Functional Quality of Service During Events: An Empirical Analysis

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Abstract

Visitors to events attach great importance to the range of artists and their performances and the quality of their stay and services. To create a staging and, consequently, an emotionalization of the visitor, many action areas simultaneously take effect at an event. In this context, the customer satisfaction of visitors plays a major role for event organizers, which aims to generate a competitive advantage over other providers and be attractive for artists simultaneously. This article aims to analyse the perceived functional quality of service (QoS) during various events in a multi-purpose event venue. The analysis was based on 563 primary data samples. On the off chance, selected visitors were during the events recruited and interviewed using a standardized questionnaire. The data were collected during the break of five events. These events took place in the period from mid-November to mid-December 2019. This was supplemented by an online survey of enthusiastic fan club visitors who regularly watch handball matches within the event venue. The online survey was conducted in parallel with the surveys during November 2019. Overall, the results showed a high level of satisfaction among visitors regarding the QoS. In addition to services, exploratory factor analysis identified cleanliness as a satisfaction factor that significantly accounted for overall service satisfaction. Differences in the perception of both factors could be detected between the fan club visitors on the one hand and all other visitors of various events (comedy, music, sports) on the other. Based upon the results of this analysis, the event managers of this venue are enabled to employ target group-oriented improvements of individual services to consolidate and increase customer satisfaction.

Introduction

Customer satisfaction plays a major role for event managers to generate a competitive advantage over other providers and attract artists (O'Neill et al., 1999, Pivac et al., 2011). If the service quality of events can be increased, customer satisfaction often increases (Sureshchandar et al., 2002, Tkaczynski, 2013). Nowadays, event managers are faced with responding to the various groups of visitors in an appropriate way. For this reason, they need to know what services each target group values during an event (Kelley et al., 2001). To influence customer satisfaction and thus repurchase intention, it is necessary to identify and analyse those factors that explain service quality, which is the only way to continuously improve services to increase the satisfaction of event visitors (Pivac et al., 2011, Tkaczynski, 2013). The objective of this article is to identify the following issues for a multi-purpose event venue: (1) which factors of perceived functional QoS play a significant role in visitor satisfaction, (2) whether there are differences regarding the perception of functional QoS between individual target groups (gender, age group, frequency of attendance, event type).

To this end, the QoS and its relationship to customer satisfaction are examined from a theoretical perspective. To identify a target group-oriented offer of services, the research team examines whether the perception of the functional QoS depends on gender, age group, frequency of visits, or the type of event. Building on this, a quantitative survey is then applied to examine how visitors to various events and members of the handball fan club visiting home games rate the quality of the individual functional services offered. Moreover, the satisfaction level of all visitors is determined. By means of an explorative factor analysis, the collected service attributes are condensed to analyse their suitability for subsequently explaining customer satisfaction.

The article consists of five parts: following the introduction (1), the literature review (2) on event services quality and its impact on customer satisfaction lays the theoretical foundation. After that, the research methodology (3), including sample description and research instruments, is described. Data analysis (4) and main research findings are provided in the fourth part. Finally, (5) research results are discussed from theoretical and managerial standpoints. In addition, directions for future research are outlined.

Literature review

Quality of Service (QoS)

The construct QoS has been systematically studied by many service marketing researchers. The gap model of Parasuraman et al. (1985) relies on a series of surveys on executive staff and consumer focus groups. This research identified 10 determinants of QoS. Subsequent empirical research condensed the determinant list to manageable five dimensions: reliability, responsiveness, empathy, safety, and material values (Parasuraman et al., 1988). Gronroos (1984) suggested that customer perceptions of service quality can be divided into two components:

(1) The **technical quality** focuses on the quality assessment of the core services received by visitors to an event. In the context of an event, this relates to the quality of the sporting competition at a handball match or the quality of the performance by the musical artist or comedian that visitors observe during the event.

(2) **Functional quality** refers to the evaluation of service delivery, which consists of: the venue, the staff overseeing the event, parking facilities, the sound system, hostesses, and similar aspects of service delivery.

Event managers may have control over functional quality. However, there is significantly less control over the technical quality during the performance of artists or athletes (Kelley et al., 2001).

