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Special Olympic Stakeholders' Perceptions of Service Deliveries: Construct Validity of Selected Measures on Service Perception

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Abstract

Due to the unique nature of the event and its participants, services associated with theSpecial Olympics World Gamesshould be carefully designed and provided. However, little attention has been paid to the development of the appropriate measurement tools of service quality for the Special Olympics WorldGames.The purpose of the current study was to develop and assess psychometric properties related to the service quality dimensions with regard to the Special OlympicsWorld Games. The resultsindicated that the five-factor model with 29 items was the most appropriate model measuring service attributes associated with the Special OlympicsWorld Games.The authors are confident that the newly created five-factor model would help event organizers accuratelymeasure and assess service quality toward the Special Olympics World Games.

Keywords: The Special Olympics World Games, Service Quality, Service Attributes
JEL Classifion: I30; L83; M39

1. Introduction

Special Olympics World Gameswas founded in 1968 as a sporting competition for adults and children with disabilities. Over the past 40 years, the Games have developed into an internationally celebrated event that features many of the best athletes from around the world. Although various Special Olympics competitions are held every day in different locations throughout the world, the Special

Olympics World Games are only held once every two years, and alternate between winter and summer games.

Special OlympicsWorld Gamesis a global movement of people creating a new world of inclusion and community, where every single person is accepted and welcomed, regardless of ability or disability. We are helping to make the world a better, healthier and more joyful place – one athlete, one volunteer, one family member at a time." (www.specialolympics.org). Special OlympicsWorld Gameshas been considered as a respectful program for people with intellectual disabilities. It is very important to effectively communicate with rapidly growing body of constituents of the Special Olympics World Games and produce the highly satisfactory athletic environmental conditions developing successful managerial and operational procedures of the Special Olympics World Games. Special Olympics World Gamesathletes are individuals with intellectual disabilitiesthat is manifest before age 18 by its definition and requirements and thus the Special OlympicsWorld Games, Inc. has been documenting both the impact of its programs on the lives of its athletes and the reach of its programs around the world through large-scale program objective assessments (Special Olympics Impact Survey, Special Olympics Athlete Participation Survey). The 2013 Special Olympics World Winter Gameswas held in PyeongChang, Republic of Korea, featuring alpine skiing, cross-country skiing, figure skating, snowboarding, speed skating and other sports (www.2013sopoc.org).

Due to the unique nature of the event and participants, services associated with the Special OlympicsWorld Gamesprograms should be carefully designed and provided.It is important to recognize the fact that intellectual disabilities are unique even within the disability spectrum (e.g., Hammond & Turner, 2006).Providing high level of service quality during the event operations of the Special Olympics World Gamescannot be overstated mainly due to its prominentexplanatory power on various outcome variables, such as purchase intentions (Byon, Zhang, & Baker, 2013)), customer satisfaction (Clemes, Brush, & Collins, 2011), word-of-mouth referrals (Petrick& Backman, 2001), and switching behavior (Anderson & Sullivan, 1993). The practical importance of investigating service quality lies in the fact that a superiorquality of service will result in a competitive edge, which will be directly related to profit generation for the organization (Parasuraman, Zeithaml, & Berry, 1988). Furthermore, accurate and periodic assessment of service quality would provide management with feedbacks with regards to specific areas in which improvement should be made.

Studying service quality has significant implications for effective operations of sportingevents. Much knowledge in the area of service quality during sporting events has been introduced for the past two decades. Results of the previous studies shed light on better understanding of dimensions of service quality associated with professional sports (Byon et al., 2010; Clemes et al., 2011; Ko, Zhang, Cattani, &Pastore, 2011; Uhrich& Martin, 2010; Yoshida & James, 2011), recreation sports (Ko&Pastore, 2005), structural relationship between service quality and various outcome variables (Clemes et al., 2011), and gender difference in service quality perception (Kim, Ko, & Park, 2011).

Despite the advanced understanding concerning service quality at sporting events, to date, there is no service quality measure specific to sporting events involving athletes with disabilities. Although such scale as SERVQUAL (Parasuraman et al., 1988) is available to assess customer's service perception, researchershave suggested that effort be made to identify industry-specific factors of service quality due to the different nature of servicesoffered and perceived by sport providers and customers, respectively (e.g., Lam, Zhang, & Jensen, 2005). The attributes measuring service quality should be those relevant to the context in which the service is to be employed.

