



**Please cite the Published Version**

Bamford, D  and Dehe, B  (2016) Service quality at the London 2012 games – a paralympics athletes survey. *International Journal of Quality and Reliability Management*, 33 (2). pp. 142-159. ISSN 0265-671X

**DOI:** <https://doi.org/10.1108/IJQRM-05-2014-0058>

**Publisher:** Emerald

**Version:** Accepted Version

**Downloaded from:** <https://e-space.mmu.ac.uk/623606/>

**Usage rights:**  In Copyright

**Additional Information:** This is an Author Accepted Manuscript of a paper *International Journal of Quality and Reliability Management* published by Emerald.

**Enquiries:**

If you have questions about this document, contact [openresearch@mmu.ac.uk](mailto:openresearch@mmu.ac.uk). Please include the URL of the record in e-space. If you believe that your, or a third party's rights have been compromised through this document please see our Take Down policy (available from <https://www.mmu.ac.uk/library/using-the-library/policies-and-guidelines>)

## Service quality at the London 2012 Games – a Paralympics Athletes Survey

### Abstract

Purpose – This paper reports on aspects of service quality at the London 2012 Paralympic Games, from a rather unusual perspective, the athletes. To date there has been little evidence captured about athlete's satisfaction at sporting events, and specifically about their perceptions of the service quality provided.

Design/methodology/approach – Unique 'full' access to the London 2012 Paralympics allowed to the collection of data directly from the athletes. The study reports the questionnaire findings from a sample of 250 respondents.

Findings – From this study an operational assessment and performance framework has been generated composed of 10 criteria and 73 items or sub-criteria, which can be used as a benchmarking tool to plane, design and compare future sport mega-event. Moreover, the study evidence based the high quality of the 2012 Paralympics Games, as he athletes rated, on a 5 point Likert scale, 64 items in the 'very satisfied' category, a very positive set of feedback for the Games organisers.

Research limitations/implications – The methodology applied was appropriate, generating data to facilitate discussion and draw specific conclusions from. A perceived limitation is the single case approach; however, this can be enough to add to the body of knowledge where very little evidence has been captured so far and where the objectives were to explore the Paralympics games service quality and performance.

Practical implications – This research provides a tangible evidence base to support future sport event decision-makers, planners and designers in this highly complex 'arena'. In any system, there are always areas for improvement (AFIs), these are highlighted within the paper for further investigation.

Originality/value – This is the first paper to identify and synthesize aspects of sport mega event service quality from the athletes viewpoint and informs how well designed, organised and managed the London 2012 Games were from a primary user perspective. The paper makes a defined contribution by developing evidence based recommendations for this important yet under researched area.

**Keywords:** Service quality; Performance measurement; Paralympics

## Introduction

The International Paralympic Committee (IPC) and the World Academy of Sport (WAOs) launched a study in 2012 to capture the ‘voice of the athletes’ during the London 2012 Paralympic Games. This research was designed to help measure and understand what was critical, in terms of the services provided, for the athletes competing at the Paralympics. The objectives were to appreciate which criteria were important to optimise the Athletes’ experience. It starts to establish a valid evidence base and establish how London 2012 performed against multiple key criteria. The questionnaire was designed by the IPC and the WAOs with direct support and facilitation from the University of Huddersfield (UoH). The research was then undertaken and facilitated at London 2012 in August and September 2012. This utilised a team of four IPC Academy Interns led by an IPC Academy Research Fellow. This paper is structured as follows: it provides an overview of the Olympic and Paralympic movements followed by a brief review of aspects of quality and service quality; the research methodology is explained and outlined; the key findings and outcomes from the survey results are presented followed by the discussion and conclusion.

## Literature

### *Successful Olympics and the Paralympics*

The Olympic and Paralympic Games are recognised as the one of most prestigious sporting events in the world (Abhishek, 2013; National Geographic, 2013). The Games were re-introduced in Athens in 1896 following the ideas of Pierre de Coubertin who viewed it as “the theories of physical exercise as the basis of a balanced education and organised sport as an agent of international unity and social equality” (Chalkley & Essex, 1999, p.369). Over the past 116 years significant infrastructure developments have been observed for the host cities. The Games offer the host cities huge opportunities for regenerating the urban environment, stimulating their economic growth throughout jobs creation, improving transport facilities as well as enhancing its global recognition (Blake, 2005; Chalkley & Essex, 1999).

Chalkley and Essex (1999) explained that a total of 311 athletes from 13 countries participated in the Games held in Athens in 1896 (230 of the athletes were Greek). However, fast forward to 1996 and in Atlanta, 10,788 athletes from 196 Countries took part; a relevant indicator of the impact of the games. In London 2012 for the 30<sup>th</sup> Olympiad nearly 11,000 athletes participated; and 4,278 Paralympic athletes took part in the 14<sup>th</sup> Paralympics games. This made it the largest Paralympics games ever organised (IPC, 2012).

In terms of academic research, there is extensive literature that describes the advantages of organising the games (Kauppi *et al.*, 2013; Kendall *et al.*, 2010; Emery, 2010; Beis *et al.*, 2006;

Minis *et al.*, 2006) and when major sporting events do not go as planned they make for high-profile international headlines. This was clearly demonstrated by the 2010 Commonwealth Games, held in Delhi, India, which was had empty stands, collapsing scoreboards, strike threats by judges, poor transportation and failing technology (Gilmour, 2010). These issues were viewed as having been predictable and preventable, all were operational design and management issues that could have been foreseen, especially for a sporting event on the scale of the Commonwealth Games that cost an estimated \$6.8 billion (Kaushik, 2010).

This research project investigated a rather unrepresented area, the perceived ‘quality’ of the games from the different groups of stakeholders: public; government; press; and the athletes. In this paper the focus remains exclusively on the athletes and their perception of the quality of the Paralympic Games. It is assumed, in this research, that athletes are the prime stakeholder group. They are participating in the co-creation of the event as well as influencing and are being influenced by the overall event quality. In other words, from a stakeholder theory perspective, they have high power and high interest and their perception should be measured (Hill & Hill, 2001). This service quality study was developed in active collaboration with the IPC, the organisation overseeing and controlling the sporting mega-event, and the WAOs who facilitated the Games Experience programme for external observers and future games organisers.

