Rio 2016 Olympics: analysis of the tourist perception of quality using TOURQUAL

Olimpíadas Rio 2016: análise da percepção da qualidade turística utilizando-se o TOURQUAL

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Abstract

The Rio 2016 Summer Olympics was a mega-event that changed the Brazilian tourism structure, particularly in the city of Rio de Janeiro. This article focuses on the evaluation of the quality of services offered to tourists during the event, analyzing the tourists' perception of quality. It is a quantitative, exploratory, descriptive research based on the Tourqual indicators and using a survey. The study interviewed 1912 tourists throughout the event. Data were treated and analyzed adopting descriptive statistics, student's t-test for mean comparison, and Spearman correlation, to define which indicators most influenced the result of the evaluation performed. The event's evaluation index was 9.28 out of ten. The results showed that the indicators that most influenced the positive perception were 'comfort, beauty, acoustics, and temperature of the Olympic venues,' 'variety of activities,' and 'transportation'.

Keywords: Service quality, Olympic Games, TOURQUAL, Rio de Janeiro.

Resumo

Os Jogos Olímpicos Rio 2016 foram um mega evento que modificou a estrutura turística brasileira, particularmente na cidade do Rio de Janeiro. Este artigo centra-se na avaliação da qualidade de serviços oferecida ao turista e analisa a percepção de qualidade dos turistas. É uma pesquisa quantitativa, exploratória, descritiva, do tipo survey, com base nos indicadores Tourqual. Foram entrevistados 1912 turistas durante todo o evento. Os dados foram analisados por meio de estatística descritiva, teste-t de Student para comparação de média e correlação de Sperman para definição dos indicadores que mais influenciaram a avaliação. Os principais resultados indicam que o evento teve uma avaliação de índice 9,28 (de 1 a 10) e os indicadores de conforto, beleza, acústica e temperatura nos locais olímpicos, variedade na oferta de atividades e transporte até os locais, foram os que mais influenciaram a percepção positiva de qualidade no evento.

Palavras-chave: Qualidade do serviço, Jogos Olímpicos, TOURQUAL, Rio de Janeiro.

1. Introduction

Tourism is currently responsible for 01 in 11 jobs created, 9.8% of the world's GDP, USD 1.5 trillion in exports (6% of all world exports), and 30% of services exported (Unwto, 2015). These are significant numbers in terms of the production of wealth, job creation, and income of a large part of the world's population. This study focuses on Brazilian tourism, more specifically, the Rio 2016 Summer Olympics. Since 2007, when Rio de Janeiro hosted the Pan-American Games, Brazil and the city became hosts of mega-events such as the World Military Games in 2011, the Rio + 20 Conference (2012), the FIFA Confederations Cup (2013), World Youth Day (2013), Rock in Rio, the 2014 FIFA World Cup and the 2016 Summer Olympics and Paralympics.

This research presents an evaluation of the quality of services provided to tourists during the 2016 Summer Olympics, taking into account the relevance and economic and social impact of this mega- event in Rio de Janeiro. Several authors pioneered the studies on service quality. Oliver (1980) and Booms and Bitner (1981) proposed an expanded marketing mix for services. Groonros (1984) proposed his well-known three-point model, while Parasuraman, Zeithaml, and Berry (1985 and 1988) presented SERVQUAL. Cronin and Taylor (1991) introduced SERVPERF, and many other authors have contributed to developing the scientific and marketing field of service quality in the late 1980s and early 1990s. Particularly in tourism, studies on service quality began in the 2000s.

The literature presents several service quality models. In hospitality, Sierra (1999) proposed the HOTELQUAL, by adapting the SERVQUAL model. SERVQUAL is the most used service quality model and prevails in Brazilian literature on the evaluation of services in general (Mondo & Fiates, 2013). In restaurants, Knutson et al. (1995) created DINESERV, one of the most used models in international literature, and also a model adapted from SERVQUAL. In addition, there are specific models for measuring the quality of Airline services, such as the method for quality assessment on domestic flights developed by Danaher (1997). SERVQUAL has several variations (Gloudin & Kloppenborg, 1991), such as HISTOQUAL, used to evaluate service quality at historical attractions, such as museums and castles, developed by Frochot and Hughes (2001).

