Contemporary Management Research
Pages 275-288, Vol. 12, No. 3, September 2016
doi:10.7903/cmr.15852

Relationships among Service Quality, Value, and Student Athlete Satisfaction at Taiwan's National Tug of War Competition

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ABSTRACT

Service quality has been extensively used to improve corporate performance in business; however, few studies have applied this concept to the sports field. In Taiwan, students' sporting events play an important role in national sports development as they are the main channels in which to incubate elite athletes and a way to develop professional experiences related to holding mega-sports events. Therefore, the main purpose of this study is the application of the service quality concept to sports events. Specifically, a model was proposed to examine the relationships among service quality, perceived value, and satisfaction. Self-administered questionnaire surveys were completed by 356 student athletes recruited from the 2013 National Tug of War Competition in Taiwan. The data were analyzed using structural equation modeling with LISREL 8.52. Results of this study indicated that the research model fit the data well. Participants' overall satisfaction was directly influenced primarily by perception of event value, followed by staff service quality and interaction service quality; finally, the perceived event value served as a mediator, and significant indirect effects on participants' satisfaction were found in administrative service quality and facility service quality. The study established a model including service quality, value, and

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satisfaction for tug of war competitions. Suggestions for sports organizers and implications for future studies are provided.

Keywords: Service Quality; Perceived Event Value, Satisfaction, Tug of War Competitions

INTRODUCTION

Tug of war is a relatively new sport in Taiwan compared to sports such as track and field, baseball, and basketball. The country's formal tug of war competition started in 1997 (Lee & Hsieh, 2011), and the sport has been promoted by Taiwan's Ministry of Education since the early 1990s due to its traditional teamwork spirit and its basic skill requirements. With the government's support, the Chinese Taipei Tug of War Association has made strong efforts to introduce these competitions at all school levels and to hold competition events for students. As a result, the sport has become increasingly popular at all school levels, and Taiwanese athletes have won the World Championship several times. Students' sporting events play an important role in the country. They are the main channel for incubating elite athletes, and they are a way to develop knowledge about holding even larger sporting events. There are six major national sporting events in Taiwan, and two of them are held for student athletes. Therefore, there is a need to understand the quality of sporting events for student athletes.

In the sports business, products or services are classified as core products and extension products (Li, Hofacre, & Mahony, 2001; Mullin, Hardy, & Sutton, 2016). Core sports products include (1) consumer participation in exercises or recreational or professional competition; and (2) spectators attending sports events and watching performances. Extension sport products depend on the existence of core products. For example, athletic shoes, apparel, sporting equipment, and coaching services are a consequence of people participating in sports, and sports-related broadcasting, marketing service, news, souvenirs, lottery, and online fantasy games are extension products of spectatorship. Therefore, core sport products are key factors in the success of the sports business, and a sporting event can generate these two core sports products.

The success of a sporting event is determined by the degree to which it satisfies participants/athletes and spectators/fans with quality service (Ko, Kim, Kim, & Lee, 2010). This study focuses on participation—specifically, on athletes in a sporting event—because it is crucial to the event's success. For example, Venus Williams, a leading female tennis player, first participated in the WTA Taiwan Open in 2016. Her

participation drew on average around 1,500 fans per day, which is two to three times more spectators than the previous year (Zeng, 2016). Williams was happy with her experience at the Taiwan Open and promised that she would attempt to convince her sister, Serena Williams, the highest ranked player in the world, to participate in the Taiwan Open the following year (Peng, 2016). What satisfies players or athletes and motivates them to participate in a sporting event? From a participant's point of view, service quality of a sporting event includes professional and well-organized competition settings, judges, schedules, staff, and other logistics. These factors influence a participant's perceived value of the event and the amount of time, money, and effort he or she is willing to expend to prepare for and take part in the event. Eventually, the service quality and value that an athlete perceives from the event may influence the participant's satisfaction and willingness to appear in future editions or promote the event. This study attempts to address specific service factors, degree of influence on service value and satisfaction, and the impact of demographic variables for a sporting event.

The main purpose of this study is to discern, among several service factors in a sporting event, which factors have the most significant influence on participants' perceived value and satisfaction. The study will also identify a path model among service quality, perception, and satisfaction. By setting a path model, moderation effects will be examined by gender, level, and experience.