### *Service Quality*

Service quality has been investigated over the past three decades very comprehensively (Fatima & Razzaque, 2014; Zhang *et al.*, 2014; Choudhury, 2013; Ganguli & Roy, 2013; Kim *et al.*, 2011; Tsao & Tseng, 2011; Lonial *et al.*, 2010; Garcia & Caro, 2010; Bai *et al.*, 2008; Agus *et al.*, 2007; Saravanan & Rao, 2007; Kang & James, 2004; Brady & Cronin, 2001; Carmen, 1990; Parasuraman *et al.*, 1988). However, there is less evidence of its application within the sporting environment (Trenberth & Hassan, 2012, Bamford *et al.*, 2012, De Knop, 2004; Lentell & Morris, 2001). It is only relatively recently that sport organisations have started to appreciate the importance of service quality and the potential organisational and business benefits they could develop by understanding it further (Tsitskari *et al.*, 2006). Its unique characteristics as an industry call for specific research in the field (Chadwick, 2011). Indeed Chadwick goes further, suggesting that sport events management must focus on bidding for, securing, organising, staging and evaluating the outcomes, with the management challenges being to ensure that events are strategically planned to ensure effectiveness, efficiency and overall success (Chadwick, 2013).

In this paper, it is assumed that sport events and games can be categorised as services, that their consumption is intangible, heterogeneous, simultaneously produced and consumed and perishable (as

per Parasuraman *et al.*, 1985). Measuring service quality has always been a rather controversial topic within academia (Brady & Cronin, 2001) but it is accepted as being the stakeholders or consumers perceptions of the service excellence (Tsitskari *et al.*, 2006). The objective being to match the performance with the stakeholders or consumers' expectations for an optimum delivery. Bernthal and Sawyer (2004) explained that the limited research, which has investigated service quality in the sport industry, have so far focused almost exclusively on the satisfaction from the fans perspective. It is, therefore, recognised that a lack of evidence exists which investigates the athletes' perspective regarding their perception of sport event service quality. This is the core rationale for this study.

The diverse models for measuring service quality that have been most tested are often derived from SERVQUAL (Parasuraman *et al.*, 1988) where a five-factor model was developed. Murray and Howat (2002) explored the relationships between service quality, value and satisfaction in the sport environment using the SERVQUAL instruments. Of the 22 original SERVQUAL items they identified 18 attributes, amongst these are: 'parking safety and security'; 'facility cleanliness'; 'up-to date information available'; 'programmes start and finish on-time'; 'broad range of activities available'; 'how well the centre is organised and run'; 'the physical comfort of the centre'; 'value for money services'; 'equipment quality and maintenance'; 'food and drink services'; 'staff experience and friendliness'. Other studies have demonstrated that the measured factors often focus on different feature combinations, such as: reliability; tangibles; personal attention; and convenience (Carman, 1990) or personnel, core and peripheral (Howat *et al.*, 1999). Zhang *et al.* (2014) sought to use the SERVQUAL model within car rental in China to further examine which dimension has great contribution to service quality. However, there is little cross over with the athletes perceptions and needs as key stakeholders.

In a paper reporting on a comprehensive systematic literature review that examined the published research on 'sport operations management', Kauppi *et al.*, (2013), focusing on quality, found that questions of what and how to measure quality, were pervasive across the sport quality management literature. Research on the topic of evaluating quality in a sporting context focused on fitness clubs (Alexandris *et al.*, 2001, Chang & Chelladurai, 2003, Bodet, 2006, Moxham & Wiseman, 2009), surfing events (de Knop *et al.*, 2004), basketball games (Kelley & Turley, 2001) and public sports halls and swimming pools (Taylor & Godfrey, 2003). The direct relationship between revenue and quality were key drivers for the majority of the studies in this area, with Alexandris *et al.*, (2001) finding a positive correlation between high levels of perceived quality and repeat purchase intentions and Bodet (2006) surmising that staff behaviour is a key factor of perceived service quality. Whilst all of these studies examined aspects of service quality from

multiple perspectives, such as users of private/public gyms and pools, they did not look at the athletes perceptions in viewed sporting events. No one has yet focused on the athletes perceptions of the fitness for purpose of the operational infrastructure – this is the area covered by this research at the largest sporting mega event in the world (Minis *et al.* 2006).

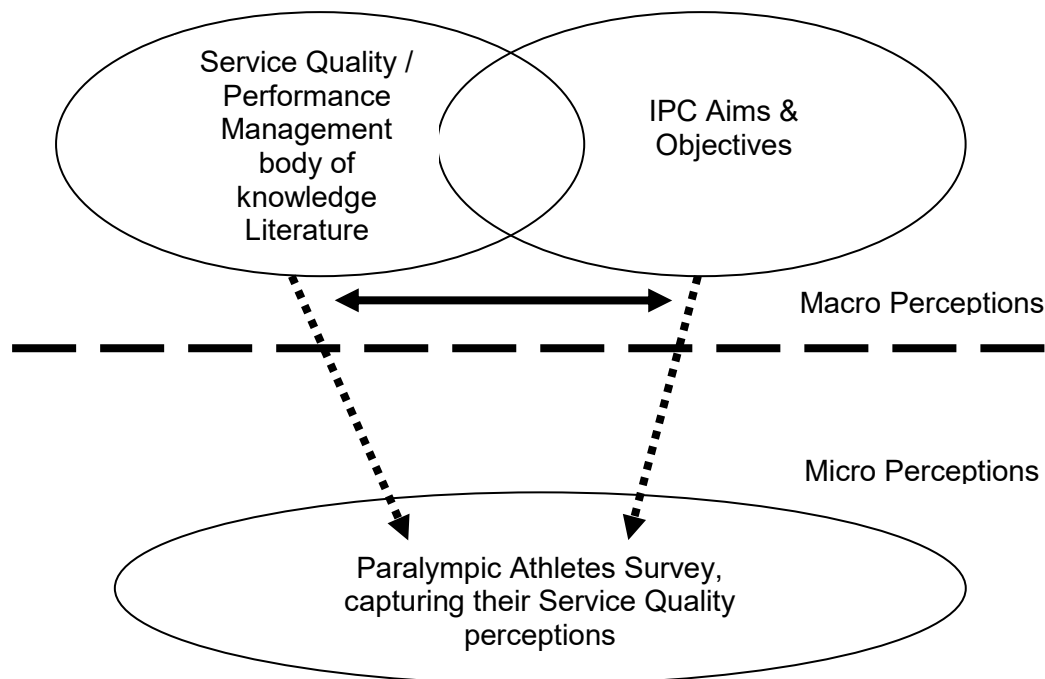
In this research the IPC were keen to establish a framework to enable future Games decision-makers to have a better understanding of the athletes' perception of quality. To help structure the dissemination of the research a two-fold research question was developed using features defined from the available literature: 'what are the most important factors for the key client group (the athletes) and how did the London 2012 Paralympics perform against these criteria?'

