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Assessment of event quality in major spectator sports

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Abstract

Purpose – The purpose of this study is to enhance understanding of service quality at major spectator sports events by developing a conceptual framework and measurement scale specifically designed for assessment of spectators' perceptions of event quality.

Design/methodology/approach – Utilising a comprehensive literature review and detailed qualitative preliminary procedures, a comprehensive model of event quality for spectator sports (MEQSS) and a measurement scale of event quality in spectator sports (SEQSS) are developed. The models are then tested using confirmatory factor analysis and structural equation modelling using data from a quantitative survey of a convenience sample of spectators at a major league baseball game in the United States.

Findings – The proposed model is shown to fit the data well. Reliability and validity of the SEQSS are established through a pilot test and the substantive survey.

Research limitations/implications – The findings of the study are limited by the sample being restricted to a single sports event in the United States. Further studies in other settings using larger samples are desirable.

Practical implications – The study provides a valid and reliable conceptual framework and measurement tool that can be used to ascertain the quality perceptions of consumers of major spectator sports events. Managers can use this framework and measurement scale as a diagnostic tool to identify strengths and weaknesses in their services, this providing guidance for potential areas of improvement.

Originality/value – This study extends the literature on service quality by providing a unique conceptual framework and measurement scale for major spectator sports events.

Keywords Customer service quality, Sporting events, Customer service management, United States of America

Paper type Research paper

1. Introduction

Major spectator sports constitute a large, expanding, and competitive industry. However, many sports organisations are facing resistance from their customers as a consequence of increasing prices and heightened expectations regarding event quality (Howard and Crompton, 2004). Examples of this phenomenon in the United States are the major professional sports leagues (National Football League, Major League Baseball, National Basketball Association, and National Hockey League), all of which are struggling to keep operational costs down while continuing to provide the best-possible on-field product and customer services. Similar comments apply to major spectator sports events in other countries.

In this business environment, the ability to offer high-quality events and services has become a critical issue for professional sports organisations. As in all service



industries, the provision of high-quality services to consumers promotes customer satisfaction and loyalty, which, in turn, enhances the profitability of the service provider (in this case, the professional sports organisations) (Anderson *et al.*, 1994; Anderson and Sullivan, 1993; Dagger and Sweeney, 2007; Fornell, 1992). In this regard, Martinez *et al.* (2010) have identified service quality as one of the most important issues facing contemporary sports marketers because it is a:

- proxy measure of management performance;
- significant factor in the positioning of the company; and
- key determinant of critical consumer-behaviour variables, such as customer loyalty.

Event quality has been studied from both the marketing perspective (Dale *et al.*, 2005; Kelley and Turley, 2001; Shilbury, 1994; Wakefield *et al.*, 1996) and the operational perspective (Getz *et al.*, 2001). In the context of spectator sports, it has been shown that consumers develop an overall impression about such dimensions as:

- game performance (Greenstein and Marcum, 1981; Hansen and Gauthier, 1989; Shofield, 1983);
- amenities and additional services (Hansen and Gauthier, 1989); and
- event staff/volunteers and service-delivery systems (Getz, 2005).

This general impression of the overall consumption experience determines perceptions of the overall event quality. According to Getz (2005), the quality of sporting events should thus be conceptualised as an amalgam of a variety of programs and service delivery processes.

Although generic instruments exist for assessing service quality, such as the well-known SERVQUAL instrument (Parasuraman *et al.*, 1988, 1994), relatively few studies have actually attempted to measure service quality in the specific context of sports events (Getz *et al.*, 2001). Nevertheless, several studies have helped to establish a general foundation for understanding the quality perceptions of consumers with regard to sports event operations (Kelley and Turley, 2001; Theodorakis *et al.*, 2001; Wakefield *et al.*, 1996; Westerbeek and Shilbury, 2003). What is now required is the development of a comprehensive, industry-specific conceptual framework for understanding and measuring event quality in major spectator sports (Brady and Cronin, 2001; Getz *et al.*, 2001; Kelley and Turley, 2001; Rust and Oliver, 1994).

Against this background, the purposes of the present study are twofold:

- (1) to propose a comprehensive theoretical model of event quality in spectator sports, which is designated here as the Model of Event Quality for Spectator Sport (MEQSS); and
- (2) to test the psychometric properties of the proposed MEQSS model by developing an appropriate scale for measuring event quality, which is designated here as the Scale of Event Quality for Spectator Sport (SEQSS).

In developing this comprehensive conceptual model, the study utilises a methodology that has not previously been reported in the service-marketing literature. The accompanying measurement instrument represents a valid and reliable tool for assessing event quality at spectator sports events. The study thus provides academics

and practitioners with valuable theoretical insights and a practical assessment tool for assessing event quality from the perspectives of consumers.