Therefore, the purpose of the current study was todevelop a service quality model with regards to the Special OlympicWorld Games. Specifically, the objectives of the study were to (a) develop a measurement model regarding various service encounters associated with the Special Olympic World Games and (b) test psychometric properties of the measure via EFA, CFA, construct validity test, reliability test, and measurement invariance test.

This study is unique in that to our knowledge, this is the first attempt to design a service quality scale specific to the Special OlympicsWorld Games. Exhaustive stakeholders relevant to the Special

OlympicsWorld Games participated in providing their perceptions related to the service provision during the Games. With this context-specific nature of the scale, the event organizers of the Special Olympics World Games may use the scale to better understand what specific services should be delivered and how those services are provided.In addition, use of the valid and reliable scale may enable the event organizers to accurately assess and understand areas in which improvementsneed to be made.

2. Review of Literature

2.1 Service Quality

For the past three decades, service quality research has essentially been guided by three theoretical paradigms: (a) the Gap Model represented by the SERVQUAL scale (Parasuraman et al., 1988), (b) the Performance-Only Model(Cronin & Taylor, 1992), and (c) the Nordic model developed by Grönroos (1984).

In terms of the SERVQUAL, Parasuraman et al.(1988) proposed fivefactors: Reliability, Assurance, Tangibles, Empathy, and Responsiveness. Reliability referred to how dependably and accurately the service was performed. Assurance was defined as the courtesy, knowledge, and trust of employees. Tangibles were related to the appearance of physical facilities and communication items.Empathy was defined as the offering of caring and attention to customers. Responsiveness referred to the extent to which a service firm displayed a willingness to help and provide timely service to customers. The authors of the study defined as the comparison of a consumer's evaluation of the service performance to his/her pre-expectation of the service, known as the gap model.

Despite the popularity of the SERVQUAL model, researchers have criticized this model due to the lack of predictive validity and measurement reliability (Buttle, 1996; Cronin & Taylor, 1992), and researchers have recommended using a performance-only model by viewing service quality as an attitudinal construct (e.g., Cronin & Taylor, 1992; VanDyke, Kappelmen, &Prybutok, 1997).Empirically, Cronin and Taylor (1992) compared the performance-only measure with the gap model (SERVQUAL) and found that the performance-only measure was superior in all four industries (i.e., banking, pest control, dry cleaning, and fast food) to which a measurementwas applied.

With modified adoption of Oliver's (1980) disconfirmation paradigm, Grönroos (1984) proposed a two-dimensional model that included technical quality and functional quality (Nordic Model). Technical quality was defined as the outcomes of the service, which reflects tangible aspects. Grönroos (2005) elaborated that technical quality "… is what the customer is left with, when the service production process and its buyer-sellerinteractions are over" (p. 63). Functional quality was related to intangible aspects, such as the consumers' perception as to how the service was delivered. The uniqueness of Grönroos'theory was the recognition, inclusion, and emphasis of the technical quality aspect, where key service elements were specified. As an important aspect when defining a service, functional quality is the interaction between the service provider and the customer that takes place while the service is delivered (Brady & Cronin, 2001). McDougall and Levesque (2000) used the term 'relational quality' as they defined the functional quality while taking into consideration the interaction aspect of the service. In sport and leisure management, numerous researchers adopted theGrönroos' two-dimension model (e.g., Byon et al., 2010; Ko et al., 2011; Lam et al., 2005

Although the aforementioned scales greatly contributed to our understanding of how service is perceived by sport spectators, a mere adoption of the scales without taking into consideration the crucial service points associated with the Special Olympics may lead to a service failure due to differences between non-disability spectator sports and disability spectator sports in terms of the environment, nature, participants, and stakeholders.Service quality is operationalized in the current study as a consumer's perception of service performance received by the customers (constituents participating in the Special OlympicsWorld Winter Games in PyeongChang). In the following section,

detailed descriptions of various service encounters relevant to the Special Olympics World Games are discussed.