## Methodology

The study was conducted by using a mixed-methodology embedded in a case study containing multiple units of analysis (Eisenhardt, 1989; Yin, 2009). A survey instrument was designed, as the primary research method, by a joint team from the IPC, WAoS and UoH based on a review of the SERVQUAL literature and the IPC aims and objectives (IPC Strategic Plan 2011-2014). The survey sought to provide an evidence base against two primary objectives: i) identifying what are the specific Paralympics Games criteria impacting the athlete experience, and ii) establishing a baseline against each of the core criteria by measuring the performance of the London 2012 Paralympics. From this process, 10 criteria were ultimately identified and developed: i) Paralympic village; ii) competition venues; iii) transport; iv) catering; v) volunteers and staff; vi) ceremonies; vii) pre-game information; viii) medical and healthcare; ix) arrival and departures; and x) anti-doping. For each criteria between 4 and 12 items were defined to form the survey, a total of 73 were created. The survey was a combination of closed, fixed-response questions using a 5-point scale (1=very satisfied, 2=satisfied, 3=neutral, 4=dissatisfied, 5=very dissatisfied) and open dialogue boxes for respondent opinion and suggestions. The developed survey was facilitated through a dedicated web application. Moreover, it is relevant to note that the survey has an exploratory purpose rather than an explanatory one, which was appropriate to address the two research questions.

The Research Questions (RQs) developed for this study were therefore defined as: RQ1 = what are the specific Paralympics Games service quality criteria impacting the athlete experience?; and RQ2 = can a valid baseline be established to measure the service quality / performance of the Paralympics? A conceptual overview of the research design is shown in Figure 1. As illustrated (see Figure 1), the study utilised at a macro level aspects of the literature and the IPC Aims and Objectives. However, at the heart of the research were the micro perceptions of the Paralympic athletes. From a management theory perspective, stakeholder theory, with its emphasis on

explaining an organisations functions with respect to the relationships and influences existing in its environment (Rowley, 1997) was considered most appropriate. Stakeholder theory is part of a comprehensive view that regards organisation-group relationship as both a foundation and a norm (Pesqueux & Damak-Ayadi, 2005); hence its appropriateness here.



*Figure 1 – Conceptual Overview of the Research Design*

The research was undertaken and facilitated at London 2012 in August and September 2012. A team of four IPC Academy Interns led by the IPC Academy Research Fellow (all volunteers seconded to the IPC for the duration of the Games) facilitated the survey over several days through 1:1 interviewing, recording the survey responses on tablet and PCs. Moreover, throughout the interviews, qualitative data was recorded and transcribed. Following the departure of the Research team the survey was made available for on-line completion (*c.f.*: Duffy, 2005). Due to the large number of athletes involved (4278) the research team used a rationale sampling system to target 323 competitors. This also ensured as wide a representation across the countries present as possible. Ultimately, 250 responses were collected (during the fieldwork the team recorded 130 questionnaires; 120 were subsequently completed on-line). It is relevant to mention that no significant differences were perceived between the 2 sub-samples, hence the samples were aggregated to allow the following analysis.

## The Findings

### *Descriptive analysis*

36% of the respondents were wheelchair users, 19% visually impaired and 45% ambulant, and this across most of the 166 disciplines. The most represented countries were Brazil 11.24%, China 9.24% and the US 9.24%. The rest of the sample was reasonably distributed amongst the other countries. Regarding the gender of the respondents 62% were male and 38% female. Furthermore, 72% of respondents were between 16 and 34 years old.

10 Themes and their boundaries were defined, expressed by 73 items. In order to assess each themes importance, the survey asked the respondents (the athletes) to select their five most important themes. From this it was possible to extract a normalised weight according to the results for each theme. Table 1 summarises these results.

*Table 1: Themes and their associated weight*

<b>Themes</b>	<b>% Weighting</b>
Paralympics village	17.50
Competition venues	17.06
Transport	14.57
Catering	12.08
Volunteers and staff	8.52
Ceremonies	8.00
Pre-game information	7.63
Medical and healthcare	6.83
Arrivals and departures	5.05
Anti-doping	2.76

The Paralympics village, the Competition venues, Transport and Catering services were highlighted as the four most important themes. The athletes appeared sensitive to the operational environment that impacted their sporting performances.

The research was concerned with not only collecting the ‘voice of the athlete’ but also assessing the operational performance of the London 2012 Paralympics Games. This would set a benchmark for future reference and facilitate the comparison of upcoming sporting events. Therefore, the survey asked respondents to express their satisfaction with the service received using a scale from 1 to 5 (1=very satisfied, 2=satisfied, 3=neutral, 4=dissatisfied, 5=very dissatisfied). By compiling all the results it was possible to define the performance for each theme as shown in Table 2.



*Table 2: Themes and their assessment scores*

<b>Themes</b>	<b>1-5 Assessment</b>
Volunteers and staff	1.486
Ceremonies	1.488
Medical and healthcare	1.517
Arrivals and departures	1.671
Paralympics village	1.810
Transport	1.812
Competition venues	1.820
Catering	1.846
Anti-doping	1.894
Pre-game information	1.999

*(Note: 1-5 scale; 1=very satisfied to 5=very dissatisfied)*

All theme assessments had a score between 1.486 and 1.999, which means that overall respondents indicated they were ‘very satisfied’ with the processes, services and facilities provided during the London 2012 Paralympic Games. However, the most ‘important’ areas did not ‘score’ best (comparing Table 1 with Table 2). There are, therefore, areas for improvement (AFIs) that should be taken into account in planning, designing and organising future Paralympic events (potentially both the Winter and Summer Games). The four most ‘performing’ activities were: i) Volunteers and staff; ii) Ceremonies; iii) Medical and healthcare; and iv) Arrivals and departures. Although none of these were considered by the athletes to be central; interestingly they rated: i) the Paralympics village; ii) Competition venues; iii) Transport; and iv) Catering as the most significant and important. The following section analyses in detail each theme and its associated items, by theme importance order.

### **Theme by themes analysis**

In this section we present, in greater detail, what the athletes considered as important and how the London 2012 Paralympic Games performed in each.

#### *Paralympics village*

The Paralympics Village was considered as the most important area from the athletes’ perspective but only ranked at the fifth position in term of overall performance. The Village was defined by 12 items, as Table 3 illustrates.