The remainder of this paper is organised as follows. The next section presents the theoretical background to the study, including the development of the proposed conceptual model (MEQSS). The methodology of the empirical study is then presented, including the development of the proposed measurement scale (SEQSS). The results of the study are then presented. The paper concludes with a summary of the major findings and implications of the study.

2. Theoretical background and conceptual model

2.1 *Measurement of service quality*

Parasuraman *et al.* (1985, p. 16) defined perceived service quality as “a global judgment, or attitude relating to the superiority of a service”. In a similar vein, Bitner and Hubbert (1994, p. 77) suggested that service quality is “the consumer’s overall impression of the relative inferiority/superiority of the organization and its services”. In the context of the sports and leisure sector in general, service quality has been measured by both the generic SERVQUAL instrument and by modified versions of the scale adapted to the specific circumstances of the sports industry (Crompton *et al.*, 1991; Howat *et al.*, 1996; McDonald *et al.*, 1995; Wright *et al.*, 1992).

There have also been attempts to measure service quality in the specific context of spectator sports (Kelley and Turley, 2001; McDonald *et al.*, 1995; Theodorakis and Alexandris, 2008; Theodorakis *et al.*, 2001). For example, McDonald *et al.* (1995), who developed the 39-item TEAMQUAL scale by modifying the five-dimensional structure of SERVQUAL, measured the performance of ticket takers, ticket ushers, merchandisers, concessionaires, and customer representatives by applying simultaneous measurements of expectations and perceptions of spectators attending professional basketball games, and then using the weighted average scores of the five dimensions to determine overall service quality. In another example, Theodorakis *et al.* (2001) assessed perceptions of service quality among sports spectators by developing the SPORTSERV scale, which consists of 20 performance-only items representing five dimensions of service quality:

- (1) tangibles (cleanliness of the facility);
- (2) responsiveness (willingness of personnel to help);
- (3) access (accessibility of stadium);
- (4) security (personal security during games); and
- (5) reliability (delivery of services as promised).

More recently, Theodorakis *et al.* (2009) averaged the scores of the five SPORTSERV dimensions to examine the relationship between overall service quality and repurchase intentions. Finally, Kelley and Turley (2001) developed a nine-factor structure for measuring service quality at spectator sports:

- (1) employees;
- (2) facility access;
- (3) concessions;
- (4) comfort;

- (5) game experience;
- (6) showtime;
- (7) convenience;
- (8) price; and
- (9) smoking.

2.2 Proposed conceptual model

2.2.1 Development of the model. The proposed conceptual model for the present study, which was designated as the Model of Event Quality for Spectator Sport (MEQSS), was developed on the basis of several focus group interviews and an extensive literature review. The primary context for the proposed model was posited as (US) Major League Baseball, although it was understood that the model (and subsequent measurement scale) is likely to be applicable to other major spectator sports.

The first two focus groups consisted of seven graduate students who were undertaking a sports management program at a large university in the Pacific North West region of the United States. All participants regularly attended sporting events (both professional and college). In this initial stage of model development, participants were requested to generate a list of elements that influence the experiences of spectators at major sports events. These included:

- main products (for example, game performance);
- secondary products (for example, in-game promotion, cheerleading, memorabilia, food and beverage);
- other tangible elements (for example, stadium quality and parking services); and
- other intangible elements (for example, services from event staff).

Two managers in the spectator sports industry were then invited to assess the importance of each item in the list in terms of positive spectator experience.

At the same time, the researchers conducted an extensive literature review to identify key factors that determine service and event quality in major spectator sports events. This information was combined with the information from the focus groups and sports managers to generate a conceptual framework. This framework was then transmitted to each focus group member and the managers of professional sport franchises for review.

As a result of these preliminary qualitative procedures, an initial MEQSS was developed. In accordance with the hierarchical structure of many other models of service quality (Brady and Cronin, 2001; Dabholkar *et al.*, 1996; Fassnacht and Koesse, 2006; Ko and Pastore, 2005), the proposed model consisted of certain higher-order quality constructs (“game”, “augmented services”, “interaction”, “outcome”, and “physical environment”), each of which was defined by two or more sub-dimensions. The dimensions and their sub-dimensions are summarised in Table I.