These models corroborate the idea of customer focus and promote research on new topics in the field of service quality in tourism. This first analysis of the literature reveals a need for further studies of service quality in mega-events, which represents an opportunity to propose an adaptation of the TOURQUAL model (Mondo, 2014; Mondo & Fiates, 2017), emphasizing the evaluation of tourists' perception of the quality

of their experiences in events. Although studies on tourism have built on the fundamental concepts of experience economy (Pine & Gilmore, 1999), the perspective of the quality of experiences in mega-events is a feature that needs to be better explored.

The analysis responds to this demand, working in a similar direction as studies such as Brown, Smith, and Assaker (2016), who investigated the relationship between sports involvement, site evaluation (host city), and the evaluation of the London Olympics as factors related to tourists intention to revisit the city. The work by Sebata (2016) is another example. The author proposed a model for measuring the satisfaction of African sports tourists in Rio 2016 Summer Olympics, based on the quality of the program of activities, media coverage, experience at the event, quality of results, facilities, food and beverages, and referees performance. Bamford and Dehe (2016), in turn, investigated the quality of services at the London 2012 games from the perspective of Paralympic athletes. Finally, Yoshida and James (2010) studied 283 baseball spectators in Japan and 343 football spectators in the United States, concluding that the game atmosphere is a strong predictor of satisfaction as well as staff service at the stadium and the ease of access.

Other studies emphasized the image of the destination. Hahm, Tasci, and Terry (2019) observed the impact of the Olympic games on South Korea's image. The findings did not reveal significant changes in the country's image, tourist destinations' image, or the image of the Olympics over time. This may indicate that, against common expectations, hosting Olympics has no influence regarding image improvement, or that the country missed the opportunity to take advantage of the mega event, failing to use all possible media channels to its favor. Target marketing organizations need, therefore, to consider these two indications in their decisions to promote mega-events.

This article aims to evaluate the quality of services offered to tourists who visited Rio during the 2016 Summer Olympics, considering the specific and particular nature of service quality models present in the literature, and understands tourism as an important economic activity in the international context. The study analyzes the tourists' perceptions of quality based on the research question "What are the tourists' perception of the quality of experiences and services offered at the Rio 2016 Summer Olympics?"

2. Theoretical framework

The discussions on the distinctive characteristics of services and physical goods started only in the late 1970s (Soteriou & Chase, 2000). Since then, many different definitions of service quality emerged. For Oliver (1993), the concepts and their relationships with other definitions of service marketing have been actively researched throughout the years. One of the most popular definitions of service quality was presented by Parasuraman et al. (1985) who consider service quality as a formal attitude, related to building customer satisfaction and resulting in the customer's perception towards services offered.

According to Al-Allak and Bekhet (2011), customer satisfaction is a vital tool of differentiation in marketing strategy in a context of high competition, where new markets are emerging rapidly, and companies are making every effort to attract and retain customers. Numerous studies have shown that satisfied customers perceiving service quality, are a real source of competitive advantage. However, it is becoming increasingly difficult for many organizations to understand and keep such an advantage.

2.1 The experiential nature of service quality

Experience in services has been a well-discussed topic in academia, highlighting the services simultaneity, i.e., the customer and the service provider are likely to be in contact, and the intangible and heterogeneous nature of the service and the "service encounter." Hume (2011) states that the "service encounter" or "service experience" is the entire transaction the client receives. For example, in a museum setting, this experience refers to the material, the actual exhibition and curation, the interactive elements and service processes, the extra services such as the cafeteria and the store, and the clients' educational and experiential elements.

The reasons to emphasize the importance of service encounter are related to the perception of value, satisfaction, and intention to recommend. In tourism, Kyle et al. (2010) state that involvement is an unobservable state of motivation, excitement, or interest. There is evidence indicating that the degree to which customers are involved in the activity influences their evaluations of service providers and experiences.