*Table 3: Paralympics village indicators weighting and scoring*

<b>Ref</b>	<b>KPI</b>	<b>% Weighting</b>	<b>Scoring</b>
1	internal transport system	9.84	1.86
2	access to internet	13.83	1.55
3	social activities	8.40	1.93
4	resident centre service	6.45	1.88
5	room house keeping	13.23	1.99
6	hygiene	13.15	1.76
7	laundry services	12.21	1.72
8	language services	5.60	2.00
9	NPC services	3.31	1.87
10	multi-faith centre	0.93	2.04
11	repair centre	3.48	1.81
12	village plaza	8.40	1.76

*(Note: Scoring 1-5 scale; 1=very satisfied to 5=very dissatisfied)*

Access to internet, the room house keeping service, the hygiene and the laundry service were the four most weighted indicators. Their performances were also excellent as the athletes rated them between 1.55 and 1.99, which correspond to ‘very satisfied’, based on the 1 to 5 discrete scale developed. It might be relevant to note that the least important items were the NPC (National Paralympics Committee) services and the multi-faith centre respectively weighted at 3.31 and 0.93.

#### *Competition venues*

The Competition Venues were ranked second in terms of perceived importance, with a normalised weight of 17.06. However, they ranked at the seventh position in terms of performance. Clearly a mismatching ratio can be seen in this category. 9 items were identified and selected as Table 4 shows.

*Table 4: Competition venues indicators weighting and scoring*

<b>Ref</b>	<b>KPI</b>	<b>% Weighting</b>	<b>Scoring</b>
13	warm up area	18.66	1.79
14	waiting call area	11.65	2.02
15	distance to drop off	11.00	1.86
16	field of play	16.40	1.51
17	access & changing room	10.03	1.86
18	mixed zone	3.67	2.01
19	athlete lounge	8.95	1.98
20	equipment storage	6.58	1.95
21	training venues	12.19	1.78

*(Note: Scoring 1-5 scale; 1=very satisfied to 5=very dissatisfied)*

The most important items were the warm-up area, the field of play, the training venues and the waiting call area, these items performed well with a scoring between 1.51 for the field of play and

2.02 for the waiting call area which was seen as ‘very satisfactory’ or ‘satisfactory’. The athletes considered equipment storage and mixed zone as secondary.

### *Transport*

Transport services in and around the Paralympics Games were seen by the athletes as the third most important area, with the total weight of 14.57. However, they came in sixth position in terms of assessment and performance.

*Table 5: Transport indicators weighting and scoring*

<b>Ref</b>	<b>KPI</b>	<b>% Weighting</b>	<b>Scoring</b>
22	travel time	18.41	1.83
23	quality of buses	15.67	1.78
24	adequacy of transport info	7.59	1.88
25	accessibility	15.80	1.75
26	adherence to public schedule	9.33	1.79
27	frequency of transport	16.92	1.76
28	transport to observe other sports	7.59	2.00
29	transport of equipment	8.08	1.85

*(Note: Scoring 1-5 scale; 1=very satisfied to 5=very dissatisfied)*

As shown in the table above, 8 items constituted the transport service. 4 items can be distinguished from the others: Travel time, frequency of transport, accessibility and quality of buses with weights between 18.41 and 15.67. Their performances were also considered as ‘very satisfying’ by the athletes, meeting their expectations. The four other items were not seen as important by the athletes.

### *Catering*

Catering services have been weighted as reasonably important by the athletes, with an associated weight of 12.08. However, in terms of performances the catering services are ranked in eighth position. We questioned the athletes on 6 items. 5 of these were seen as important. The athletes’ diet is critical and impacts their performances, it must be thought and planned very carefully; this could explain the reason why most of the items of this theme were importantly rated.

*Table 6: Catering indicators weighting and scoring*

<b>Ref</b>	<b>KPI</b>	<b>% Weighting</b>	<b>Scoring</b>
30	variety of cuisine	22.14	1.64
31	food quality	24.58	1.72
32	menu rotation	17.64	1.97
33	access to food at different location	17.07	1.89
34	athlete lounge food provision	15.57	2.11

35	boxed meal	5.44	1.96
----	------------	------	------

(Note: Scoring 1-5 scale; 1=very satisfied to 5=very dissatisfied)

### *Volunteers and staff*

Volunteers and staff were ranked fifth in the weighting table with 8.52, this was the best performing service provided according the athletes. The performance scores were extremely high. The athletes recognised and were greatly satisfied with the workforce's motivation to assist (1.31), their level of training (1.45), the appropriate number (1.46), their language skills (1.57) and their non-intrusive ability (1.64). The methodology for staff training, recruitment and development could certainly be replicated elsewhere, as sport events greatly rely on the volunteers and staff to provide a high service quality.

*Table 7: Volunteers and staff indicators weighting and scoring*

<b>Ref</b>	<b>KPI</b>	<b>% Weighting</b>	<b>Scoring</b>
36	well trained and informed	20	1.45
37	adequate number	20	1.46
38	motivated and keen to assist	20	1.31
39	good language skills	20	1.57
40	non-intrusive workforce	20	1.64

(Note: Scoring 1-5 scale; 1=very satisfied to 5=very dissatisfied)

### *Ceremonies*

From the data, it was established that the Ceremonies were an important part of the Games experience for the athletes. The 4 items ranked in order of importance is not surprising: the opening ceremony (32.72), the team welcome ceremony (29.04), the closing ceremony (21.27) might not have been attended by all the athletes and the victory ceremonies (15.95) will have been influenced by individual results. The 4 items achieved a very high score between 1.34 and 1.61 as Table 8 demonstrates.

*Table 8: Ceremonies indicators weighting and scoring*

<b>Ref</b>	<b>KPI</b>	<b>% Weighting</b>	<b>Scoring</b>
41	team welcome ceremony	29.04	1.52
42	opening ceremony	32.72	1.34
43	closing ceremony	21.27	1.61
44	victory ceremony	15.95	1.57

(Note: Scoring 1-5 scale; 1=very satisfied to 5=very dissatisfied)

### *Pre-Game information*

Pre-game information was not considered too critical. It has an aggregated weighted of 7.63. It ranked last in term of performances with a total ratio of 1.999, which is still a high score but considered within the bottom end of the ‘very satisfying’ discrete category.