2.2.2 Dimensions and sub-dimensions of the model. As shown in Table I, the dimension of game quality refers to spectators’ perceptions of the quality of the core product of game performance. In this regard, Hansen and Gauthier (1989) found that game attractiveness is the most important factor affecting game attendance. It should also be noted that team performance is directly related to game attractiveness and

Dimension	Sub-dimensions	Definition (in terms of spectators' perceptions)
Game quality	Skill performance	Quality of athletic performance: aesthetics, excitement, drama
	Operating time	Convenience of operating hours
	Information	Ease of obtaining up-to-date information about teams, players, products, and events
Augmented service quality	Entertainment	In-game promotion, events, and activities (in addition to game product)
	Concessions	Availability of wide range of food choices
Interaction quality	Employee interaction	Attitudes, behaviours, and expertise of service personnel
	Fan interaction	Attitudes and behaviours of other clients
Outcome quality	Sociability	Positive social experiences of being with others who enjoy the same activity.
	Valence	Post consumption evaluation of overall outcome (regardless of evaluation of specific aspects of service quality)
Physical environment quality	Ambience	Non-visual aspects of service environment: temperature, lighting, noise, scent, music
	Design	Functional and aesthetic design of the sports facility
	Signage	Ease of viewing and aesthetic attractiveness of signs within the facility

Table I.
Dimensions and sub-dimensions of proposed MEQSS

attendance (Hansen and Gauthier, 1989; Shofield, 1983). The sub-dimensions of this dimension include:

- “skill performance” (spectators’ perceptions of the quality of athletic performance through which spectators experience the aesthetics, excitement, and drama associated with sporting events);
- “operating times” (whether the game schedule and operating hours are convenient to spectators) (Ko and Pastore, 2004, 2005); and
- “information” (ease of obtaining up-to-date information about teams, players, products, and events).

The dimension of augmented service quality refers to perceptions of the quality of secondary products offered in conjunction with events. The sub-dimensions of this dimension are “entertainment” and “concessions” (that is, food stalls), which represent the two most important secondary products that augment spectators’ experiences. With regard to entertainment, many National Basketball Association (NBA) franchises in the USA offer in-game entertainment (such as on-court competitions and trivia quizzes) during breaks in the game. Music is also often used to entertain members of the audience and enhance the game experience (Zhang *et al.*, 1995; Zhang *et al.*, 2005; King, 2006). With regard to “concessions”, many managers of sports events offer a variety of high-quality foods and drinks to their customers during games. For example, the San Jose Giants baseball team uses high-quality foods and drinks as a key promotional tool.

The dimension of interaction quality focuses on the role of people in the delivery of services (Brady and Cronin, 2001; Czepiel *et al.*, 1985; Grönroos, 1984). Human factors

are important at sporting events, where staff and volunteers form a key part of the customer experience (Getz *et al.*, 2001). This dimension consists of two sub-dimensions:

- (1) “employees” (that is, spectator-employee interactions); and
- (2) “fans” (spectator-spectator interactions).

According to Ko and Pastore (2004, p. 164), the first of these refers to “... the customers’ subjective perception of how the service is delivered during the service encounter in which the attitude, behavior, and expertise of service personnel are highlighted”. For the purposes of this study, an employee’s attitude is defined in terms of professional attributes (such as friendliness, warmth, politeness, demeanour, concern, openness, and helpfulness). The employee’s behaviour is the manifestation of these attributes. The employee’s expertise is determined by the person’s task and human-oriented skills (Czepiel *et al.*, 1985). The second of the sub-dimensions (“fans”) refers to spectator-spectator interactions, which Ko and Pastore (2004, p. 164) defined as “... the customers’ subjective perception of how the service is delivered during the service encounter in which the attitude and behavior of other clients are highlighted”. It is well established in the literature that customers’ perceptions of service quality can be significantly influenced by their interactions with other customers (Brady and Cronin, 2001; Ko and Pastore, 2005). In the context of sporting events, displaying appropriate attitudes and behaviours towards other consumers has the potential to optimise their game experience.

The fourth dimension shown in Table I, outcome quality, refers to “what the consumer receives as a result of this interaction with a service firm” (Grönroos, 1984, p. 38). When attending a sport event, spectators generally expect to receive socio-psychological benefits – such as thrills, enjoyment, and social interaction (Deighton, 1992; Milne and McDonald, 1999). The first sub-dimension, “sociability”, refers to the social gratification of being with others who enjoy similar activities (Milne and McDonald, 1999). Sporting events provide opportunities for large numbers of people to come together to be entertained, and thus to enrich their lives through socialisation, friendship, and belongingness (Melnick, 1993; Zhang *et al.*, 2005). Socialising with others adds to the entertainment value of the sporting events and is a major factor that leads to the excitement of the event (Melnick, 1993). In the present study, this social experience is associated with the after-consumption outcome, as opposed to spectator-spectator interaction (see above), which occurs during the service delivery (Ko and Pastore, 2004). The second sub-dimension, “valence”, reflects the degree to which an object of interest is considered favourable or unfavourable (Mazis *et al.*, 1975). In the present context, this sub-dimension therefore refers to a spectator’s post-consumption evaluation of the outcome (“good” or “bad”), regardless of their evaluation of other aspects of the service quality (Brady and Cronin, 2001; Ko and Pastore, 2004; Mazis *et al.*, 1975). Many factors that shape the valence of an outcome are outside the direct control of management (Brady and Cronin, 2001). For example, spectators at a sporting event might have positive perceptions of service quality, but report negative valence of the outcome because their team has lost.