Wang (2009) corroborates, arguing that interpersonal relationships refer to the strength of personal ties developed between clients and service employees. Interpersonal relationships positively influence the intention of staying with a service provider (Burnham, Frels, & Mahajan, 2003) and lead to positive recommendations (Gwin-Ner, Gremler, & Bitner, 1998). In addition, interpersonal relationships can lessen the impact of dissatisfaction with customer service by encouraging them to stay with their service providers, even in situations where the client is not fully satisfied. Hsieh and Hiang (2004) discuss the work of Crosby et al. (1990) and affirm that service quality can be considered a necessary condition for the quality of the relationship. Crosby et al. (1990) proposed that the seller determines the level of quality of the service offered. In a later study, Brady and Cronin (2001) proposed an integrated service quality model based on three dimensions: customer-employee interaction, service environment, and quality of the result. Hsieh and Hiang (2004) researched the relationships among these dimensions and identified that the relationship during consumption influences the perception of service quality.

The next section addresses quality in tourism services, taking into account service experience and promotion of quality.

2.2. Quality in tourism services

This section presents studies on the quality of tourism services. Liao (2012) researched service quality in leisure resorts.

Sánchez-Hernandez et al. (2009) proposed an integrated service quality model to be tested empirically in hotels. Kenneth, Judith, and David (1995) indicated that when assessing the most "intangible" purchasing criteria, tourists mentioned safety, reliability, quality of service, convenience, and reputation. Service quality is, therefore, an important criterion for repurchase intent. In order to provide high-quality services, leisure business managers have focused on the expectations of paying customers. In leisure services as a whole, quality management seems to be a suitable strategy to conduct businesses related to leisure facilities (Leigh, 2001).

Chen et al. (2011) researched quality in national parks. The authors consider the relevance of these sites for the protection of ecological systems and natural resources at the same time as they offer leisure and tourism opportunities for the public. Also, national parks are considered natural landscape repositories, as well as cultural and historical resources. As noted by Ryan et al. (2008), national parks function as essential elements of economic growth. Ritchie and Crouch (2003) noted that the competitiveness of a tourist destination is its ability to increase tourist spending and attract an increasing number of visitors to the destination by providing them with quality services and rewarding experiences.

Rukuiziene (2007) researched services in the context of rural tourism and identified that cultural influences help to describe the dimensions of service quality. Hume (2011) has researched quality in museums, galleries, science centers, and art galleries. According to Albu (2009), the adoption of a quality management system in tourism is a strategic decision, with long-term implications that would bring advantages such as increasing customer satisfaction, reducing costs, and reinforcing employee's responsibilities and satisfaction at work.

The quality of the experience involves not only the attributes provided by a supplier but also attributes brought by the visitor (Zoune & Koremenos, 2008). The quality of the experience is a psychological result or an emotional response. The measurement of satisfaction refers to how well customers perceive the experienced leisure activities, based on attention to their needs and motivation to participate. The general experience of tourists consists of numerous small encounters with a variety of tourist services such as taxi drivers, hoteliers, and waiters as well as elements of local attractions such as museums, theaters, beaches, and theme parks. The tourist's overall impression develops their memory of the destination after the visit.

The visitor's experience is at the heart of the destination, becoming the main objective when offering tourist products (Swarbrooke, 2002). However, most researchers agree that tourism experiences should be better studied (Larsen, 2007; Connell & Meyer, 2004). According to Buhalis (2000), few books examine destination marketing. Even fewer of them illustrate 'destinations' as a type of 'experience provider' for tourists, local inhabitants, and other destination agents.

Zoune and Koremenos (2008) researched the evaluation of tourism experience in the context of a destination both conceptually and empirically. The authors indicate that the rating given to the experience in a destination reflects the assumptions and principles adopted when rating the perceived service quality, as proposed in the service marketing literature. Also, new marketing approaches (relationship marketing, network approach, and service-dominant logic) provide a different conceptualization of all tourism experiences. The assumption, therefore, is that the customer defines the quality, and the evaluation of quality is based on the customer's perception (Zoune & Koremenos, 2008)

3. Methodology

This section presents the main methodological characteristics of the research, as well as the procedures for data collection, treatment, and analysis.

The study is exploratory and descriptive, adopting a quantitative approach, and field research using a survey. A questionnaire was applied directly to tourists who were at the Rio 2016 Summer Olympics.