LITERATURE REVIEW

Service quality has been used to improve corporate performance in businesses, such as in the retail, hotel, bank, and transportation industries. The SERVQUAL model proposed by Parasuraman, Zeithaml, and Berry (1988) is the most well-known and popular service quality concept in this field. It contains five service factors: tangibles, reliability, responsiveness, assurance, and empathy. However, studies have also found that the SERVQUAL model may not fit all types of businesses, and service factors can differ according to different industries (Cronholm & Salomonson, 2014; Parasuraman & Grewal, 2000). The discussion of service quality's influence on participation sports is relatively recent. Studies on sports events in Taiwan have found that major service quality includes special events, interaction, experience, environment, and information (Chen, Tsai, & Ye, 2014; Yang, Tsai, & Lin, 2014). Recent studies focusing on student athletes indicated that service factors may include the staff, facility, judges, experience, administration, information, procedure, and medical service (Lee, 2008; Lee & Hsieh, 2011; Lee & Hsieh, 2015).

Perceived product or service value is a subjective perception that the consumer assesses by noting an overall utility of a product or service based on what is received and what is given (Petrick, 2002; Tu, Li, & Chih, 2013). Value is also an influential factor that leads to product- or service-purchasing and referral behaviors. Zeithaml (1988), the pioneer researcher of perceived value, defined four diverse meanings of value: (1) value is low price; (2) value is whatever one wants in a product; (3) value is the quality that the customer received for the price paid; and (4) value is what the customers get for what they give. Based on Zeithaml's definition, a common measure of a product's or service's perceived value was developed based on five factors: quality, emotional response, monetary price, behavioral price, and reputation (Hightower, Brady, & Baker, 2002; Petrick, 2002; Tu et al., 2013). Recent studies have explored participants' perceived value of a sporting event. One research evaluated perceived value based on esteem/escapism, economy, social, service, entertainment, and aesthetics of a sporting event (Musa & Kassim, 2013). Another utilized the aforementioned five factors of measurement to analyze a sport participant's perceived value (Lu, Lee, Tsai, & Lin, 2013; Yang et al., 2014).

Satisfaction, an important research area in business, is the consumer's overall feeling after using a product or accepting a service that leads to repurchase and referral intentions (Ledden, Kalafatis, & Mathioudakis, 2011; Suharto & Sulistiyono, 2015; Yu et al., 2014). The ways to measure a consumer's satisfaction are diverse. Some researchers have used a single-item model to understand a customer's overall satisfaction with a product or service (Bigne, Sanchez, & Sanchez, 2001; Suharto & Sulistiyono, 2015), and others have suggested multi-dimensional measurements to evaluate satisfaction (Ko et al., 2010; Millan & Esteban, 2004; Yu et al., 2014). Similarly, measures of sport participants' satisfaction with sporting events have also utilized either a single-item method (Chen et al., 2014; Lin, Chang, & Su, 2007; Murray & Howat, 2002; Tsuji, Bennett, & Zhang, 2007) or a multi-factor method (Yang et al., 2014; Yoshida & James, 2010). Nevertheless, the questions asked in multi-dimensional satisfaction scales are somewhat the same as questions asked in a service quality scale. For researchers to understand product or service quality and consumer satisfaction, the use of multi-factor satisfaction scales may cause an overestimated correlation between these two variables.

When discussing the relationships among service quality, perceived value, and satisfaction, researchers have suggested that corporations try to increase consumers' perceived value by promoting service quality, which leads to higher satisfaction (Bawa, Gupta, & Sharma, 2013; Ledden et al., 2011; Yu et al., 2014; Zeithaml, 1988). Past research in the business field has adopted service quality as a precedent to

perceived value and satisfaction as well as perceived value as a mediator between service quality and satisfaction (Chuang, Chen, & Chen, 2010; He & Li, 2011; Hightower et al., 2002; Ledden et al., 2011; Yu et al., 2014). Studies in sports have found that service quality positively influences both perceived value and satisfaction (Chen et al., 2014; Lee & Hsieh, 2011; Lin et al., 2007; Lu et al., 2013; Murray & Howat, 2002; Yang et al., 2014), perceived value positively influences satisfaction (Lin et al., 2007; Lu et al., 2013; Murray & Howat, 2002; Yang et al., 2014), and perceived value has a mediating effect (Lin et al., 2007; Murray & Howat, 2002). As a result, the study's conceptual model is presented in Figure 1. Bivariate correlations and the overall relationship model among the three variables have been analyzed in previous studies. However, the nature of service quality is multi-faceted, and a corporation may have more interest in finding key or influential service factors and different service reactions among different populations. Thus, the current study proposes the following hypotheses:

H_1: Service quality has a directly positive effect on perceived value.