3. Conceptual Framework

Cottingham et al (2014) noted that a majority of wheelchair basketball spectators had a direct relationship to disability (including a close friend or family member with disabilities). It would stand to reason that this event would similarly attract spectators who have a direct relationship to intellectual disability. Disability sports is still a distinct market segment with a narrow but growing fan base who are related to disabilities (Cottingham, Chatfield, Gearity, Allen, & Hall, 2012; Ekmekci, Berber, Zaharia, & Turco, 2013;Evaggelinou&Grekinls, 1998). Support structures have been influential in sport service delivery. Additionally, the following factors have been shown to be critical to the lived experiences of individuals with disabilities and their friends.

3.1 Registration Process

Presumably, many of those who are registering for this event provide services, support, or have a direct connection to those with intellectual disabilities. Registration is often a time consuming process, and it can be challenging for registrants and the individuals with intellectual disabilities. Harris (2006) notes that individuals with intellectual disabilities may have shorter attention span than those without intellectual disabilities. Furthermore, Hassall, Rose, and McDonald (2005) explain that the additional time activities take inflicts stress on the familial support systems of individuals with intellectual disabilities. Consequently, a systematic registration process would be more ideal for individuals with intellectual disabilities and those in their support systems.

3.2 Transportation

Yamaki and Fujiura (2002) found that transportation was one of the most influential factors for individuals with intellectual disabilities and their participation in sport; in fact, it can affect numerous aspects of their lives. Factors such as timeliness of transportation and crowds can be high stressors for people with intellectual disabilities (Bramston, Fogarty, & Cummins, 1999), and by extension, their support systems attending the events are included as primary factors measured in this scale.

3.3 Accessibility

Accessibility includes various sporting event area features, such as parking, seats, restrooms, and concessions. Accessibility is an important aspect of service quality because sport fans simply have high expectations for these features. Scholars have found a positive relationship between accessibility and service quality perception, re-attendance intention (Kelly & Turley, 2001), and consumption behaviors (Byon et al., 2013).

As some of the spectators had intellectual disabilities and many of the others provided support or had relationships with intellectual disabilities, the items used to address accessibility had specific pertinent application. Ease of processing and systematic access to restrooms and parking, for example, are highly important when assisting an individual with intellectual disabilities. In the current study, accessibility was operationalized to include the following attributes: ease of entrance, parking convenience, good seats, restroom availability, food/drink courts, and arena access.

3.4 Staff

Providing staffing for a population of individuals with intellectual disabilities is rewarding but also constitutes unique challenges regarding understanding special considerations related to disability (Hatton et al., 1999). Individuals with intellectual disabilities, their families, and support systems are

highly concerned with whether or norstaffsare informed about and sensitive enough to help and support the unique groups of audiences (Mansell &Beadle-Brown, 2004). Having appropriately staffed events would be presumably of serious emphasis to those who have a relationship to intellectual disability.

3.5 Food Services

Although specific literature dealing with food services with regards to Special Olympics has not been identified,food services should be an integral aspect for constituents of Special OlympicsWorld Games. Findings of several empirical studies have indicated there is a positive relationship between food services and overall satisfaction. For example, Kelly and Turley (2001) found that concession services werepositively related to college basketball game attendance, suggesting providing good food services is crucial factor in a sport event. We believe this would be the same case for stakeholders' in Special Olympic World Games.

4. Method

4.1 Context, Participants, and Data Collection Procedures

Every two years,thousands of Special Olympics World Gamesathletes from countries all over the world congregate to display their athletic ability and celebrate the spirit of the Special Olympics. The 2013 Special OlympicsWorld Winter Games was the largest winter sporting event in Korea to date with more than 110 nations represented by athletes who competed in seven Olympic-type winter sports. In this event, approximately 3,300 athletes and coaches representing 113 countries as well as over 15,000 various constituents (e.g., family members, friends, volunteers, and spectators)gathered in PyeongChang for the 2013 Special OlympicsWorld Winter Games.