According to further studies, service quality refers to evaluating service attributes. Hence QoS is attribute-based and a cognitive evaluation (Crompton et al., 1995, Ayob et al., 2010, Ju et al., 2019). Further studies revealed how service quality was evaluated by visitors and detected those factors that influence QoS. For example, Crompton et al. (1995) demonstrated that the frequency of attendance did not influence perceptions of service quality during festivals. On the one hand, Tkaczynski (2013) detected that individual venue factors (e.g., décor and seating) influence the ratings of functional QoS.

On the other hand, the study also revealed that different target groups perceived individual service attributes differently (Tkaczynski, 2013). If visitors perceived improved service quality, they became more satisfied accordingly. In this way, Taylor et al. (1994) explained the relationship between service quality and customer satisfaction.

Customer satisfaction

Oliver (1980) describes customer satisfaction as the perceived deviation between initial expectation and perceived performance after consumption. If the expected performance deviates from the perceived consumption, dissatisfaction occurs accordingly (Oliver, 1980). Customer satisfaction can thus be defined as the degree to which an experience is believed to evoke feelings - positive if satisfied - or negative if dissatisfied (Oliver, 1997, Armbrecht et al., 2020).

Functional QoS has been repeatedly cited as an important contribution to customer satisfaction and, in particular, event success (Tsuji et al., 2007, Shi et al., 2014). O'Neill et al. (1999) argued that although the performance of an event may be excellent, visitors may question a future attendance because of experiencing inferior or incompetent QoS (such as poor food and unclean or inadequate restrooms) (O'Neill et al., 1999). The relationship between perceived service quality and customer satisfaction has been analysed in many studies during various events. The results revealed that service quality and customer satisfaction are independent and are different constructs from the customer's point of view. However, they also demonstrated that both constructs might influence each other negatively or positively (Crompton et al., 1995, Sureshchandar et al., 2002, Ayob et al., 2010, Tkaczynski, 2013, Shi et al., 2014, Zhong et al., 2020).

Methodology

The study's objective is to analyse the perceived functional QoS (Gronroos, 1984) based on the importance of service attributes. In collaboration with an experienced team of experts from a multi-purpose event venue, 13 service attributes were developed based on the literature review. The event venue was chosen because of its versatility. The venue is multifunctional and can accommodate 3,000-5,000 visitors who may experience various events ranging from sporting events to comedy and music concerts with international stars. Due to this diversity, this multi-purpose event venue is predestined as a research object to examine the effects of various target groups on the assessment of the functional QoS offered. The functional service performance, which specifically for the multi-purpose hall referred on the one hand to the services in the areas of checkroom and the catering and on the other hand to the cleanliness in the areas of the toilet, foyer, seating and standing, catering.

The survey of visitors during each of the events was conducted before the Corona crisis in 2019. The five events took place from mid-November to mid-December 2019. To ensure the identification of immediate perceptions of the functional QoS, the survey was conducted during the breaks and after the event experience. On the off chance, selected visitors were during the events recruited and interviewed using a standardized questionnaire. Before the interviews, the standardized questionnaire was transferred to the survey tool "umfrageonline.com". This enabled the interviewers to transfer the respondents' answers directly into the umfrageonline.com app during the interviews using a tablet. Attendees were asked to rate the service attributes employing a standardized questionnaire with a 5 step Likert scale (1 = very dissatisfied to 5 = very satisfied). In addition to the service attributes, demographic visitor information such as gender, age, and frequency of visits were collected.

In addition to the on-site interviews, an online survey was conducted among enthusiastic fan club visitors who regularly attend handball matches within the venue. The online survey was intended to expand the sample to include responses from visitors who regularly attend the venue.