H_2: Service quality has a directly positive effect on satisfaction.

H_3: Perceived value has a directly positive effect on satisfaction.

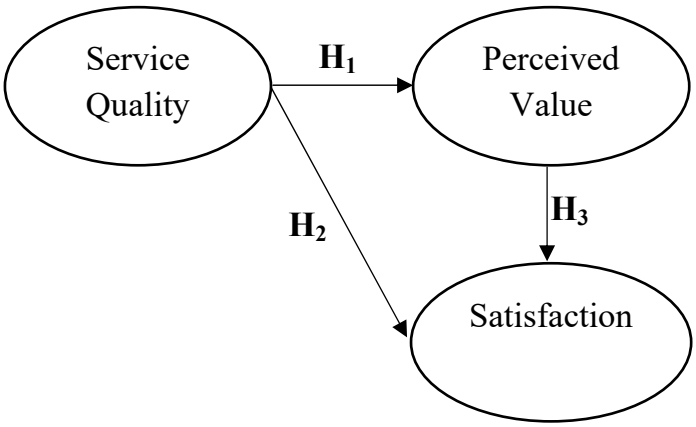

Figure 1 Conceptual Model of the Study

METHOD

Participants

The participants of this study were selected from the 2013 National Tug of War Competition. Student athletes were asked to fill out the questionnaires during a break in the competition. Four hundred questionnaires were distributed, and 356 (89%) were determined to be valid. Participants' mean age was 16.45 years old (SD = 2.24) and

most of them were male (74%), high school students (77%), in the division I level (69%), and not in their first experience participating in a competition (65%).

Measures

The event service quality scale was modified from Lee and Hsieh's (2011) study. The scale included 21 items and 7 services subscales (staff, facility, judge, experience, administration, information, and medication). A 1-factor and 5-item scale measuring student athletes' perception of the event's value was in accordance with previous research (Hightower et al., 2002). The student athletes' satisfaction was measured with reference to the concept of overall satisfaction (Murray & Howat, 2002). Five-point rating scales were used for all measurement scales.

Data Analysis

SPSS 17.0 was used for descriptive statistics and reliability analysis. LISREL 8.52 was utilized to conduct validity, structural model, and moderating effect analyses. The study used a backward selection method to identify influential event service factors. The insignificant path coefficients were then removed, starting with the lowest *t*-value score. The steps continued until all path coefficients in the model were significant. The study examined moderating effects by applying a multiple group analysis (Jaccard & Wan, 1996). The participants were divided into two groups based on their respective medians. Multiple group SEM analysis was used to identify the existence of moderating effects.

RESULTS

Validity and Reliability of Scales

Table 1 shows that the mean scores of event service items ranged from 3.36 to 4.02. The Experience Service subscale showed a highest mean score (M = 3.99) while the Facility Service subscale showed the lowest score (M = 3.52). The mean scores of perceived event value ranged from 3.76 to 3.88, and on average, participants' overall event satisfaction was 3.96.

Confirmatory factor analysis indicated that the measure model fit the data well ($\chi^2_{(271)} = 393.46$, $p < .05$, $\chi^2/df = 1.45$, RMSEA = .036, NNFI = .98, CFI = .98, SRMR = .045, GFI = .87, AGFI = .83). Convergent validity was evident as all factor loadings were significant ($p < .05$). The internal consistency reliability of the scales was high, with Cronbach's alpha ranging from .83 to .93. The AVE scores ranged from .66 to .72, also indicating good construct reliability.