4.2 Survey Instruments and Procedures

Following the performance-only measure (Cronin & Taylor, 1992), service performance was assessed in the current study.A total of 32 items relevant various service attributes were developed based on the following procedures: (a) extensive review of literature in service marketing, (b) multiple observations of Special Olympics venues, and (c) interviews with staff members of Special Olympics World Winter Games. The service performance included five sub-dimensions:(a) registration, (b) transportation, (c) accommodation, (d) staff, and (e) food services. Each item was based on a 5-point Likert scale anchored from "strongly disagree" to "strongly agree".The second part contains demographics questions such as gender, education, ethnicity, constituent group, profession, and current residence as well as some behavioral information such as the usage of social media services and the most memorable moment at the games.

A preliminary questionnaire was sent to a panel of expert that included three event organizers working for the 2013 PyeongChang Special OlympicsWorld Winter Games for content validity. The panel members were asked to provide feedback with regards to survey items' clarity and representativeness. Minor comments pertaining wording and grammatical issues were provided, and the correction was subsequently incorporated into the final survey questionnaire.

Two versions (i.e., English and Korean) of the questionnaire via back-translation were developed and distributed to respondents. A total of 15 survey crews were recruited for this current study (14 were graduate or undergraduate sport industry and management major students at a major university in Korea and one was a Special Olympics Southern California staff). The researchers organized the orientation before the event to make sure every survey crew understood their roles and responsibilities with regards to the process of data collection. Then, survey crews were sent various event locations and venues, including the Gangneung Ice Rink, Gangneung Sports Center, Gangneung Indoor Sports Center, Gangneung Inline Skating Rink, GangneungWonju National University, Kwandong University Sports Center, Yongpyong Ski Resort, Yongpyong Dome and Alpensia Resort

to obtain reliable opinions and/or voices from 12 different groups. A total of 462 participants successfully completed survey instruments and their status were divided into the following 12 constituent groups: athletes, coaches, head of delegation, Torch run participants, honored guests, officials, youth summit groups, sponsors, family, volunteers, media, and spectators. The majority of participants were Asian (64%) and Caucasian (30.0%). Around 80% had some college education experiences or even further higher educational degrees. Among social media services, Facebook was used as the most popular social media tool.A majority of participants (82.0%) reported that they used Facebook at least once a week.

4.3 Data Analyses

The total of 462 was randomly split into two sets. The first data set (n = 230) was employedto conductexploratory factor analysis (EFA) and the second set (n = 232) was used for confirmatory factor analysis (CFA). To examine the equality of the mean score for all service attributes (32 items), independent sample t-test was conducted.Procedures in the PAWS version 20.0 were used to calculate descriptive statistics for sociodemographic,service attributes, execute the EFA, and calculate reliability coefficients.

The primary purpose of the EFA was to identify a simple factor structure from a sample of variables, so as to reduce any redundant data. Following an EFA, internal consistency reliability was examined by calculating the Cronbach's alpha coefficients for the identified factors (> .70; Cronbach, 1951). In the EFA, principal axis factoring with direct oblimin rotation was used. The following were used for factor and item retaining criteria: (a) a factor had an eigenvalue equal to or greater than 1.0 (Kaiser, 1974), (b) an item had a factor loading equal to or greater than .40 (Nunnally& Bernstein, 1994), (c) item should not be double loaded, and (d) a factor had at least two items (Hair, Black, Babin, &Anderson,2010). The scree plot test was also used to help make a decision on the factor retention (Cattell, 1966).

AMOS version 22 were used for conducting the CFA with maximum likelihood (ML) estimation for the retained factorsand items resolved from EFA (Gerbing& Hamilton, 1996). Following Hair et al.'s(2010) suggestion, multiple fit indices were adopted to assess model fit: (a) chi-square statistic (χ^2), (b) normed chi-square (χ^2/df, < 3.0; Bollen, 1989), (c) root mean square error of approximation (RMSEA, < .08; Hair et al., 2010), and(d) comparative fit index (CFI, > .90; Hair et al., 2010).

Convergent validity was assessed via statistical significance, magnitude of factor loading, and AVE value (>.50; Fornell&Larcker, 1981). Additionally, discriminant validity was examined through interfactor correlation (< .85; Kline, 2010) and Fornelland Larcker's (1981) method, in which AVE value for any of construct should be higher than squared correlation between two constructs.