The final dimension, physical environment quality, can influence a customer’s cognitive/affective states and subsequent purchase behaviour (Donovan and Rossiter, 1982; Wakefield *et al.*, 1996). Because most services are produced and consumed simultaneously, the consumer usually experiences the total service within a physical

facility (Bitner, 1992). In the case of sports services, the sporting facility is central to the customers' experiences of event services (Westerbeek, 2000). This dimension has three sub-dimensions in the present model. The first of these, "ambience", refers to the non-visual aspects of the service environment – such as temperature, lighting, noise, scent, and music (Baker, 1986; Bitner, 1992). In addition, the cleanliness and maintenance of the facility have the potential to affect attendance (Hansen and Gauthier, 1989). The second sub-dimension, "design", refers to the functional and aesthetic components of the facility (Bitner, 1992; Brady and Cronin, 2001; Theodorakis *et al.*, 2001). The third sub-dimension, "signage", refers to ease of viewing and aesthetic attractiveness of signs (names of sponsors, rules of behaviour, traffic directions, etc.) within the facility (Bitner, 1992). In particular, scoreboard quality is very important because scoreboards fulfil a multitude of functions at modern sports events – including updates of scores, information about events, entertainment, sponsorship, and crowd control (Shank, 2005).

2.2.3 Comparisons with other models and frameworks. The proposed model described above extends current conceptualisations of service quality by incorporating dimensions and sub-dimensions that are specific to major sports events. The proposed framework (MEQSS) is supported by an accompanying measurement tool (SEQSS), which is described and applied in the empirical study that follows. Table II compares the proposed MEQSS model with other selected service-quality frameworks for spectator sports events.

It is apparent from Table II that Ko and Pastore's (2004, 2005) hierarchical model of service quality for the recreational sport industry (and the accompanying SSQRS scale) was the primary reference for guidance in developing the present study's proposed model (MEQSS) and the accompanying measurement scale (SEQSS) (which is described below). However, it should be noted that the MEQSS and SEQSS include four new sub-dimensions ("skill performance", "entertainment", "concessions", and "signage") that were not included in Ko and Pastore (2004, 2005). These new additions were deemed to be important for measuring event quality of major spectator sports.

3. Methodology

3.1 Development of SEQSS instrument

As indicated above, a measurement tool known as the scale of event quality for spectator sports (SEQSS) was developed to test the proposed conceptual model (MEQSS). The SEQSS was developed in accordance with the scale-development procedures suggested by Nunnally and Bernstein (1994).

Many of the measurement items for inclusion in each sub-dimension were adopted and/or modified from the items of various existing scales (Brady and Cronin, 2001; Crompton *et al.*, 1991; Howat *et al.*, 1996; Ko and Pastore, 2005; Parasuraman *et al.*, 1988). For example, one item entitled "Class/program times are convenient", which had appeared in the "operating time" dimension of Ko and Pastore's (2005) scale, was adapted by replacing the words "class/program" with the word "game". For the new sub-dimensions ("skill performance", "concessions", and "signage"), a list of potential items was generated from a review of the relevant literature.

A total of 21 experts (faculty members and graduate students of sports management and business administration courses) were then asked to:

Model	Context	Instrument	Analysis	Domain	Dimensions (sub-dimensions)
MEQSS (proposed model of present study)	Major League Baseball	SEQSS	CFA	Event quality	Game (skill performance; operating time; information) Augmented services (entertainment; concessions) Interaction (employee; fans) Outcome (sociability; valence) Physical environment (ambience; design; signage) Program (range of program; operating-time; information)
Ko and Pastore (2004)	Recreational sport	SSQRS	CFA	Service quality	Interaction (client-employee; inter-client) Outcome (physical change; valence; sociability) Physical environment (ambience; design; equipment) Facility parking Facility aesthetics Scoreboards Seat comfort Layout accessibility Space allocation Signage
Wakefield <i>et al.</i> (1996)	Spectator sport		CFA	Sportscape (facility)	Reliability Responsiveness Access Tangibles Security
Theodorakis <i>et al.</i> (2001)	Professional basketball	SPORTSERV		Service quality	Core sport product (sporting contest; religious/fanatical follower; hedonist/uncertain outcome) Service coproduction (SERVQUAL; personal attention; safe atmosphere; TEAMQUAL) Sportscape feature (servicescape feature; safe atmosphere; hospitality; tangibles; servuction inanimate)
Westerbeek and Shilbury (2003)	Spectator sport		Qualitative	Service quality	Game experience Convenience Concessions Showtime Employee Facility access Fan comfort Price Smoking
Kelley and Turley (2001)	College basketball	-	EFA	Service quality	