3.1 Population and sample

The population was formed by the tourists who passed through the Olympic venues between August 5-20, 2016. As the exact number of people is unknown, the research considered an infinite population, resulting in a probabilistic sample of 1912 people. The researchers took turns to record this information in three shifts at the four official Olympic areas, in addition to the Fan Fests and Olympic Boulevard.

3.2 Data Collection Instrument

The instrument for data collection was a structured and non-disguised questionnaire, completed by a researcher after interviewing the participant. The questionnaire included questions on socio-demographic profile (sex, age, schooling, marital status and origin), trip profile data (motivation, where they stayed and how many days they were in Rio for), and data about the perception of the quality of their experience. The model adopted was an adaptation of Mondo's TOURQUAL (2014). TOURQUAL is an evaluation protocol based on a theoretical model for measuring the service quality of tourist attractions.

TOURQUAL (Mondo, 2014) was created after identifying a theoretical gap in analyses of the quality of touristic attractions. First, two bibliometric surveys were carried out to identify the existing quality assessment models. From this, 36 models were created and classified by scope, dimensions, indicators, scales, and presentation format. Then, 211 indicators were collected, and a qualitative analysis was carried out. The preliminary theoretical model included 35 indicators.

In the second stage of the research that led to the creation of TOURQUAL, tourist comments were collected from TripAdvisor. A total of 68,301 comments were collected from eight Brazilian

cities, and the data were evaluated and compared with the indicators of the preliminary theoretical model using the software T-LAB text analysis. Of the 35 indicators, 12 were excluded, 23 were maintained, and three new indicators were created. The model was then tested empirically, with a sample of 476 tourists, evaluating tourist attractions in Florianópolis,

Brazil. The results validated the indicators, attesting their importance to determine the quality of the attractions. The research confirmed TOURQUAL as a service quality model to evaluate tourist attractions, useful both in academia and in the market, contributing to improving quality in the tourism industry (Table 1).

Table 1 – TOURQUAL protocol indicators

Category	Indicator	Indicator adapted for the research
Access	Accessibility / Location	Transportation to the Olympic venues, parking, and location
Access	Accessibility for people with disabilities	Accessibility for people with disabilities in Olympic venues
Access	Accessible restrooms	Location, availability, and cleanliness of restrooms
Access	Waiting for service	Queues to enter arenas, bars, and parties
Access	Ticket purchase	Process of ticket purchase
Access	Working hours	X
Environment	Temperature / Acoustic	Comfort, beauty, acoustic and temperature of Olympic venues
Environment	Comfortable and inviting place	
Human factor	Service presentation	Volunteer service
Human factor	Attention	
Human factor	Service	
Human factor	Trust	
Human factor	Knowledge	
Experience	Learning	***Absorbed by other indicators
Experience	Entertainment	
Experience	Aesthetics	
Experience	Evasion	
Safety	Safety	Perception of safety in Olympic venues
		Perception of safety in the city of Rio de Janeiro
Technical Quality	Price	Price of tickets and event products
Technical Quality	Weather	X
Technical Quality	Maintenance (equipment and infrastructure)	Infra-structure in Olympic venues
Technical Quality	Signage	Signage to reach Olympic venues
Technical Quality	Technology	Technology/ 4G signal/Wi-Fi and information poles
Technical Quality	Cleanliness	Cleanliness of Olympic facilities
Technical Quality	Carrying capacity	X
Technical Quality	Activities variety	Variety of activities offered in the Olympic venues

Source: Adapted from Mondo (2014) and Mondo e Fiates (2017).

After brainstorming with experts on large-scale events, the authors decided to adapt TOURQUAL to reduce response time and become more specific to mega-events. In this way, a focus group was held with 04 professionals in the area who specialize in research topics related to this type of event (quality, experience, and tourism economics), and the model was reduced to 15 indicators. As shown below in the results, it was verified that the adaptation was reliable, resulting in a Cronbach Alpha index of 0.795.