Table 1 Descriptive Statistic, Validity, and Reliability of Measurement

Factor/Item	*M*	*SD*	λ	α	AVE
Event Service Quality Scale					
Staff	**3.93**	**0.78**		**.85**	**.66**
1. Staff are very friendly.	4.01	0.87	.75		
2. Staff respond to my requests promptly.	3.88	0.91	.84		
3. Staff are competent.	3.89	0.89	.84		
Facility	**3.52**	**1.02**		**.86**	**.67**
4. The event surrounding environment is visually appealing.	3.62	1.12	.81		
5. The stadium is well-designed.	3.36	1.24	.84		
6. This event has standard facilities and equipment.	3.56	1.11	.80		
Medical Support	**3.87**	**0.81**		**.86**	**.67**
7. Medical service and facilities are well-prepared.	3.81	0.97	.82		
8. Medical staff are professional.	3.90	0.89	.86		
9. Medical staff are friendly.	3.90	0.90	.77		
Judge	**3.84**	**0.90**		**.88**	**.72**
10. Judges are professional.	3.78	1.00	.82		
11. Judges are fair and impartial.	3.85	1.00	.91		
12. Competition rules are fair and reasonable.	3.89	1.00	.82		
Administration	**3.91**	**0.78**		**.83**	**.65**
13. Competition schedule is well controlled.	3.92	0.94	.66		
14. Easy registration procedure.	3.89	0.87	.82		
15. Check-in procedure is efficient.	3.91	0.89	.91		
Information	**3.79**	**0.83**		**.89**	**.72**
16. Easy to contact the organizer.	3.80	0.93	.85		
17. Easy to contact the organizer via its website's message board.	3.75	0.92	.85		
18. The website provides up-to-date information.	3.81	0.91	.85		
Interaction	**3.99**	**0.80**		**.87**	**.70**
19. I get to interact with other people	4.01	0.88	.89		
20. I get to meet up with other student athletes.	3.96	0.91	.86		
21. I have a great experience during the competition.	4.02	0.91	.75		
Perceived Event Value Scale				**.93**	**.72**
1. Quality of the event is reliable.	3.82	0.88	.84		
2. Participation in this event makes me feel happy.	3.88	0.94	.82		
3. The event is worthwhile to spend time.	3.80	0.96	.87		
4. All event services are cost-effective.	3.76	0.95	.81		
5. The event has a great reputation.	3.87	0.93	.89		
Overall Event Satisfaction	3.96	1.03	--	--	--

λ: factor loading; α: Chronbach's α; AVE: Average Variance Extracted

Baseline Model and Influential Service Factors

A structural equation model analysis was conducted to examine the relationship among service factors, perceived event value, and satisfaction. After deleting insignificant paths using the backward selection method, four service factors were retained in the model. The baseline model was found to fit the data well ($\chi^2_{(299)}$= 445.16, $p < .05$, $\chi^2/df = 1.49$, RMSEA = .037, NNFI = .98, CFI = .98, SRMR = .045, GFI = .86, AGFI = .82). Overall, the model explained 74% of the variances of perceived event value and 61% of event satisfaction. Participants' overall satisfaction was directly influenced primarily by their perception of event value (β = .57) followed by staff service quality (β = .14) and interaction service quality (β = .13). Perceived event value was explained by administrative service quality (β = .61) and facility service quality (β = .33). The perceived event value served as a mediator, and significant indirect effects on event satisfaction were found in administrative service quality (β = .35) and facility service quality (β = .19).

Table 2 Direct and Indirect Effects of Path Coefficients

Path	β	*t*
Direct Effect		
Perceived Event Value →Event Satisfaction	.57	7.84*
Staff→Event Satisfaction	.14	2.00*
Interaction→Event Satisfaction	.13	2.05*
Administration→Perceived Event Value	.61	8.75*
Facility→Perceived Event Value	.33	4.70*
Indirect Effect		
Administration→Event Satisfaction	.35	5.52*
Environment→Event Satisfaction	.19	4.01*

β: standardized path coefficient; * $p<.05$

Moderation Effect

Moderation effects were analyzed on the model path coefficient by gender, level, and participation experience. A two-sample structural equation model analysis was conducted. The baseline model was first established with model coefficients of two samples, all of which were estimated freely. A restricted model was then set, with two samples' path coefficients forced to be equal. If the inflation of the chi-square score was significant, the moderation effect existed by testing the variable. Table 3 shows that moderation effects were not found in the model by gender ($\Delta\chi^2 = 7.81$, $\Delta df = 5$, $p > .05$), level ($\Delta\chi^2 = 4.64$, $\Delta df = 5$, $p > .05$), or participation experience ($\Delta\chi^2 = 8.6$, $\Delta df = 5$, $p > .05$).