Table II.
Comparison of selected service-quality frameworks for spectator sports events

- write actual questions/statements that represented the factors and items;
- provide clarification regarding the supplied definitions of each factor and items (if required); and
- add additional items to the existing factors (if deemed constructive and/or necessary).

As a result of these procedures, an initial pool of 71 items (representing 12 sub-dimensions) was generated. These items were then incorporated as statements into a measurement instrument utilising a seven-point Likert-type scale (1 = “strongly disagree” to 7 = “strongly agree”).

A panel of five experts in sports management and business administration assessed content validity by assessing items on the basis of their relevance and clarity of wording. Items that were endorsed by three experts were retained, whereas items that were deemed to be unclear, irrelevant, or redundant were eliminated. As a result of these procedures, 15 items were eliminated. The remaining 56 items were included in a questionnaire for a pilot field test.

The pilot test involved ten undergraduate students who were enrolled at an institution in the Pacific Northwest of the United States and had past consumption experience of professional sports events. The respondents were asked to examine the items for relevance and clarity. As a result of this test, three more items were deleted due to ambiguity in wording. A convenience sample of 168 students in sports management and business administration who had previous experience of attendance at professional sports events was then recruited to assess internal consistency. A further 13 items that had corrected item-total correlations of 0.50 or less were deleted. After these items had been deleted, Cronbach’s alpha coefficients for all factors were greater than 0.70.

Following these scale-purification procedures, the final version of the instrument had a total of 40 items representing 12 sub-dimensions of event quality (with each sub-dimension having three-to-five items) (see Table III).

3.2 Sample and data collection

The SEQSS scale was administered to spectators attending a Major League Baseball (MLB) game, located in the Pacific Northwest region of the USA. Questionnaires were distributed to a convenience sample of 400 spectators who were intercepted individually as they entered the event through the two main gates. Members of the research team were stationed at the exit points to collect the surveys at the conclusion of the game.

A total of 274 completed questionnaires were returned (69 per cent response rate), of which 220 were usable for data analyses. The sample size exceeded the minimum sample size (200) recommended for structural equation modelling with maximum likelihood estimation (Hair *et al.*, 2005).

An examination of the demographic data included in the survey (gender, age, income) revealed that the characteristics of the sample were consistent with the general profile of MLB spectators. For example, 61 per cent of respondents were male and 38 per cent was female.

Factor	Item	λ	CR	AVE
Skill performance	The players' skills make me excited	0.70	0.76	0.52
	The team provides a high-quality event for me	0.79		
	Skill performance of my team's players is excellent	0.65		
Operating time	The operating hours of the events are convenient	0.85	0.91	0.78
	Game times are convenient	0.92		
	The times for watching the game are convenient	0.89		
Information	Up-to-date information is available on events/team	0.78	0.86	0.66
	Information about the event is easy to obtain	0.86		
	I can easily get information about the event through the internet	0.80		
Entertainment	The show combined with the game is entertaining	0.64	0.81	0.59
	The show is just as exciting as the game	0.83		
	Pre- and after-game shows are entertaining	0.82		
Concessions	The facility provides high-quality food	0.85	0.88	0.70
	The concessions offer a wide variety of foods	0.80		
	The quality of food of the concession stands impresses me	0.87		
Employee interaction	The employees seem very knowledgeable about their jobs	0.72	0.90	0.65
	I can count on the employees at this event to be friendly	0.82		
	The employees handle problems promptly and satisfactorily	0.81		
	Employees in the event deal effectively with the special needs of each customer	0.82		
Fan interaction	The demeanour of the staff is pleasant	0.86	0.83	0.62
	I am generally impressed with the other spectators	0.73		
	Spectators follow rules and regulations	0.74		
Sociability	I find that other spectators consistently leave me with a good impression of the service	0.88	0.82	0.61
	I feel a sense of family among the fans at the event	0.86		
	I really enjoy the social interaction in the event	0.90		
Valence	I have quality time with my friends/family at the event	0.54	0.82	0.61
	I feel good about what I get from this event	0.84		
	I evaluate the outcome of the event favourably	0.79		
Ambience	Attending the event has helped me to become a loyal fan	0.70	0.87	0.69
	The stadium/arena's ambience is excellent	0.81		
	The stadium's ambience is what I'm looking for in a spectator sport setting	0.87		
Design	The facility is clean and well maintained	0.82	0.83	0.56
	I am impressed with the design of the facility	0.84		
	The facility is safe	0.81		
Signage	I can move freely in this facility	0.75	0.86	0.60
	It is easy to get in and out of the facility	0.56		
	Signs help me to find my way around the facility	0.75		
	There are enough signs directing me to various necessities	0.84		
	Scoreboard is aesthetically attractive	0.79		
	Scoreboard is easy to read	0.72		