Different from the proposal put forward by Sebata (2016), this study exclusively examined the quality perceived by tourists based on specific indicators related to the touristic services, as presented above. The choice to use TOURQUAL (2014) took into consideration the characteristics of the services and the fact that it is an updated model. Other research identified quality indicators in touristic sports events that could be used, such as Kelley and Turley, (2001), Shonk and Chelladurai, (2004), Clabuig et al. (2008), Morales et al. (2005), Wakefield et al. (1996),

Alexandris et al. (2004), Howat et al. (1996). In this case, however, TOURQUAL was considered the best option.

3.3 Data collection and analysis

The application of the questionnaires occurred during the Olympics, at the main competition venues. SPSS 22 statistical software was used to treat the data, and the analysis used descriptive statistics (frequencies, means, and tables), chi-square test (in the cross-tables), Kolmogorov Smirnov test (to measure data normality), student t-test for means comparison, and the Spearman correlation test to determine influences between variables.

4. Results and Discussion

This section presents the results of the field research, including the main characteristics of the sample's profile and the tourists' evaluation of the quality of the experience.

4.1 Sample profile

The sample consisted of 1912 people who had been to the Olympic venues. Of these, 1000 were women and 851 men, 54% and 46% respectively (61 did not answer this question). Regarding marital status, 54% were single, 39.3% married, 1.1% widowed, 4.5% divorced, and 1% other.

In terms of the level of schooling, 86.3% of the sample had higher education, followed by 8.9% who had a high school education, 3.3% technical training, and 1.5% other. Regarding age, 16.4% of the sample were 18 to 24 years, 36.4% 25 and 34 years old, 21.6% 35 to 44 years, 14.6% 45 to 54 years, and 11% were over 55 years. The mean age was 21.33 years, with a standard deviation of 11.93.

As for nationality, 1229 (66.4%) respondents were Brazilian, and 622 (33.6%) were foreigners. The main countries were the United States (8.2% of the total), Argentina (5.5%), Colombia (2.1%), France and Great Britain (4%), and Canada (1.4%). Among the Brazilian tourists, the main states were São Paulo (32.2% of Brazilians), Minas Gerais (9.5%), Paraná (6.6%), Rio de Janeiro (6.3%), Rio Grande do Sul (6.0%) and Bahia (5.0%).

Concerning the main reason for the trip, 83.3% of the sample (1541 tourists) stated the Rio 2016 Olympics as the main reason, followed by 5.9% (109) who traveled for professional reasons, 5.2% (97) to visit Rio de Janeiro and 4.0% others. Of the total sample, 28.7% traveled as a family, 27.7% with friends, 21.4% alone, and 18.3% in couples, 4.0% of the sample traveled in organized groups. Regarding accommodation, 37.7% of the sample stayed at friends' homes, followed by 21% who stayed in hotels, 16.6% in a rented apartment or house (except AirBnb), 12.9% Airbnb, and 11.8% others. Finally, the average time tourists spent in Rio de Janeiro was 9.99 days, with a standard deviation of 7.54 days.

4.2 Quality Assessment of the Tourist Experience

As presented in the methodology, an adaptation of TOURQUAL was used to evaluate the indicators of quality of services offered to tourists at the Rio 2016 Summer Olympics. Table 2 presents the 15 indicators adopted.

The indicator with the best evaluation was 'perception of safety' at Olympic venues such as Arenas, Olympic park, and FanFests (average rating 9.83). The Rio Olympics demanded the largest security scheme for mega-events ever held in the country, according to the Brazilian Defense Ministry. The reinforcement in the sector included an emergency federal government contribution of R$ 2.9 billion. More than 80,000 security agents were mobilized, including the Military, Civil and Federal police, as well as the National Force and the Armed Forces (Navy, Army, and Air Force).

When comparing the assessments of the indicator by Brazilians and foreigners, a statistically significant difference was found (9.92 for Brazilians and 9.65 for foreigners), but it was the indicator with the best evaluation in the two public segments.

In a study about the perception of German tourists about Brazil after the 2014 FIFA World Cup and the Rio 2016 Summer Olympics, Schallhorn (2019) observed that tourists positively perceived and evaluated safety. This item of the author's questionnaire was rated higher after the 2014 FIFA World Cup than before the event. However, the same item was rated lower after the Rio 2016 Summer Olympics than before the games. The study also identified that the risk of crimes after the Olympics was also higher. According to another study by Schallhorn (2019b), the infrastructure and safety were two of the most publicized themes in the German media about the Rio 2016 Summer Olympics.