Table 1
Demographic and target-group specific information about the sample

Sample			Event visitors	Fan club members
	All	**All**		
Age	**n**	**%**	**%**	**%**
<18 years	26	4.6	5.7	0.0
18-24 years	142	25.3	21.8	39.5
25-34 years	155	27.5	28.2	24.8
35-50 years	148	26.3	29.5	12.8
>50 years	92	16.3	14.8	22.9
Gender				
Female	257	46.0	49.2	32.4
Male	300	53.7	50.3	67.6
Diverse	2	0.3	0.4	0.0
Visit frequency				
1-2	209	37.3	41.8	18.5
>2-5	187	33.4	37.2	17.6
>5	164	29.3	21.0	63.9

Source: Author's calculation

Students of the 5th semester of the Osnabrück University of Applied Sciences questioned visitors of the multi-purpose event venue during the breaks and at the end of each of the events. In parallel, they applied an online survey with the members of the handball fan club who regularly attend home games of their handball club in this multi-purpose event venue. The online survey of fan club members was conducted to capture the perceptions of functional services and cleanliness in selected areas (cloakroom, catering, restrooms, foyer, and seating/standing areas) of visitors who regularly attend events (at least 5 times a year). Of 12,500 visitors during the events, 455 visitors could be surveyed on site. One hundred eight fan club members responded to the online survey. In this way, a total sample of 563 could be reached. The sample reveals a largely balanced distribution within the visitor target groups (event visitors and fan club members). Overall, fan club attendees attended events at the multi-purpose hall more frequently (< 5 visits; 63.9%). A systematic comparison of the sample with the population is impossible because the distribution of sociodemographic characteristics in the population is unknown. (table 1).

The data set analysis started with the mean values of all service attributes. Subsequently, explorative factor analysis was applied to identify whether the service attributes can be grouped into a reduced number of content-related factors. A subsequently applied robust regression analysis was supposed to identify to what extent these factors contribute to the "overall" satisfaction of the visitors. In the next step, the mean values of the extracted factors for the groups "event", "age", "gender," and "frequency of visit" are determined. After that, a comparison of means (Kruskal-Wallis test) was applied to detect whether the mean values of the individual groups show significant differences and whether the perception of QoS, therefore, differs significantly among those groups.

Results

Mean values of the service attributes

First, the mean satisfaction values of the individual service attributes were determined. Visitors to the multi-purpose event venue rated all 13 service attributes on the scale from "1 = very dissatisfied" to "5 = very satisfied" on average between 4.21 and 4.54. Visitors were most satisfied with the staff in the checkroom area (4.48) and the cleanliness in the foyer (4.54). In comparison, the prices for catering (4.21) were slightly
lower rated. In summary, there is a high to a very high level of satisfaction across all 13 service attributes, which is also underpinned by the associated moderate standard deviations. At the same time, the standard deviation of the service attribute "price of catering" stands out with a higher value (0.83). Consequently, the visitors are also very satisfied with the services of the multi-purpose event venue as a whole (4.60) (table 2).

Table 2
Descriptive statistics: mean values of the perception of all service attributes

Questions	Mean	SD	n
Services during the event (cloakrooms and Catering):			
How satisfied were you with the staff while using the cloakroom?	4.48	0.64	402
Were you satisfied with the cloakroom services?	4.47	0.64	413
How satisfied were you with the catering staff?	4.46	0.62	494
How satisfied were you with the wait during the drop-off at the cloakroom?	4.45	0.69	371
How satisfied were you with the price for the checkroom use?	4.37	0.73	385
How satisfied were you with the waiting time during pickup at the cloakroom?	4.35	0.74	349
How satisfied are you with the catering offer?	4.34	0.71	494
How satisfied are you with the quality of the catering?	4.33	0.67	474
How satisfied are you with the prices of the catering?	4.21	0.83	477
Cleanliness of various areas of the venue			
How did you perceive the cleanliness of the foyer?	4.54	0.57	538
How did you perceive the cleanliness of the seating/standing area?	4.47	0.60	508
How did you perceive the cleanliness of the catering area?	4.46	0.59	520
How did you perceive the cleanliness of the restrooms?	4.46	0.61	505
How satisfied were you with the services in the multi-purpose event venue altogether?	4.60	0.56	523

Note: Likert scale where 5 = very satisfied, 1 = very unsatisfied
Source: Author's calculation

Explorative factor analysis

In the second analysis phase, exploratory factor analysis was applied to determine whether the 13 service attributes/items could be condensed to a reduced number of factors.