*Table 9: Pre-game information indicators weighting and scoring*

<b>Ref</b>	<b>KPI</b>	<b>% Weighting</b>	<b>Scoring</b>
45	departures and arrivals	18.10	1.69
46	accreditation	19.54	1.75
47	ticketing	14.94	1.81
48	qualification process	17.82	2.70
49	classification opportunity	10.92	2.08
50	games related information	11.21	2.04
51	anti-doping	6.03	1.90

*(Note: Scoring 1-5 scale; 1=very satisfied to 5=very dissatisfied)*

The pre-game information encompassed 7 items and the most important were: accreditation, departures and arrivals, qualification process and ticketing. The athletes were possibly expecting more information about: the qualification process (2.70); the classification opportunity (2.08); and games related information (2.04), the least performing overall indicators. Interestingly anti-doping information was considered as the least important items.

#### *Medical and healthcare*

Medical and healthcare services were ranked eighth in term of importance (6.83); it did not appear as critical as one might think to the athletes. It was ranked third in terms of performance (1.517). Athletes were very satisfied with the provided medical and healthcare services. The respondents were especially satisfied with the physiotherapy (1.43), the on venue first aid (1.44), the polyclinic general service and the optometry both with a score of (1.46).

*Table 10: Medical and healthcare indicators weighting and scoring*

<b>Ref</b>	<b>KPI</b>	<b>% Weighting</b>	<b>Scoring</b>
52	Polyclinic general service	10	1.46
53	physiotherapy	10	1.43
54	dental care	10	1.52
55	optometry	10	1.46
56	on venue first aid	10	1.44
57	emergency medical aid	10	1.48
58	sport medicine	10	1.51
59	hydrotherapy	10	1.53
60	primary care	10	1.65
61	pharmacy	10	1.69

*(Note: Scoring 1-5 scale; 1=very satisfied to 5=very dissatisfied)*

### *Arrivals and Departures*

Arrivals and departures ranked ninth in term of importance with an aggregated weight of 5.05. However, it performed relatively well achieving the fourth position and a total score of 1.671. There were 7 items assessed in this category. The athletes were ‘very satisfied’ with the provided services, especially regarding the accreditation process at the airport (1.52), the available wheelchair at the gate (1.61), the assistance in the baggage collection (1.62) and the processing through village (1.64), as table 11 below illustrates.

*Table 11: Arrivals and departures indicators weighting and scoring*

<b>Ref</b>	<b>KPI</b>	<b>% Weighting</b>	<b>Scoring</b>
62	meet your wheelchair at gate	14	1.61
63	access toilet after plane	14	1.81
64	assistance baggage collection	14	1.62
65	accreditation process at airport	14	1.52
66	travel to village	14	1.81
67	process through village	14	1.64
68	remote checking	14	1.69

*(Note: Scoring 1-5 scale; 1=very satisfied to 5=very dissatisfied)*

### *Anti-doping*

Anti-doping services were the least important theme from the athletes’ perspectives, with a total aggregated weight of 2.76. In term of performance, although satisfied with these services the athletes have it at the ninth position with a total score of 1.894. There are 5 items associated with the anti-doping theme, all scoring between 1.83 and 1.96.

*Table 12: Anti-doping indicators weighting and scoring*

<b>Ref</b>	<b>KPI</b>	<b>% Weighting</b>	<b>Scoring</b>
69	education book and info	20	1.89
70	anti-doping staff chaperone	20	1.85
71	anti-doping staff officer	20	1.94
72	efficient anti-doping process	20	1.96
73	anti-doping station facilities	20	1.83

*(Note: Scoring 1-5 scale; 1=very satisfied to 5=very dissatisfied)*

### **Discussion**

The survey sought to provide an evidence base against two primary objectives: i) identifying what are the specific Paralympics Games service quality criteria impacting the athlete experience? (RQ1), and ii) can a valid baseline be established to measure the service quality / performance of the Paralympics? (RQ2).

With reference to RQ1, the specific Paralympics Games criteria that were perceived as impacting the athlete experience were defined as: i) Paralympics village; ii) Competition venues; iii) Transport; and iv) Catering. It is worth noting that all these significant criteria were things that the athletes had direct, regular, significant contact with. However, these were not the best rated in terms of perceived performance. For actual performance these ‘most important’ criteria were respectively at the fifth, seventh, sixth and eighth positions. Perhaps the future organisers could take these results into account to optimise the design of the infrastructure as well as for the resources and budget allocations. This research has evidenced that as ‘customers’ the athletes primarily care about what they perceive as core services to help them to perform well. Indeed according to the definition of ‘fitness for purpose’ (Bamford & Forrester, 2010, p.157), Paralympics village and Competition venues appears to be perceived as impacting directly on how athletes perform at the Games. Moreover, Transport and Catering are also key components or ‘order-winners’ (Hill & Hill, 2011). Therefore, improving these services and raising their performance will significantly increase the quality of the Games. It is only in a second extent, that the organisation will focus and dedicate resources and budget to improve the secondary or ‘order-qualifiers’ (Hill & Hill, 2011) services: Volunteers and staff, Ceremonies, Pre-game information, Medical and healthcare, Arrivals and departures, Anti-doping. However, these will have to be performing at an appropriate level; otherwise the operational and external reputation of the Games could potentially be damaged. This is associated with the order winning factors and the qualifying factors, an extremely relevant Operations Management concept linking back Operations Strategy and Service Quality in planning and design activities.

Therefore, thanks to this study an operational assessment and performance framework has been generated, as Figure 2 illustrates. This benchmarking framework is the first model to be developed to assess such sporting mega-event from the athlete perspective, and will be an extremely powerful tool to support the planning and design of future Paralympic games. The weightings associated with each criterion have been empirically developed, taking into account the key stakeholder perspective.