The second best-evaluated indicator was 'volunteer service,' with a mean score of 9.79. Despite some reports of internal disorganization, it is clear that the volunteers successfully fulfilled their roles. There were over 50,000 registered volunteers, 70% with credentials, according to the Olympic Committee. In the comparison between Brazilian and foreigner respondents, a statistically significant difference was observed between the means (9.90 for Brazilians and 9.58 for foreigners.)

The third best-evaluated indicator was 'comfort, beauty, acoustics, and temperature of Olympic venues,' with a mean score of 9.33. The following indicators were 'perception of safety' in the city, with a mean of 9.15 and 'cleanliness of Olympic facilities,' with an average of 9.03. According to the Municipal Urban Cleaning Company of Rio de Janeiro (Comlurb), the company collected an average of 104 tons of garbage per day. More than half (50.3%) of the collected material was cardboard, 16.8% was plastic, 15% was general waste, 12.2% non-tradable recyclable materials, and 5.6% metal. The director of Comlurb reported that there was a change in the profile of tourists and that the garbage collectors had less work, as tourists contributed by using the trash cans.

Valduga, Breda, and Costa (2019) studied the image of Brazil and Rio de Janeiro as a tourist destination. The authors examined the categories of the image, whether it was considered positive, and whether it was a cognitive or affective image. The results showed that the category most used to describe the image of Brazil was 'services, experience, and environment,' and the category most often applied to Rio de Janeiro was "exclusive attractions of the city."

Of these three indicators, only the 'perception of safety' in the city did not obtain a statistically significant difference between Brazilian and foreign respondents. 'Comfort, beauty, acoustics, and temperature in the Olympic venues' and 'cleanliness of Olympic facilities' obtained significant difference, with Brazilian respondents attributing a higher score.

The next indicators had a score below nine. Notwithstanding, the sample surveyed still attributed relatively good grades to the indicators. The Olympic venues' infrastructure indicator averaged 8.90. The Brazilian Olympic Committee invested more than R$ 25 billion to build structures for the games. In the comparison of the averages indicated by Brazilians and foreigners, there was a significant difference of 0.45.

Ferreira and Giraldi (2019) investigated the factors that formed the image of the city for tourists in the context of the Rio 2016 Summer Olympics. The authors found that the general infrastructure was the second most significant factor in predicting the city's image for the tourists. This may happen because hosting an event like the Olympics requires substantial investment in infrastructure, especially in an emerging country such as Brazil.

The 'variety of activities' at Olympic venues averaged 8.78 in tourists' evaluation. This result is considered positive and a consequence of the program of activities offered all over the city during the period of the Olympics. There was no statistical difference in the average between Brazilians and foreigners. Two attractions stood out going beyond the sports event: three Olympic Boulevard that received shows and cultural activities, and 52 "Casas dos Países" (countries' homes) (25 of them were open to the public) where people could learn about the countries' culture and traditions.

The indicator 'transport to the Olympic venues' obtained a score of 8.70. Rio 2016 Summer Olympics had four main venues (Olympic Park, Deodoro, Copacabana, and Maracanã) and the transport was carried out with Line 4 of the Metro (considered one of the great Olympic legacies to the city) and the Trans-Olympic BRT – Bus Rapid Transit operating in the four venues. McGillivray, Duignan, and Mielke (2019) explored the case of Rio

2016 Olympics from the perspective of the urban planning of the so-called Olympic city. The authors concluded that the framework of documents, standards, expertise, and regulations created a positive environment for space management during the mega-event.

'Transport' and all the following indicators (except for the indicator 'queues') suggested a statistically significant difference between the opinion of Brazilians and foreigners. The indicator 'price' was the one with the most significant difference (1.0). Ticket sales started two years before the mega-event. The research collected the perception of the quality of the purchasing process both when the tourist bought the tickets, before, and during the event. The average of the indicator was 8.0, reaching 8.56 as its final score. The tickets sold reached 95% of those available, bringing revenue of R$ 1.2 billion.