The Kaiser-Meyer-Olkin test (KMO) was first employed to test sufficient sample size. The standard KMO value should be approximately 1, calculated at 0.927. This figure confirms the required sample size (Kaiser, 1958). Bartlett's test was <0.001, proving the existence of relationships between items.

A maximum likelihood analysis with a varimax rotation based on an eigenvalue of 1 was applied, resulting in two factors. These two factors explained 66.6% of the variance in the data set.

Factor 1 **- satisfaction with services** – is derived from the items: (1) cloakroom waiting time (drop off), (2) cloakroom waiting time (pick up), (3) costs for cloakroom services, (4) cloakroom staff, (5) cloakroom accessibility, (6) catering prices, (7) quality of catering, (8) variety of catering items and (9) catering staff.

Factor 2 - **satisfaction with cleanliness** - is derived from the items (10) cleanliness of the foyer area, (11) cleanliness of the restroom area, (12) cleanliness of the seating/standing area, (13) cleanliness of the catering area. Table 3 displays the factor loadings and communalities accordingly.

Table 3
Rotated factor matrix for two factors and communalities (n=300)

Item	Factor		Communalities
	1	**2**	
Factor 1 – satisfaction with services:			
(1) cloakroom waiting time (drop off)	0.863		0.805
(2) cloakroom waiting time (pick up)	0.833		0.793
(3) costs for cloakroom services	0.797		0.731
(4) cloakroom staff	0.661		0.678
(5) cloakroom accessibility	0.711		0.673
(6) catering prices	0.629		0.441
(7) quality of catering	0.593		0.497
(8) variety of catering items	0.578		0.547
(9) catering staff	0.512		0.571
Factor 2 - satisfaction with cleanliness:			
(10) cleanliness of the foyer		0.752	0.693
(11) cleanliness of the restroom area		0.721	0.631
(12) cleanliness of the seating/standing area		0.832	0.763
(13) cleanliness of the catering area		0.869	0.841

Note extraction method: Maximum Likelihood, rotation method: Varimax with Kaiser normalization, ⍺ The rotation is converged with three iterations.
Only loadings for the main factors are reported.
Source: author's calculation

The interpretation of these factors resulted in the following dimensions of QoS (the explained variance is shown in parentheses):
- o Factor 1 - **services** - during the event (cloakrooms and catering) - (36.6 %),
- o Factor 2 - **cleanliness** - in various areas (foyer, restrooms, seating/standing rooms, catering counters) - (30.06 %).

With a calculated Cronbach's alpha value of 0.898, the reliability analysis confirmed a high internal consistency of the items related to the two constructs, "cleanliness" and "service".

Regression analysis

In the third step of the data analysis, a linear regression analysis demonstrates which factors play a significant role in the perceived service quality.

Before performing the regression analysis, the six Gauss-Markov assumptions were checked. The normal distribution of the data was tested applying the Shapiro-Wilk test and Kolmogorov-Smirnov test. The null hypothesis for normal distribution had to be rejected in all cases. The absence of a normal distribution requires verification of whether heteroscedasticity was present, which was performed applying the White test confirming heteroscedasticity in this case. All other assumptions (linearity of coefficients, random sampling, linear independence between independent variables, homogeneity of independent variables) were verified with the result that all of them are given. To account for and mitigate the prerequisite violations, parameter estimation was performed with robust default values (HC3) and appropriate bootstrapping (Urban et al., 2018, Cribari-Neto et al., 2004).

The result of the robust regression analysis demonstrates that 32.6 % of the variance of "satisfaction with services as a whole" can be explained by the variables "satisfaction with cleanliness" and "satisfaction with services" (table 4).