Table III.
Factor loadings, construct reliability, and AVEs for SEQSS

3.3 Data analysis

Data were analysed using SPSS 14.0 and EQS 6.1 (Bentler and Wu, 2002). The goodness-of-fit of the measurement and structural models was tested using EQS with maximum likelihood (ML) method. Goodness of fit of the model to the data was assessed with comparative fit index (CFI), standardised root mean square residual (SRMR), root mean square error of approximation (RMSEA), and χ^2/df . The convergent validity of the measures was assessed by factor loadings, AVE values, and reliability coefficients (Hair *et al.*, 2005). Discriminant validity was established when the estimated correlations between the factors or dimensions were found not to be excessively high (Kline, 1998) and when the squared correlations between a construct and any others were found to be less than the AVE for each construct (Fornell and Larcker, 1981).

4. Results

4.1 Descriptive statistics

Descriptive statistics for the 12 sub-dimensions are shown in Table IV. The means of the sub-dimensions (on a scale of 1 to 7) ranged from 4.82 (“fan interaction”) to 5.88 (“ambience”). The standard deviation (SD) ranged from 0.94 to 1.19.

Because ML statistics are very sensitive to non-normality (Bentler, 2004), the combined data for kurtosis was first checked using Mardia’s (1970) coefficient of multivariate kurtosis. The skewness values indicated that all of the items were negatively skewed (range = -1.45 to -0.14). The kurtosis values ranged from -0.54 to 2.82 . Examination of multivariate kurtosis (Mardia’s coefficient = 362.35 and normalised estimate = 42.36) indicated that the assumption of multivariate normality was tenable – because this value was smaller than the $1,680$ cut-off point derived from the formula $p(p + 2)$, where p represents the number of observed variables (Bollen, 1989). As a consequence, Satorra-Bentler scaled chi-square (S-B χ^2) and robust comparative fit index (robust CFI) were used.

4.2 First-order measurement model test

Overall model fit of the measurement model was found to be good. Fit statistics showed that the chi-square/df ratio ($\chi^2 = 816.40$, $df = 662$, $\chi^2/df = 1.23$, $p < 0.01$) was below the suggested threshold of 3.0 (Kline, 1998). The RMSEA value of 0.033 was below the recommended threshold of 0.08 (Hu and Bentler, 1999). The incremental fit index (IFI) of 0.97 and the CFI of 0.97 were, as recommended, greater than the threshold of 0.95 (Hu and Bentler, 1999).

4.3 Structural model test

The fit of the overall model was good ($\chi^2/df = 1.40$, $RMSEA = 0.043$, $IFI = 0.94$, $CFI = 0.94$). In addition, significant factor loadings supported the proposed hypothetical relationships between dimensions and sub-dimensions. The factor loadings of the relationships are shown in Figure 1. The proposed structural model fitted the data well. All the measured variables, except for three items, were found to correlate with their respective factors at a reasonably strong level.

4.4 Reliability and validity

Reliability was assessed using construct reliability and AVE for each factor (see Table III). The construct reliability ranged from 0.76 (“skill performance”) to 0.91

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
Skill	5.06	1.07	0.5 ^a											
Hours	5.61	1.07	0.66	0.78 ^a										
Information	5.76	1.06	0.48	0.49	0.66 ^a									
Entertainment	4.87	1.03	0.53	0.51	0.34	0.59 ^a								
Concessions	4.94	1.19	0.36	0.45	0.44	0.66	0.70 ^a							
Interaction	5.16	0.97	0.53	0.57	0.61	0.53	0.62	0.65 ^a						
Fan interaction	4.82	1.02	0.42	0.47	0.36	0.56	0.50	0.80	0.62 ^a					
Sociability	5.44	0.98	0.46	0.47	0.41	0.53	0.39	0.70	0.64	0.61 ^a				
Valence	5.27	0.99	0.72	0.60	0.58	0.56	0.50	0.80 ^c	0.74	0.78	0.61 ^a			
Ambience	5.88	1.01	0.62	0.67	0.57	0.59	0.54	0.71	0.60	0.56	0.71	0.69 ^a		
Design	5.53	1.00	0.55	0.60	0.58	0.52	0.60	0.74	0.64	0.56	0.69	0.98 ^b	0.56 ^a	
Sign	5.77	0.94	0.51	0.58	0.54	0.49	0.47	0.61	0.53	0.47	0.65	0.96 ^b	0.97 ^b	0.60 ^a