Construct reliability (CR, > .70; Fornell&Larcker, 1981), and average variance extracted (AVE; > .50; Bagozzi& Yi, 1988; Fornell&Larcker, 1981)wereemployed to measure the reliability of the factors.

Finally, we conducted factorial invariance to examine factor stability across gender. There were two primary reasons to test invariance using gender: (a) first, in service literature, it is noted that service quality perception is different between male and female (e.g., Mattila, Grandey, & Fisk, 2003; McColl-Kennedy, Daus, & Sparks, 2003; Snipes, Thomson, & Oswald, 2006). Thus, demonstrating invariance in the tested model is important because mere comparison of groups without imposing equality constraints for the parameters may provide biased results. Schmitt and Kuljanin (2008) argued that "unless measurement invariance is established, conducting cross-group comparisons of mean differences or other structural parameters is meaningless" (p. 210). In addition, Byrne (2009) suggested "sometimes the null hypothesis is found to be tenable, yet subsequent tests of hypotheses related to the equivalence of particular measurement must be rejected" (p. 199). Second, there may besome other variables that could be served as boundary conditions (e.g., different constituents, prior experience, etc). However, sample size only permitted us to use gender to test the invariance test of the scale.

5. Results

5.1 Exploratory Factor Analyses

In this study, data were randomly split into two sets. To verify the equality of the mean score for all service attributes(32 items) across the two data sets, an independent sample t-test was conducted, resulting in no statistical mean differences for the itemsbetween the two groups (p> .05). An EFA was conducted for identifying a simple structure among the service items (Stevens, 1996). In the EFA, six factors emerged with 29out of 32 itemsmeeting the retention criteria, explaining a total of 59.69% variance among the variables. The three items (i.e., welcome guest information (double loading, low factor loading), ease of entrance to venues (only item loaded on a factor), ease of booking hotel (double loading, low factor loading) did not meet one or more retention criteria, which were eliminated from subsequent analyses.

Another EFA was conducted with the 29 items. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy value was .911, exceeding the threshold value of .70, indicating that the degree of common variance was satisfactory (Kaiser, 1974). Bartlett's Test of Sphericity (BTS) was 3572.597 (p <.001), indicating that sufficient correlation among items exist. The results of KMO and BTS indicated that the sample size and correlation among the 29 items were adequate for a factor analysis. In the EFA, five factors emerged with 29 items, explaining a total of 64.02% variance. The scree plot test also suggested that a six-factor model was most appropriate and interpretable. The five factors were labeled as follows: (a) Registration Process (6 items), (b) Accessibility (7 items), (c) Transportation (4 items), (d) Accommodation (6 items), and (e) Food Services. The results of the rotated pattern matrix are presented in Table 1.

Table 1: Factor Pattern Matrix for the Service Attributes(n = 230)

	F1	F2	F3	F4	F5
Registration (6 items)					
Ease of Registration	.77				
Timeliness of registration processing & confirmation	.79				
Clear communication of information before arriving in Korea	.84				
Airport arrival and information center	.53				
Credentialing process	.42				
Pre-game information	.75				
Transportation (4 items)					
Amount of information (e.g., bus stop, shuttle)		.70			
Shuttle bus service		.76			
Safety while on the bus		.72			
Shuttle schedule was timely		.82			
Accommodation (6 items)					
Availability of accommodation options			.49		
The distance to the hotels			.42		
The cleanliness of the accommodation			.73		
Comfort of the accommodation			.82		
Courtesy of the staff in the accommodation			.75		
Services in the accommodation			.80		
Staff (7 items)					
Staff courtesy				.74	
Staff knowledge of Special Olympics				.67	
Enforcement of credential access by staff				.63	
Staff knowledge of the event information				.65	
Interaction with Games volunteers				.76	
Language Services				.51	
Clear Signage provided by staff				.55	
Food Services (6 items)					
Food/drink concessions					.64
Distance to the concessions					.65

	F1	F2	F3	F4	F5
Cleanliness of cafeteria					.71
Food/drink quality					.82
Availability of healthy food options					.77
Services in the cafeteria					.62

Note. F1: Registration, F2 = Transportation, F3: Accommodation, F4: Staff, F5: Food Services

The five Alpha coefficients for the factors were .85 (Registration Process), 88 (Accessibility), 87 (Transportation), .86 (Accommodation), and 83 (Food Services), exceeding the suggested criterion (Cronbach, 1951). The results of the reliability test indicated that items representing factors were all internally consistent. Only items that were retained in the EFA (29 items) were included in the subsequent CFA and invariance test.