Table 4
Robust regression of both factors, "satisfaction with service" and "satisfaction with cleanliness, " including the variable "satisfaction with services as a whole"

Variable	Unstandardized	Robust Standard error
Constant term	1.634***	
Satisfaction - service	0.222***	0.063
Satisfaction - cleanliness	0.452***	0.083
Model representativeness		
R²	0.329	
Corr. R²	0.326	
F (df=2; 498)	122.087**	

Note: significant at *p < 0.05; **p < 0.01, ***p < 0.001
Source: Author's calculation

Due to missing responses, not the entire sample could be included in the regression analysis. The regression coefficient of the factor "satisfaction with cleanliness" is 0.222 and is significant ($t(498) = 2.66$; $p < 0.001$). The regression coefficient of the factor "satisfaction with services" is 0.452 and is also significant ($t(498) = 7.13$; $p < 0.001$). As expected, both factors have a positive sign, which results in a better assessment of only one of the two factors leads to higher overall satisfaction with the QoS. Thus, the results of the robust regression analysis demonstrate that the two factors, "service" and "cleanliness," explain the variable "overall customer satisfaction service" with 32.6% of the variance (Table 4).

Variability in perception among target groups

In the fourth and final step of the analysis, the differences between the individual target groups are to be identified. Since the data are not normally distributed, the Kruskal-Wallis test was applied as a non-parametric analysis to calculate the group differences. The Kruskal-Wallis test may be applied when examining more than two independent samples, which determines whether the distribution functions are the same and whether the samples come from the same population by forming ranks (Sachs, 2013).

The Kruskal-Wallis test confirms differences in the perception of the satisfaction variable "services" (SV) between the groups event (H = 89.900; p = <0.001) and visit frequency (H = 8.258; p = 0.016). Similarly, differences in perception are found between the satisfaction variable "cleanliness" (CL) (H = 55.526; p = <0.001) and the group event. However, while applying the Kruskal-Wallis test, no significant differences were found between the variables "gender" and "age" as well as (CL) and (SV) (table 5).

Table 5
Results of the Kruskal-Wallis test

Group differences among demographic variables, events, and satisfaction variables	CL		SV	
	H	Sig. (p)	H	Sig. (p)
Events	55.526	0.000*	89.900	0.000*
Frequency of visits	4.292	0.117	8.258	0.016*
Gender	0.246	0.620	1.347	0.246
Age	3.542	0.472	2.533	0.639

Note: significant at *p<0.05; CL = satisfaction variable "cleanliness"; SV = satisfaction variable "service"
Source: Author's calculation

The post hoc test with the pairwise comparisons is supposed to demonstrate which groups differ. Due to the high significance of both satisfaction variables ("CL" and "SV"), a pairwise comparison was exclusively performed with the "event" group. The results illustrate that the handball fan club members perceived the functional QoS significantly (p < 0.05) different from the visitors of the events listed in Table 6. In contrast, all other pairwise comparisons did not reveal the significance and are not listed in table 5.

Table 6
Results of the pairwise comparison- handball supporters club including all events

Pairwise comparison: handball fan club including all events	fan club CL		fan club SV	
	r	Sig. (p)	r	Sig. (p)
Handball match	0.281	0.002*	0.296	0.001*
Chriss Tall	0.410	0.000*	0.433	0.000*
TKKG	0.298	0.000*	0.461	0.000*
C. Steiffen	0.480	0.000*	0.555	0.000*
Bonez MC	0.426	0.000*	0.549	0.000*

Note: Significant at *p < 0.05, CL = satisfaction variable "cleanliness"; SV = satisfaction variable "service"
Source: Author's calculation

The next step of the analysis requires revealing the significance of the differences between the groups. For this reason, the effect sizes (r) were calculated. According to Cohen (1988) the effect limits are 0.1-0.3 (weak), 0.3-0.5 (medium) and greater than 0.5 (strong). Based upon this, a noticeable difference between the perception of the functional services by the visitors of the events C. Steiffen, Bonez MC, and the members of the handball fan club may be assumed. Only medium to weak effects could be detected regarding the different perceptions of the satisfaction variable "cleanliness" (CL) between the other events (handball game, Chriss Tall and TKKG) (table 6).