Notes: ^aAverage variance extracted; ^bHigh correlation between factors; ^cCorrelation failed the AVE discriminant validity test

Table IV. Means, SD, and correlations matrix

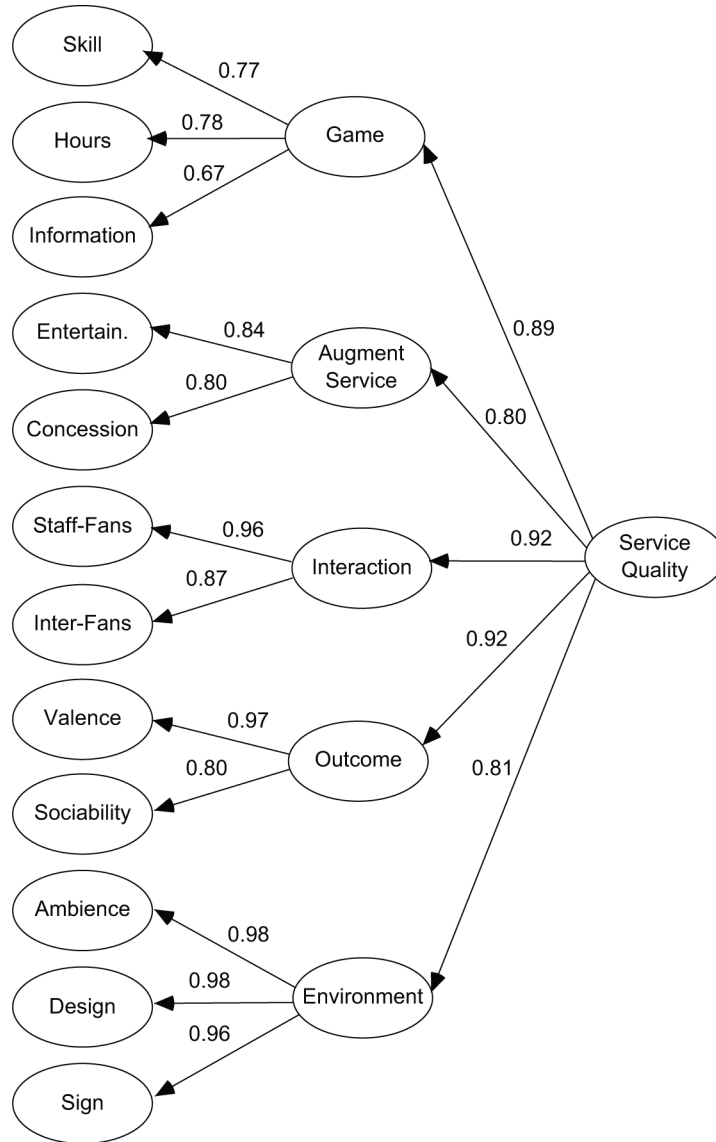


Figure 1.
A model of event quality
for spectator sport

Notes: Satorra-Bentler $\chi^2 = 985.13$; $df = 705$; $\chi^2/df = 1.40$; RMSEA = 0.043; (90% CI) = 0.036-0.049; IFI = 0.939; CFI = 0.938; SRMR = 0.072

(“operating time”). The AVE measures ranged from 0.52 (“skill performance”) to 0.78 (“operating time”); all were greater than the recommended standard of 0.50. These results indicated that the items were highly reliable in measuring the constructs.

Convergent validity is established when each item has a significant factor loading on each construct (Anderson and Gerbing, 1988). As shown in Table III, all factor

loadings were significant, with z scores ranging from 4.12 to 12.04 ($p < 0.05$). Using a significance level of 0.05, any scores greater than 1.96 in magnitude for a two-tail test would be statistically significant (Bentler, 2004). Apart from four items (“skill 3” = 0.65, “entertainment 1” = 0.64, “sociability 3” = 0.54, and “design 4” = 0.56), the factor loadings for the other 36 items (90 per cent of all items) were greater than the conservative threshold of 0.70. In addition, the significant relationships between the five primary dimensions and their 12 sub-dimensions, along with the relationships between the five dimensions and the construct of event quality provide further support for the convergent validity of the scale (Anderson and Gerbing, 1988). Loadings ranged from 0.67 (“information”) to 0.98 (“design”). All were statistically significant, with z scores ranging from 4.40 to 19.34 ($p < 0.05$). This result indicates that the sub-dimensions converged on their common factor.