5.2 Confirmatory Factor Analysis

Prior to conducting CFA, assumptions associated with CFA were checked thatincluded data normality and outliers. Data normality was checked via skewness (< 3.0) and kurtosis (< 3.0). All skewness and kurtosis values for the 29 items were well within the acceptable threshold, ranging from .27 to 1.15. The MahalanobisD^2 values were calculated via AMOS to identify the multivariate outliers. As a result, no multivariate outliers were detected. These results indicate that proceeding to CFA was proper.

The second data set (n = 232), which contained 29 items under five factors, was submitted to a CFA with ML estimation (Hair et al., 2010). Goodness of fit indexes revealed that the measurement model fit the data well. The chi-square statistic was significant ($\chi^2_{(390)} = 915.246$, $p < .001$), indicating that the hypothesized model and the observed model had a statistically significant difference. Because chi-square value is known to be sensitive to sample size (Kline, 2010), alternative fit indices were further examined, including the normed chi-square, RMSEA, and CFI. The normed chi-square (χ^2/df = 2.35) met the suggested cut-off value (i.e., < 3.0). The RMSEA was .77, indicating adequate, and CFI value of .92, which was above the suggested criterion (>.90).

Convergent validity was established in this study as all the item loadings were allstatistically significant at an alpha level of .001, ranging from .54 to .84. In addition, AVE value of all the constructs exceeded the suggested criterion of .50 (Fornell and Larcker, 1981). Discriminant validity was satisfied in the five-factor model as no inter-factor correlations were above .85, ranging from .43 (between Registration and Food Services) to .68 (between Registration and Accessibility). Further evidence of discriminant validity was found, in which all squared correlations were less than AVE value for each construct (Fornell&Larcker, 1981).

Table 2: Indicator Loadings,Composite Reliability, AverageVarianceExtracted for the Service Attributes (n = 231)

Variables	Indicator Loadings	Composite Reliability	Average Variance Extracted
Registration (6 items)		.87	.53
Ease of Registration	.81		
Timeliness of registration processing & confirmation	.84		
Clear communication of information before arriving in Korea	.80		
Airport arrival and information center	.61		
Credentialing process	.54		
Pre-game information	.75		
Transportation (4 items)		.89	.66
Amount of information (e.g., bus stop, shuttle)	.78		
Shuttle bus service	.82		
Safety while on the bus	.76		
Shuttle schedule was timely	.84		

Variables	Indicator Loadings	Composite Reliability	Average Variance Extracted
Accommodation (6 items)		.88	.50
Availability of accommodation options	.68		
The distance to the hotels	.69		
The cleanliness of the accommodation	.69		
Comfort of the accommodation	.74		
Courtesy of the staff in the accommodation	.72		
Services available in the accommodation	.81		
Staff (7 items)		.88	.52
Staff courtesy	.62		
Staff knowledge of Special Olympics	.79		
Enforcement of credential access by staff	.75		
Staff knowledge of the event information	.84		
Interaction with Games volunteers	.68		
Language services	.69		
Clear signage provided by staff	.79		
Food Services (6 items)		.85	.50
Food/drink concessions	.61		
Distance to the concessions	.70		
Cleanliness of cafeteria	.76		
Food/drink quality	.69		
Availability of healthy food options	.74		
Services in the cafeteria	.71		

The CR values and AVE for the five dimensions were above the suggested value of .70 (CR) and .50 (AVE) and as follows: (a) Registration Process (CR: .87, AVE: .53), (b) Accessibility (CR: .88, AVE: .52), (c) Transportation (CR: .89, AVE: .66),(d) Accommodation (CR: .88, AVE: .50), and (e) Food Services (CR: .85, AVE: .50). Based on the overall information of reliability, the five factors were deemed reliable.