Order-winner features

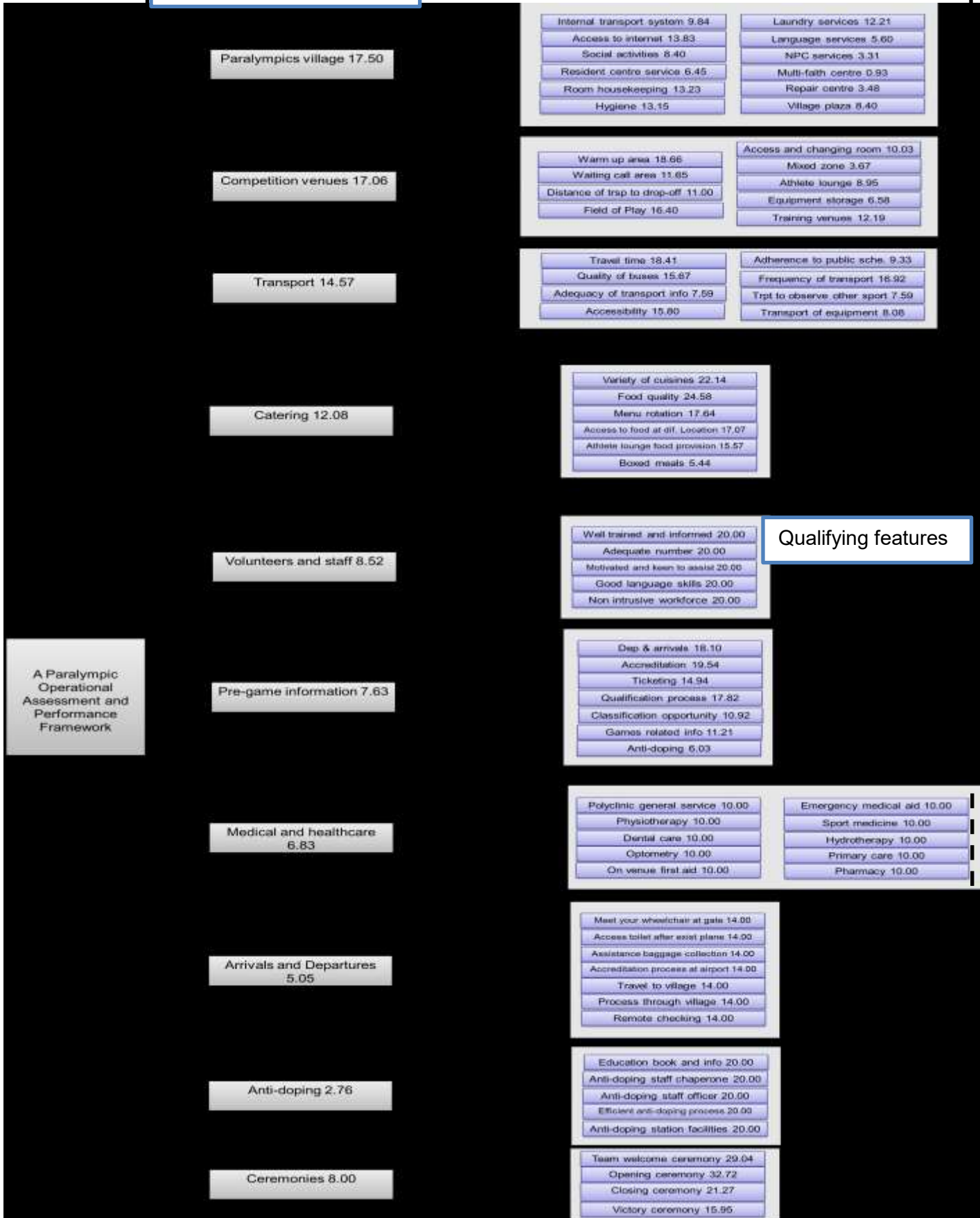


Figure 2 - An operational assessment and performance framework



With reference to RQ2, establishing a baseline to measure the service quality / performance of the Paralympics. We can construe from this study that, from the athletes perspective, the Paralympics Games processes, services and facilities were excellent, and to some extent exceeded the respondents' satisfaction, with a total of 1.822 (see Table 13). Both those involved in the survey design (the IPC, WAoS, UoH) and the athletes appear to appreciate the importance of service quality and impact it can make on actual performance (Tsitskari *et al.*, 2006). This was also identified in recent papers by Fatima and Razzaque (2014) and Zhang *et al.*, (2014), both of which highlighted the impact of customer confidence upon a reputation for service excellence. This research highlights, in the athletes opinion, how well designed, organised and managed the London 2012 Paralympic Games were. The athletes rated 64 of the 73 items with a score in the 'very satisfied' category (<2). Only 9 items have a score belonging to the 'satisfied' discrete category (<3). This is evidence that, from the athletes' perspective, their expectations have been met and mostly surpassed. Volunteers and staff services were rated as the best performing by the athletes. This is extremely interesting to note as the academic literature related to sport highlights the problematic nature of managing these critical criteria; the multiple roles and direct impact that volunteers and temporary staff have on the perception of service quality (Minis *et al.*, 2006). Specifically, Sampson (2006) compared volunteer labour with traditional labour assignments and provides examples from the Olympics showing that the availability of volunteer labour is limited by the number of volunteers that can be recruited and that volunteers that were not utilized had a reduced propensity to volunteer in the future.

Table 13 below represents for each theme the aggregated performance and weighting, based on the survey order.

*Table 13: The overall results in the questionnaire order*

<b>Themes</b>	<b>Assessment Scoring</b>	<b>% weight</b>
Paralympics village	1.810	17.50
Competition venues	1.820	17.06
Transport	1.812	14.57
Catering	1.846	12.08
Volunteers and staff	1.486	8.52
Pre-game information	1.999	7.63
Medical and healthcare	1.517	6.83
Arrivals and departures	1.671	5.05
Anti-doping	1.894	2.76
Ceremonies	1.488	8.00

*(Note: Scoring 1-5 scale; 1=very satisfied to 5=very dissatisfied)*

Having said that, it is noticeable that it is not what was identified as order-winners: Paralympics village, Competition venues, Transport and Catering that have necessarily scored the best. These were towards the bottom end of the athletes' performance ranking. This does identify the areas of potential improvement and will need to be investigated further by the future organising bodies. Of course, measuring service quality is a rather controversial topic within academia (Brady & Cronin, 2001; Tsitskari *et al.*, 2006) but we should recognise the usefulness of this evidence based study that incorporates the athletes' views. Bernthal and Sawyer (2004) identified that the limited research into service quality in sports focused almost exclusively on fans perspective. Rather a missed opportunity in terms of designing sporting operational infrastructures that are fit for purpose (Dale *et al.*, 2005).