Another indicator analyzed that reached an average of over 8.0 was the signage to find the Olympic sites and arenas (8.3 average). According to the Ministry of Tourism, R$ 15.7 million were invested in more than 500 signs to guide tourists. The last indicator presenting an average score of 8.0 referred to the restrooms at the Olympic sites (availability, location, and cleaning). There was a final score of 8.23. The restrooms were available in the Arenas, in containers, and the modality of chemical toilets.

Table 2 - Evaluation of the TOURQUAL Indicators - Quality of the Experience in Rio 2016.

	N	Average	Standard deviation	Average (Brazilians)	Average (Foreigners)	Sign. Diff.
Perception of safety in Olympic venues	1731	9.83	1.421	9.92	9.65	0.000**
Volunteer service (hospitality, courtesy, attention, technical knowledge)	1738	9.79	1.628	9.90	9.58	0.000**
Comfort, beauty, acoustic and temperature of Olympic venues	1651	9.33	1.596	9.43	9.15	0.001**
Perception of safety in the city	1832	9.15	1.805	9.17	9.13	0.657
Cleanliness of facilities in Olympic venues	1711	9.03	1.606	9.11	8.87	0.003**
Infra-structure in Olympic venues	1715	8.90	1.763	9.06	8.61	0.000**
Variety of activities offered in Olympic venues, apart from the sport games	1630	8.78	1.917	8.83	8.69	0.181
Transportation to Olympic venues, parking,, location of the arenas	1604	8.70	2.167	8.83	8.47	0.002**
Ticket purchase	1678	8.56	2.479	8.74	8.22	0.000**
Signage to reach Olympic venues and arenas	1786	8.30	2.113	8.39	8.12	0.013**
Location, availability and cleanliness of restrooms in Olympic venues	1579	8.23	2.127	8.34	8.03	0.006**
Technology, 4G or Wi-Fi, Applications, Information poles in Olympic venues	1623	7.90	2.410	8.10	7.52	0.000**
Accessibility for people with disabilities in Olympic avenues	1361	7.87	2.452	8.08	7.49	0.000**
Queue to enter in games, arenas, bars and parties	1642	7.46	2.399	7.53	7.33	0.120
Price of tickets and event products	1746	6.57	2.581	6.23	7.23	0.000**
Average		8.28		8.66	8.42	

Source: Primary data (2016).

It was possible to observe that three out of fifteen indicators did not reach a good score (above 8.0). These were the cases of 'technology' (7.90), 'accessibility for people with disabilities' (7.87), and 'queues for tickets to games, arenas, bars, and

parties' (7.46). The indicator for queues showed no difference between Brazilians and foreigners.

In the indicator for 'technology,' the Olympic Committee provided free Wi-Fi in all Olympic venues, As for 'accessibility,'

numerous actions were taken, both from the structural point of view (for example, the transmission of the games in sign language for deaf people). For the 'queues,' it was possible to detect that during the first three days, the respondents attributed low scores. As the situation was addressed by the event's managers and improved, the score increased, reaching the final average shown in Table 2.

The worst indicator evaluated in the survey was the price of tickets and products, with an average of 6.57. This fact demonstrates the dissatisfaction of the sample surveyed regarding the prices practiced.

The average of the quality evaluation for all indicators, considered here as 'objective perception,' was 8.57. The spontaneous average given by the tourists for the games, considered here as 'subjective perception' or satisfaction, was 9.28. Therefore, it is fair to argue that some indicators are more important than others in determining the general satisfaction of the tourist with the research object.

4.3 Quality indicators that most influenced tourist satisfaction

After obtaining the evaluation scores to TOURQUAL indicators, the study verified which ones most influenced the overall rates of tourists' satisfaction with the event. In general, the average satisfaction (the tourist was asked how they evaluate the event attributing a score for the event as a whole, before asking to evaluate the specific indicators) was 9.28.

Spearman's correlation test (Table 3) sought to verify the variables that had more influence on the tourists' perception of the quality of the event. The intention was not to infer the influence of a specific indicator on the overall tourists' perception. It was to observe the importance of each indicator to the satisfaction regarding the quality of the experience.