5.3 Measurement Invariance

According to Meredith (1993), establishing configural invariance (i.e., unconstrained model, in which no equality constraints are imposed on any parameters) and metric invariance (i.e., having equivalent factor loadings across groups) is a minimum requirement for further use of the scale/model (e.g., group difference test, test for association). Configural and metric invariance test were conducted across gender via AMOS 18.

First, configural invariance test was conducted. Overall model fit was good ($\chi^2_{(798)}$= 1590.86, χ^2/df = 1. 99, RMSEA = .066(CI = .062 - .071), and CFI = .91, which was interpreted that the configural invariance was established. To assess metric invariance, we adopted Jőreskog's (1971) χ^2difference test. For the χ^2difference test, evidence of invariance is established if the difference is not statistically significant. Having satisfied the configural model, it was appropriate to proceed with examining the metric invariance. The constrained model also fit the data well, $\chi^2_{(821)}$= 1618.58, CFI = .91, and RMSEA = .066 (CI = .061 - .070). The χ^2difference test was not significant, $\Delta\chi^2_{(23)}$= 27.73, p > .05. The results indicated that factor loadings across male and female were equivalent, demonstrating the invariance the measurement model.

As a result of the EFA, CFA, convergent, discriminant validity test, reliability test, and model invariance test (across gender), the five-factor model with 29 items was found to be an adequate model, pending further validation, measuring service attributes associated with the Special Olympics.

6. Discussion

Despite the increased attention to understanding the stakeholders' perception associated with service deliveries of the Special OlympicsWorld Winter Games, a quality instrument was not available. In response to this need, the current study was designed to assess psychometric properties related to the service quality dimensions with regard to the Special OlympicsWorld Games. In sum, 29 items under five factors were derived through following the performance-only paradigm (Cronin & Taylor, 1992) and various psychometric testing proceduresas the theoretical and empirical guidelines, respectively.

This study makes significant contributions to the literature in three different ways.

First, this study systematically assessed stakeholders'perceptions towards service quality of the Special OlympicsWorld Games. When developing items, the authors not only took into consideration the unique aspects that were related to Special Olympics, but also, items were generated through observations of the nine event facilities and interviews with the event organizers, ensuring construct validity and ecological validity (Stevens, 1996).The findings have reinforced the importance of these five factors in the planning, preparation, and operation of a Special OlympicsWorld Games. While making efforts to maintain and improve delivery quality of these five functional areas, the Special Olympics World Games organizers may highlight their quality and efficiency in marketing campaigns through such procedures as printed materials, broadcasted messages, and on-line information. In addition, the five resolved factors have implications for job classification, work duties, and human resource recruitment, placement, and training. Work forces and job duties may be organized, departmentalized, and coordinated according to the five-factor structure identified in this study. Within each dimension of the five factors, there were inherent relationships; thus, activities within a dimension also define the job span for event organizers (e.g., employees, volunteers, and other supporting units). The Special Olympics World Games organizers need to prepare well for the programs and activities under the five dimensions in an effort to achieve sustained success in event operations.

Secondly, past studies on sport service were generally limited in the generalizability of the findings due to the partial sample composition in nature (e.g., students or only spectators from a single game; Ko&Pastore, 2005; Papadimitriou &Karteroliotis, 2000).We successfully addressed the void in the literature by sampling a total of 12 constituents associated with the Special Olympics World Winter Games. Although it is true that event venues in other hosting country have their uniqueness in architectural designs, the 12 constituents sampled in this study are identical in any Special Olympics World Games. Thus, findings of the current study could be generalizable to the other Special Olympics World Games setting, enhancing the scale's external validity.

Thirdly, unlike past studies, which assessed customers' service perception based on post-event recall(e.g., Byon et al., 2010), where respondents might have had a difficult time to clearly distinguish the service delivered, the current study recruited respondents during the event that enables respondents clearly to recall various service encounters during the Special Olympics World Games to avoid potential memory loss bias.