With regard to discriminant validity, a CFA revealed high factor correlations among the sub-dimensions of “physical environment quality”. As shown in Table IV. these were 0.98 between “ambience” and “design”, 0.96 between “ambience” and “signs”, and 0.97 between “design” and “signs”. Based on Fornell and Larcker’s (1981) method, there was also one additional high correlation between “valence” and “interaction with staff”.

5. Conclusions and implications

5.1 Major conclusions

The present study makes two important contributions to the literature on event management and marketing. First, the study has proposed a conceptual Model of Event Quality for Spectator Sports (MEQSS), which provides a systematic framework of the factors involved in spectators’ perceptions of event quality in major spectator sports events. Secondly, the study has drawn on the MEQSS to propose and test a measurement Scale of Event Quality in Spectator Sports (SEQSS), which offers marketers and researchers a measurement tool to assess event quality from the consumer’s perspective – and thus the opportunity to identify areas that need improvement in event operations.

With regard to the first of these contributions, the study has shown that the MEQSS provides an accurate description of the concept of event quality in the context of major spectator sports. The third-order factor structure of the construct of event quality has been confirmed by the overall good fit of the model, the statistically significant factor loadings, and the significant correlations among the various dimensions. These findings are in general accordance with Ko and Pastore’s (2004, 2005) conceptual approach to service quality in sport events. The findings also demonstrate that the construct of event quality in spectator sports is similar to the multi-level concepts of service quality that have been demonstrated in many other settings (Brady and Cronin, 2001; Dabholkar *et al.*, 1996; Ko and Pastore, 2005; Ko *et al.*, 2008).

With regard to the second contribution, confirmatory factor analysis of the SEQSS, which was developed to test and complement the conceptual model, has provided strong evidence of the reliability and convergent validity of the scale.

Taken together, these two contributions have significantly expanded theoretical and practical knowledge of event quality by providing a conceptual framework (MEQSS) and measurement scale (SEQSS) for major spectator sports events.

5.2 Managerial implications

The findings of this study have important implications for managers and marketers of major spectator sports events. The SEQSS can provide event managers with a reliable and valid analytical tool for measurement of spectators' perceptions of event quality. More specifically, the five dimensions of the framework can be used ("game quality", "augmented services quality", "interaction quality", "physical environment quality", and "outcome quality") to identify potential problem areas in event operations and thus provide guidance for future improvement of services. An understanding of particular operational strengths and weaknesses is of crucial importance to managers who seek to increase spectator patronage through the provision of excellent on-field and off-field products and services.

The sub-dimensions of the SEQSS are sufficiently generic to lend themselves to other industry segments – such as musical concerts, product conventions, and professional conferences and symposia. Although some items might require some adaptation, managers in these service sectors can utilise the SEQSS to obtain a better idea of their customers' experiences of their events. For many of these events, which draw much of their revenue from ticket sales, the ability to diagnose specific aspects of their customers' service experiences is critical to drawing large numbers of spectators and thus establishing market leadership.

5.3 Limitations

Several limitations are acknowledged in the present study. First, the conceptual model (and the accompanying measurement scale) were developed primarily in the context of major league baseball (MLB) in the United States and other major spectator sports held in large sporting arenas. Although it is likely that the sub-dimensions are reasonably generic (see above), it is true that further studies would be required to ascertain whether the proposed conceptual frameworks are equally applicable to various other sports settings.

Second, the psychometric properties of the measurement scale have been verified with only a limited sample (that is, the spectators at one MLB event). Further tests of the psychometric properties of the scale using broader samples in other event contexts would be desirable to increase confidence in the generalisability of the scale.

Third, two items ("I have quality time with my friends/family at the event" = 0.54; "It is easy to get in and out of the facility" = 0.56) had relatively low factor loadings; these items require refinement in future studies. In addition, the discriminant validity of the three factors in the dimension of "physical environment" ("ambience", "design", and "signage") require re-examination in future studies.

5.4 Future research directions

In addition to the matters raised in connection with the limitations of the present study, future studies could consider adding other aspects of event quality to the scale. For example, Kelley and Turley (2001) emphasised the importance of parking convenience for sport spectators, which was not an item that was retained in the final SEQSS. Future studies could also utilise the SEQSS instrument to study event quality in conjunction with various constructs of consumer behaviour – such as consumer loyalty, perceived value, and customer satisfaction.

In summary, despite the acknowledged limitations of the present study, the conceptual model and measurement scale proposed here will assist sports managers to establish and maintain a competitive edge within the sports marketplace by diagnosing organisational strengths and weaknesses, thus providing a solid empirical basis for potential improvement.

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