It would be useful to reflect further on why the most important themes were not necessarily the ones that performed best according to the athletes' perspectives. However, we should reiterate that all themes were meeting, even exceeding, the athletes' expectations, considering their scoring, <2 means 'very satisfied'. This study started to establish a valid evidence base and establish how London 2012 performed against multiple key operational criteria. When the findings are taken forward they will lead to improvements in the planning, design and organisation of future Paralympic events, supporting and informing the decision makers for the Brazil 2016 Paralympic Games and will be used as a Benchmarking framework for comparison of future Paralympic Games (*c.f.*: Tsitskari *et al.*, 2006; Dale *et al.*, 2005). At that point it would be well worth considering the application of analysis using the SERVQUAL model (Parasuraman *et al.*, 1994), to perhaps provide relative importance of factors when dimensions are interdependent

## Conclusion

This research has demonstrated that although the athletes were delighted by the games organisation, the themes considered as the most important did not perform the best. In any system there are always areas for improvement (AFIs), which should be actively targeted. This research has highlighted the following AFIs:

- i) From an overall perspective the most important criteria, or the order-winners were: Paralympic village; Competition venues; Transport; and Catering, but these were not the ones that scored best in terms of actual performance. This should be investigated further to understand why the most important criteria were not the best performing, from the athletes perspective;
- ii) Looking more specifically, this study showed that within Transport, four criteria: i) adherence to public transport; ii) transport of equipment; iii) adequacy of transport

- information; and iv) the transport to observe other sports were not seen as important by the athletes. These should be investigated further to assess what type of dedicated resources had been allocated to these low rated / poorly utilised facilities.
- iii) Furthermore, from the Catering services the boxed meals were not considered as important by the athletes as expected, it might be relevant to examine the potential reasons for this.
  - iv) Finally, it is noteworthy that Pre-game information was the least well performing service according to the athletes. They were possibly expecting more information about: the qualification process (2.7); the classification opportunity (2.08); and games related information (2.04).

The comments help to identify the gap between the expectations and the actual experiences. Kauppi *et al.*, (2013) reinforce the need for this type of research and dissemination, highlighting that the identification of best practices within the sport industry and the dissemination of knowledge is essential so that managers and academics alike can understand what works best.

The methodology applied required the collection of research data and was appropriate and consistent with the perceived outcomes. This research has provided a foundation for future work as defined above. It is acknowledged that further detail regards the research techniques and methodology would have added value, however, word count limitations worked against this. The authors also recognise that it is difficult to generalise the results from a single case study, however, Remenyi *et al.*, (1998) argue a single case can be enough to add to the body of knowledge. Indeed, the authors perceive that the results from this research project will be utilised by the Olympic committees to inform and influence the service quality design aspects of future Games (see Figure 2). In addition, the micro perceptions of the Paralympic athletes (see Figure 1) and the stakeholder theory (Pesqueux & Damak-Ayadi, 2005; Rowley, 1997) approach appeared to work well. Therefore, we strongly believe and suggest that replicating this study and testing these findings with other sports mega-events such as the Commonwealth Games, the Olympic Winter Games or multiple World Cups and Championships, in further studies, would enhance the contribution. It is also thought that the benchmarking and performance framework developed can support comparison between the different events, which makes a defined contribution of this paper. Finally as this study focuses on the primary stakeholder group, the athletes, we suggest evidencing the service quality perceived from other prime groups such as: press and media; national organising committees; governing bodies; and spectators. This would support developing a much more integrated picture of the sports events service quality concept.

## References

- Abhishek (2013), Top 10 World's Biggest Sporting Events, June 4 2013, <http://listdose.com/top-10-worlds-biggest-sporting-events>
- Agus, A. Barker, S. Kandampully, J (2007), An exploratory study of service quality in the Malaysian public service sector, *International Journal of Quality & Reliability Management*, Vol. 24, Iss: 2, pp.177 – 190.
- Bamford, D. and Forrester, P. (2010) *Essential Guide to Operations Management: Concepts and Case Notes*, Wiley.
- Bamford, D. Moxham, C. and Karjalainen, K. (2012), On the winning team: Exploring the application of planning, scheduling and control to sport operations, In: 19<sup>th</sup> International Annual EurOMA Conference, Amsterdam, Netherlands, 1-5 July 2012.
- Bai, C., Lai, F., Chen, Y., & Hutchison, J. (2008). Conceptualising the perceived service quality of public utility services: A multi-level, multi-dimensional model, *Total Quality Management & Business Excellence*, 19(10), pp. 1055–1070.
- Beis, D., Loucopoulus, P., Pyrgiotis, Y., Zografos, K. (2006), PLATO helps Athens win gold: Olympic Games knowledge modelling for organizational change and resource management, *Interfaces*, Vol. 36 No.1, pp. 26-42.
- Bernthal, M. J. Sawyer, L. L. (2004), The importance of expectations on participatory sport event satisfaction: an exploration into the effect of athlete skill level on service expectations, *The Sport Journal*, Vol. 7 No. 3, unpaginated.
- Blake, A. (2005), *The Economic Impact of the London 2012 Olympics*, Christel DeHaan Tourism and Travel Research, Institute Nottingham University Business School report, pp. 1-72.
- Brady, M. Cronin, J. (2001), Some new thoughts on conceptualizing perceived service quality: a hierarchical approach, *Journal of Marketing*, Vol. 65, pp. 34–49.
- Carmen, J. M. (1990), Consumers perceptions of service quality: an assessment of service quality and value, *Journal of Consumer Research*, Vol. 66, pp. 33–55.
- Chadwick, S. (2013), From outside lane to inside track: sport management research in the twenty-first century, chapter 27 in Soderman, S. and Dolles, H. (2013) *Handbook of Research on Sport and Business*, Edward Elgar, Cheltenham.
- Chadwick, S. (2011), Editorial: the distinctiveness of sport: opportunities for research in the field, *Sport, Business and Management: An International Journal*, Vol. 1 No. 2, pp. 120-123.
- Chalkley, B. Essex, S. (1999), Urban development through hosting international events: a history of the Olympic Games, *Planning Perspectives*, Vol. 14, No. 4, pp. 369-394.
- Choudhury, K. (2013), Service quality and customers' purchase intentions: an empirical study of the Indian banking sector, *International Journal of Bank Marketing*, Vol. 31 Iss: 7, pp.529 - 543
- Dale, B. van Iwaarden, J. van der Wiele, T. and Williams, R. (2005), Service improvement in a sports environment: a study of spectator attendance, *Managing Service Quality*, Vol. 15, No. 5, pp. 470- 484.
- De Knop, P. Van Hoecke, J. and De Bosscher, V. (2004), Quality Management in Sports Clubs, *Sport Management Review*, Vol. 7, pp. 57–77.
- Duffy, B. Smith, K. Terhanian, G. and Bremer, J. (2005), Comparing data from online and face-to-face surveys, *International Journal of Market Research*, Vol. 47, No. 6, pp. 615-639.
- Eisenhardt, K.M. (1989). Building theory from case research. *Academy of Management Review*, 14(4), pp. 532–550.
- Emery, P. (2010), Past, present, future major sport event management practice: The practitioner perspective, *Sport Management Review*, Vol. 13 No. 2, pp. 158-170.
- Fatima, J.K. Razzaque, M.A. (2014), Service quality and satisfaction in the banking sector, *International Journal of Quality & Reliability Management*, Vol. 31 Iss: 4, pp.367 - 379