Having a valid instrument that allows event organizers to specifically identify areas where improvement is needed is critical in elevating the sustainability of the event (Greenwell et al., 2002). Sport managers conduct periodic assessment of their peripheral service areas to examine whether or not the services are adequately delivered in the hand and mind of customers. In this regard, the findings of current study provided a reliable measure for the Special Olympics World Games organizers as they evaluate the stakeholders' perception of service provision during the event.

6.1 Practical Implications

This scale provides academic value but has a direct applied benefit to practitioners. First and foremost, the scale can most directly be applied to measuring the effectiveness of sporting events provided to participants with intellectual disabilities. This scale can function similarly to the Motivation Scale for Disability Sport Consumption (MSDSC; Cottingham et al., 2014) functions as a scale used to measure consumption behavior and to measure the experience of spectators.

In addition, this scale enables practitioners tounderstandthe consumptive behavior of individuals with intellectual disabilities and those who support them. The reality is, research notes that consumers with disabilities have unique experiences that are quite different from their counterparts without disabilities (Grady & Ohlin, 2006). Because collecting data from individuals with disabilities in large enough numbers to validate a study is challenging, a significant portion of research is conventional or relates to application of services for people with disabilities (Grady & Ohlin, 2009; McMillen&Majoney, 2011). Our study provides a validated instrument to understand the consumption experiences of individuals with intellectual disabilities and their support systems. This instrument could be used with smaller samples by sport organizations to determine what factors are most important to consumers with intellectual disabilities and those with whom they travel.

The importance of the service quality on event management and operations of the Special Olympics World Games cannot be overstated mainly due to the fact that the target people are athletes with disabilities and their families. As such, the researchers had undergone an extensive training prior to the data collection process in order to ensure sensitivity to all participants involved. With an innocent yet offensive mistake made by untrained research staff, the entire project could have faced a risk of non-response or non-participation from the subjects. Throughout the whole procedures, every research staff had to practice caution, patience, and compassion towards the athletes with disabilities. Since the opportunity to interact with and study hard-to-access participants was deeply attractive, the researchers made certain that the experiences for every constituent involved were safe, comforting, and rewarding.

Special Olympics World Games participants come from everywhere, as evidenced by the 2013 PyeongChang Special Olympics World Winter Games. Yet, young people with intellectual disabilities are visually and somewhat purposefully encapsulatedfrom the societies we live in today by the parents and families. Such protection may stem from a fear that their children may get their feelings hurt by social indifference or a sheer uncomfortableness of admitting the disability in the family publicly. Whatever the reason may be, nearly 4 million Special Olympics World Games athletes around the world and the millions more with disabilities who do not have the privilege or access to playing sports at all are an enormous population. These special young men and women with disabilities require special attention and care. As the intellectual world aspires to study and ameliorate the lives of this extraordinary group of people, it is only appropriate that they utilize a special set of research design and instruments. In that regard, the practical implication of this study is just a small yet powerful step toward achieving a better world for all.

Perhaps, the greatest reward of this study was the emotional roller-coaster that every researcher experienced throughout the study, particularly when working with the Special Olympics World Games athletes. The research team as a whole struggled at times to hold back a tear or two when they watched the athletes give everything they had just to finish the race. For the athletes and families, the joy of participation was more profound at the Special Olympics World Games than any other sporting event seen on TV or witnessed live. Almost every moment at these Games was a sheer inspiration for all. That, in it self, may be the greatest practical implication, if not benefit, for the global research community striving to seek answers to the questions we live with every day.

6.2 Limitations and Future Studies

As with other research, this study has several limitations. Although we demonstrated the validity of the measure used in this study, the data still were collected from one Special OlympicsWorld Games. Thus, a continued effort in collecting more data from other Special Olympics World Games or a similar size of disability sporting event needs to be conducted to test for external validity (i.e., generalizability) of the factor structure.Another validity that needs to be established for the measure used is criterion validity. Although researchers found that peripheral service quality can explicate affective (e.g., satisfaction; Greenwell et al., 2002) and behavioral variables (e.g., game attendance,

word-of-mouth; Yoshida & James, 2010), this study did not examine the criterion validity. Thus, future studies should investigate this aspect to further enhance validity of the measure.

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