Table 7

Mean values of the group events, SV und CL

Mean values	SV			CL		
	Mean	N	SD	Mean	N	SD
Handball match	4.36	19	0.47	4.56	21	0.49
Chriss Tall	4.41	43	0.51	4.58	51	0.49
TKKG	4.46	234	0.46	4.50	242	0.47
C. Steiffen	4.47	68	0.65	4.62	67	0.63
Bonez MC	4.51	61	0.51	4.59	63	0.48
Handball supporters club	3.82	98	0.59	4.15	101	0.51
all	4.34	523	0.58	4.47	545	0.53

Note: Likert scale where 5 = very satisfied, 1 = very unsatisfied
Source: Author's calculation

The mean values of the individual events related to the satisfaction variables ("CL" and "SV") confirm this difference. Altogether, all respondents rated the functional service 4.34 (satisfied to very satisfied). Fan club members gave the services a moderate rating of 3.82 (partly satisfied to satisfied). All respondents were satisfied to very satisfied with the cleanliness, with a rating value of 4.47. In comparison, the fan club members rated cleanliness at 4.15 (satisfied)(table 7).

Discussion and conclusion

This study demonstrates a very high overall level of customer satisfaction with the perceived functional QoS during various events at the event venue. This result was evident for the individual service quality attributes and the service satisfaction in the overall assessment. To clarify which factors are decisive for the perceived functional QoS, two factors were extracted with the help of factor analysis. These were, first, visitor satisfaction with services and, second, satisfaction with the cleanliness of various event venue areas. These two factors cover the overall customer satisfaction with the services with 32.6 % of the variance. This result implies that customer satisfaction with services is significantly influenced by the factors of services (especially checkroom and catering) and cleanliness (in the foyer, restrooms, seating/standing areas, serving catering). The subsequent comparisons of the individual target groups reveal that only the members of the handball fan club rated the services with an average of 3.82 (partly satisfied to satisfied). The further results of the pairwise comparison of the perception of both factors ("SV" and "CL") between the individual target groups merely showed a significant difference between the fan club group and all other groups (handball game, Bonez MC, Chriss Tall, TKKG, C. Steiffen). In general, fan club members perceived the services slightly worse (table 6) than other visitors.

Previous research showed that functional QoS is an important component of customer satisfaction (Tsuji et al., 2007, Shi et al., 2014, Zhong et al., 2020). The study was equally able to confirm that visitor satisfaction is significantly dependent on service and cleanliness in specific areas of the multi-purpose hall. In addition, the study showed that the target group fan club evaluated the service differently than visitors who were interviewed on-site during the event. Tkaczynski (2013) also confirmed this and showed in his study that different target groups perceive individual service attributes differently (Tkaczynski, 2013).

Based on these results, the management of the multi-purpose event venue might want to pay close attention to both factors in the future. Services and cleanliness will play a central role as functional services during the events to influence visitors' satisfaction. However, due to the Corona pandemic, the main focus in the future will

be on the "cleanliness" factor. New hygiene concepts are changing the way events are organized and realized.

The assessment of the service performance of the "fan club" target group, which can be expanded, should be looked at more closely to improve the service in a targeted manner. To provide these services during events in the event venue that is even more tailored to particular target groups, event managers must understand how the various target groups perceive various services.

One limitation of this study relates to the different survey methods. Fan club members were surveyed online to increase the sample, but not during an event, which could be the reason for a distorted perception of service and cleanliness. Likewise, future studies should consider current conditions due to the Corona pandemic and examine how the new hygiene standards are perceived and how these standards change the event experience. In addition, further studies might want to analyze additional service attributes (e.g., information sources and special event features) in terms of their perception and influence on the overall assessment. Likewise, studies should analyze the extent to which the fun component can influence hedonic satisfaction (Armbrecht et al., 2020). Oliver (1997) demonstrated that satisfaction is a combination of cognition and emotion.

For this reason, both the performance of the services provided by event managers and visitors' emotions are important for forming satisfaction judgment (Oliver, 1997). Further studies should analyze the functional QoS of an event (Gronroos, 1984) and complementary factors that measure the event experience in terms of its emotionality. Moreover, events are hedonistic experience products consisting of a complicated system of factors such as emotions. Unlike other products and services, an event experience is not exclusively characterized by the activities of event managers (Gronroos, 1984). If the interrelationships among the different variables are not comprehended, then the concept of the visitor experience in the context of an event might be misunderstood (Ayob et al., 2010).

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