- Garcia, J.A.M., & Caro, L.M. (2010). Rethinking perceived service quality: An alternative to hierarchical and multidimensional models, *Total Quality Management & Business Excellence*, 21(1), pp. 93–118.
- Ganguli, S & Roy, S. K (2013) Conceptualisation of service quality for hybrid services: a hierarchical approach, *Total Quality Management & Business Excellence*, Published online 08 Jul 2013.
- Gilmour, R. (2010), Commonwealth Games 2010: What's going wrong in Delhi today? The Telegraph, 13 October 2010, <http://www.telegraph.co.uk/sport/othersports/commonwealthgames/8050220/Commonwealth-Games-2010-Whats-going-wrong-in-Delhi-today.html>
- Hill, A and Hill, T (2011) *Essential Operations Management*, Palgrave Macmillan
- Howat, G. Murray, D. Crilley, G. (1999), The relationship between service problems and perceptions of service quality, satisfaction and behavioural intentions of Australian public sports and leisure centre customers, *Journal of Park and Recreation Administration*, Vol. 17, No. 2, pp. 42–64.
- International Paralympic Committee Strategic Plan 2011-2014, [http://www.paralympic.org/sites/default/files/document/120201082624295\\_RZ\\_IPC\\_11\\_Strategic\\_A4\\_quer\\_fin.pdf](http://www.paralympic.org/sites/default/files/document/120201082624295_RZ_IPC_11_Strategic_A4_quer_fin.pdf)
- Kauppi, K., Moxham, C., Bamford, D. (2013) Should we try out for the major leagues? A call for research in sports operations management, *International Journal of Operations and Production Management*, Vol.33 Iss.10 pp.1368-1399
- Kaushik, M. (2010), "Business Today - India's leading business magazine". Business Today, [http://businesstoday.intoday.in/index.php?option=com\\_content&task=view&issueid=92&id=16093&Itemid=1&sectionid=25](http://businesstoday.intoday.in/index.php?option=com_content&task=view&issueid=92&id=16093&Itemid=1&sectionid=25)
- Kang, G.D., James, J. (2004), Service quality dimensions: an examination of Gronroos's service quality model, *Managing Service Quality*, Vol.14 No.4 pp266-77
- Kendall, G., Knust, S., Ribeiro, C., Urrutia, S. (2010), Scheduling in sports: an annotated bibliography, *Computers and Operations Research*, Vol. 37 No. 1, pp. 1-19.
- Kim, Y.K., Kim, Y.B., & Lee, Y.I. (2011). Perceived service quality for South Korean domestic airlines, *Total Quality Management & Business Excellence*, 22(10), pp. 1041–1056.
- Lentell, R. Morris, B. (2001), The effects of Investors in People and ISO 9002 in local authority leisure facilities, *International Journal of Quality & Reliability Management*, Vol. 18 Iss: 4, pp.415 - 430
- Lonial, S., Menezes, D., Tarim, M., Tatoglu, E., & Zaim, S. (2010). An evaluation of SERVQUAL and patient loyalty in an emerging country context *Total Quality Management & Business Excellence*, 21(7), pp. 813–826.
- Minis, I., Parashi, M., Tzimourtas, A. (2006), The design of logistics operations for the Olympic Games, *International Journal of Physical Distribution and Logistics Management*, Vol. 36 No.8, pp. 621-642.
- Moxham, C., Wiseman, F. (2009), Examining the development, delivery and measurement of service quality in the fitness industry: A case study, *Total Quality Management and Business Excellence*, Vol. 20 No. 5, pp. 467-482.
- Murray, D. Howat, G. (2002), The relationship among service quality, value, satisfaction, and future intentions of customers at an Australian sports and leisure centre, *Sport Management Review*, Vol. 5, pp. 25-43.
- National Geographic (2013), The 10 Best of Everything-Top 10 Sporting Events, <http://travel.nationalgeographic.co.uk/travel/top-10/sporting-events/>
- Parasuraman, A. Zeithaml, V. Berry, L. (1985), A conceptual model of service quality and its implication for future research, *Journal of Marketing*, Vol. 49, pp. 41–50.
- Parasuraman, A. Berry, L. Zeithaml, V. (1988), SERVQUAL: a multiple-item scale for measuring consumer perceptions of service quality, *Journal of Retailing*, Vol. 64, pp. 12–40.

- Pesqueux, Y and Damak-Ayadi, S (2005), Stakeholder theory in perspective, *Corporate Governance*, Vol. 5, Iss: 2, pp. 5 – 21
- Rowley, T.L (1997) Moving beyond Dyadic Ties: A Network Theory of Stakeholder Influences, *The Academy of Management Review* Vol. 22, No. 4, pp. 887-910
- Remenyi, D., Williams, B., Money, A., Swartz, E. (1998), *Doing research in business and management*, London, Sage Publications Ltd
- Sampson, S. (2006), Optimization of volunteer labor assignments, *Journal of Operations Management*, Vol. 24 No. 4, pp. 363-377.
- Saravanan, R., & Rao, K.S.P. (2007). Measurement of service quality from the customer's perspective – an empirical study, *Total Quality Management & Business Excellence*, 18(4), 435–449.
- Trenberth, L. Hassan, D. (2012), *Managing Sport Business*, an introduction, Routledge, Oxon.
- Tsao, W., & Tseng, Y. (2011). The impact of electronic-service quality on online shopping behaviour, *Total Quality Management & Business Excellence*, 22(9), pp. 1007–1024.
- Tsitskari, E. Tsiotras D. Tsiotras G. (2006), Measuring Service Quality in Sport Services, *Total Quality Management*, Vol. 17, No. 5, pp. 623–631.
- Yin, R. (2009). *Case study research design and methods*. Thousand Oaks, CA: Sage.
- Zhang, M. Xie, Y. Huang, L. He, Z. (2014), Service quality evaluation of car rental industry in China, *International Journal of Quality & Reliability Management*, Vol. 31 Iss: 1, pp.82 - 102

Acknowledgements: the authors would like to thank the International Paralympics Committee ([www.paralympic.org](http://www.paralympic.org)) and the World Academy of Sport ([www.worldacademysport.com](http://www.worldacademysport.com)) for the invitation to perform the research and their full support and kind cooperation.