Table 3 Moderation Effect by Gender, Level, and Participation Experience

	Free Model		Restricted Model			
Moderator	χ^2	*df*	χ^2	*df*	$\Delta\chi^2$	Δdf
Gender	1501.29	598	1509.10	603	7.81 n.s.	5
Level[a]	1418.35	598	1422.99	603	4.64 n.s.	5
Experience[b]	1278.55	598	1287.15	603	8.60 n.s.	5

a. Level includes 2 groups: division I and division II

b. Experience includes 2 groups: low experience and high experience

n.s.: nonsignificant

DISCUSSION AND CONCLUSION

Discussions of individual factors' influences on service quality have been found in business research (He & Li, 2011; Ledden et al., 2011); however, it is a relatively new topic in the sports business field (Lee & Hsieh, 2015). Among seven service quality factors, significant influences were found in the model only in the factors of administration, facility, staff, and interaction. Participants' perceptions of events' value were explained by administration and facility service qualities, and overall event satisfaction was determined by perceived value, staff service quality, and interaction service quality. These results are different from the findings from Lee and Hsieh's (2015) study on Intercollegiate Athlete Games, in which the judge, facility, information, and medical support service qualities were found to be influential in the model. The reason may be that the Intercollegiate Athlete Games is a larger sporting event, which includes multi-sport competitions other than the National Tug of War Competition, which is a single-sport event. The discovery of facility service quality's important influence in sporting events is consistent with previous studies (Lee, 2008; Lee & Hsieh, 2015). However, administration service quality is more important than facility service quality for tug of war competitions in terms of impacting perceived value.

As with previous studies, perceived value is the most important factor influencing student athlete satisfaction (Lee & Hsieh, 2015). Dissimilarly, medication service quality is not found to be influential on satisfaction. Instead, for tug of war competitions, athletes' satisfaction can be affected by staff service quality and the quality of interaction with other athletes. This may be because interaction with event staff and other athletes occurs more often during these competitions.

The data in the current study indicated that perceived event value served as a mediator when explaining event participation satisfaction through administration and facility service qualities. Past research has found that perceived value has either a completely mediating effect (He & Li, 2011) or a partial mediation effect (Chuang et

al., 2010; Ledden et al., 2011) upon the explanation of satisfaction. The current study found that service factors explained satisfaction either with a complete mediation effect upon perceived value or without going through a mediator.

Past research has indicated that student athletes' perceived service quality can differ based upon demographic variables (Lee & Hsieh, 2011), and moderation effects may exist in the relationship among service quality, event value, and satisfaction (Lee & Hsieh, 2015). However, our study found no significant moderation effect on the model based on gender, level, or experience. Unlike Lee and Hsieh's (2015) study on the Intercollegiate Athlete Games, our student athletes were from a single sport (i.e., tug of war). It may be that the nature of these competitions or the fact that this is a relatively new sport in Taiwan accounts for the findings with no moderation effect.

Facility service quality is consistently and undoubtedly a key factor for sporting events. A tug of war event organizer should prepare a competition's ground surface and rope to meet the Tug of War International Federation's requirements so that student athletes are not injured and are able to adapt to the international competition settings. In addition, facilities in the preparation area, practice space, and resting rooms should also meet athletes' needs. A tug of war competition event regularly involves more than 6 levels, 90 teams, and 800 competitors. Unfriendly registration procedures, delays, and inefficient competition scheduling could hinder athlete performance. Therefore, the administration service quality is important for this sport. An organizer must focus on the schedule and procedure for registration, check-in, and competition sequence.

LIMITATIONS AND FUTURE STUDIES

The current study initially established a relationship model including service quality, value, and satisfaction for tug of war competitions. Measurements were adapted from previous studies; however, one item of the service quality scale might have resembled the concept of satisfaction or the content of service value, which might have inflated the relationship among variables. Longitudinal studies may be conducted in the future to examine the consistency of the model. Future researchers could conduct in-depth inquiries of participants for further understanding as to how and why these service qualities play such influential roles. As a result, organizers could establish more specific tactics to improve a tug of war event's quality.

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