Table 3 – Spearman's Correlation

Comfort, beauty, acoustics, and temperature	0.332	Large influence – Group 1
variety of activities at the local of the Olympic Games, apart from the competing sports	0.321	
Transportation in Olympic venues	0.318	
Perception of safety in the city	0.297	Large influence – Group 2
Volunteer services	0.272	
Ticket purchase	0.257	
Cleanliness of Olympic facilities	0.252	
Location, availability, and cleanliness of restrooms	0.246	
Perception of safety in Olympic venues	0.226	
Infrastructure in the Olympic venues	0.198	Low influence
Accessibility for people with disabilities	0.187	
Signage to reach Olympic venues	0.167	
Technology	0.156	
Queues	0.133	Very low influence
Price of tickets and event products	0.118	

Source: Primary data (2016).

The test showed three quality indicators responsible for tourist satisfaction in Rio 2016 Summer Olympics. 'Comfort, beauty, acoustics, and temperature of Olympic venues,' 'variety of activities at the local of the games,' and 'transportation.' The indicators refer to aesthetics and escapism present in the experience economy (Pine & Gilmore, 1999), which are two main factors of tourists' satisfaction. The indicator' comfort, beauty, acoustics, and temperature of Olympic venues' are also related to the service surroundings, as conceived by Bitner (1991). Finally, the presence of the indicator' transportation' in the group of large influence shows that access to sites is key in good tourist attractions,which must involve strategy and urban and mobility planning.

In a second group, still considered of large influence, the research identified the indicators' perception of safety in the city,' 'volunteer service,' 'ticket purchase,' 'cleaning of Olympic facilities,' 'availability of restrooms,' and 'perception of safety at

Olympic venues.' Thus, in addition to security in events, the human factor has a strong influence, corroborating the findings by Parasuraman, Zeithaml, and Berry (1998), when using the SERVQUAL model. The presence of indicators such as the 'cleanliness of the facilities,' 'availability of restrooms,' and 'convenience during tickets purchase' in this group of large influence represents the attention to technical quality, as advocated by Groonroos (1984).

In a third block, with less influence on tourists' satisfaction, the study identified the indicators' infrastructure in the Olympic sites,' 'accessibility for people with disabilities,' 'signage to reach Olympic venues,' and 'technology.' Despite having low influence, they are items that negatively affected the respondents' evaluation scores. In the fourth group, with very low influence on the final score obtained, are the indicators 'queue' and 'prices of tickets and event products.' This result suggests that the score for satisfaction with the Rio 2016

Summer Olympics, although high (9,28), could have been higher if queue management and pricing policies were planned better. Apart from the indicators of low and very low influence, all others are considered positive within the correlations.

5. Conclusion

This research aimed to analyze the tourists' perceptions of the quality of experiences and services offered at the Rio 2016 Summer Olympics.

The study demonstrated that tourists evaluated the quality of the event positively, surpassing the final average of evaluation of events such as Oktoberfest (beer festival in the city of Blumenau, Brazil) and the Ultimate Fighting Championship (UFC) held in Brazil, for example. These results show that investment in infrastructure and human resources for tourist assistance has had a positive return.

Despite the difficulties reported in the first days of the Olympics by the international media, the event's managers were able to mitigate the problems, and evaluation regarding queues and prices were balanced. These items continued to receive lower scores in comparison to other indicators, but they finally came to an acceptable average, considering that the tests showed they had little influence on the general score that the tourists attributed to the event.

Another relevant point of the research was the little differentiation between the opinions of Brazilian and foreign tourists. It was observed that actions of planning the assistance to national and international tourists were well designed and executed during the event. As for future research, the suggestion is to replicate the model used here in other mega-events, to be able to compare indicators statistically. Future studies may also focus on the tourist experience and not only on the perception of the quality of services as put forward in this research.

As practical suggestions for mega-events managers, it is crucial to perform evaluation surveys, monitoring the indicators of interest, particularly those related to comfort, activities and entertainment, transportation, safety, assistance and cleaning, which were the indicators that most influenced the final score attributed to the Rio 2016 Summer Olympics.

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