

# Sport Website Interactivity Effects

## *An Analysis of the Relationships between Interactivity, Attitudes, and Intentions to Revisit*

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### **Abstract**

The purpose of this study was to examine the theoretical relationships between three dimensions of interactivity (i.e., active user control, two-way communication, and real-time information) and website effectiveness variables (i.e., attitudes toward the sport website and intentions to revisit). In addition, this study compared the proposed interactivity model with a rival model to identify the role of attitude as a mediating factor. The Structural Equation Modeling (SEM) analysis with a convenience sample of 235 participants revealed that the proposed interactivity model performed better and was more parsimonious than the rival model. The results also indicated that the variable relating to attitudes toward the sport website was a significant mediating element between the three dimensions of interactivity and intentions to revisit the sport website.

**Keywords:** *interactivity; sport websites; attitude; intention to revisit; SEM*

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Over the past few years, the importance of interactivity with a website has been increasingly emphasized by both practitioners and academicians, as they believe that interactivity plays a vital role in enticing website visitors and that it is a key component in measuring the success of a website (Jiang, Chan, Tan, & Chua, 2010; Suntornpithug & Khamalah, 2010). Interactivity in a website provides web visitors the functions of two-way communication and active user control, two functions that have not been available through traditional mass communication (Liu, 2003). Especially, the recent emergence of media technologies (e.g., weblogs, podcasts, live broadcasts, social networks, mobile applications) have been updated in many sport websites and those new media technologies have encouraged more interconnection between websites and sport fans (Loakimidis, 2010). For instance, not too long ago, ESPN began to offer its podcasting service for free in order to attract young, tech-savvy users (Ourand, 2009). Yahoo! Sports spent \$98 million for Rivals.com to strengthen its own website's interactive aspects through such endeavors as blogging and video streaming. In addition, Yahoo! Sports signed contracts with many sport and media organizations (e.g., National Football League, Major League Baseball Players Association, World Championship Sports Network, Turner Sports, Tennis Channel) to provide live video content. Furthermore, in order to compete with competitors such as ESPN.com and Yahoo! Sports, SI.com formed a partnership with social applications developer, Watercooler Inc., which facilitated its ability to offer a Facebook-based fantasy football game that can be played on both web (i.e., SI.com) and the SI mobile platforms (Fisher, 2010). However, such endeavors need to be increasingly focused on the wants and expectations of sports fans, because the success of websites and mobile initiatives depends largely on how customers recognize the quality of the interaction and the service received within the online environment (Rein, Kotler, & Shields, 2007; Zhang & Prybutok, 2005).

Therefore, many efforts have been made by scholars to identify interactivity dimensions as well as to improve the understanding of whether the interactivity functions can lead to a positive consequence regarding visitors' attitudes toward a website and their behavioral intentions to revisit a website (e.g., Ko, Cho, & Roberts, 2005; McMillan & Hwang, 2002; McMillan, Hwang, & Lee, 2003; Raney, 2006; Sicilia, Ruiz, & Munuera, 2005). For example, Liu (2003) developed a multidimensional interactivity scale, which displayed high levels of validity and reliability. The scale included three dimensions of interactivity (i.e., active control, two-way communication, and synchronicity). Liu's interactivity scale was utilized in another study (Chiang & Su, 2011), which explored the effects of interactivity on customers' preferences for online news. The results indicated that all three interactivity elements noted above were positively and significantly related to customers' attitudes and perceptions. However, the findings of previous studies were somewhat inconsistent. While some researchers found that website interactivity positively influenced consumer involvement (Cho & Leckenby, 1999), informa-

tion processing (Sicilia et al., 2005), and attitudes toward the website (McMillan, 2000), others revealed that interactivity did not show any significant effects (Bezjian, Calder, & Iacobucci, 1998) or was a negative contributor to user attitude (Sundar, 2004).

Such inconsistencies have triggered questions regarding the relationships between interactivity, attitudes, and intentions to revisit a website. In addition, although the importance of interactivity in a website has been well supported in previous literature (e.g., Chung & Zhao, 2004; Liu, 2003), little attention has been devoted to understanding its effects in the sport consumer behavior context. According to Hur, Ko, and Valacich (2011), the interactivity dimension is one of the important factors that should be considered when assessing the quality and success of sport websites. For instance, sport websites deliver numerous interactive components (e.g., real-time information, multimedia, voting poll, message boards, social media) to remain successful against competitors. These functions allow sport fans to select what they want and to stay in touch with other sport fans online (Seo, Green, Ko, Lee, & Schenewark, 2007). Furthermore, interactivity is expected to increase the frequency of visitors to sport websites as well as to foster more involvement and usage of sport websites (Hur et al., 2011). Consequently, interactive features might be one of the key elements on a sport website that can be used to cultivate and maintain positive customer relationships. Thus, it would be beneficial for both academicians and practitioners to more fully appreciate the importance of these functions in a sport website. Accordingly, the current study was designed to investigate whether the interactivity function on sport websites leads to positive outcomes. Specifically, this study examined how three major functions of interactivity (i.e., active user control, two-way communication, and real-time information) affect attitudes toward a sport website and intentions to revisit the sport website as well as identified the role of attitudes toward a sport website as a mediator. The following section presents a review of related literature regarding interactivity, major functions, and the relationships between interactivity, attitudes, and intentions to revisit.

## Literature Review

### Sport Website Categories and Interactivity

The phrase *sport website* refers to an Internet site that provides information on sports, sells sport products, and/or offers services related to sport (Caskey & Delpy, 1999). Furthermore, according to Caskey and Delpy, sport websites can be grouped into categories related to content websites, team or league websites, commerce websites, and gambling websites. Content websites are general sport Internet sites that gather and provide sporting information such as news, scores, and analyses of teams, players, and other sport industry stakeholders. Sport websites such as [espn.go.com](http://espn.go.com), [msn.foxsports.com](http://msn.foxsports.com), [sportsillustrated.cnn.com](http://sportsillustrated.cnn.com), [sports.yahoo.com](http://sports.yahoo.com), and [sportingnews.com](http://sportingnews.com) fit into this category. The team and league

website category represents the official websites of organized sport entities such as professional teams (e.g., [boston.redsox.mlb.com](http://boston.redsox.mlb.com)) and leagues (e.g., [WNBA.com](http://WNBA.com)). Such websites not only provide information about players, team records, and other statistics that enable fans to gain background knowledge of sport leagues (e.g., associations, conferences) and teams, but they also sell official merchandise and event tickets. The next category, commerce websites, involves those sport websites which are designed to sell sport-related products or services. Various sport industry websites (e.g., [adidas.com](http://adidas.com), [puma.com](http://puma.com), [callawaygolf.com](http://callawaygolf.com), [wilson.com](http://wilson.com), [teamarena.com](http://teamarena.com)) are included in this category. These websites not only provide information geared toward selling a product or service, but also provide a platform for companies to reveal, promote, and even improve their image or brand. For example, [nike.com](http://nike.com) provides information on the company's history, social responsibility engagement (e.g., The Nike Foundation), mission, news, e-newsletter, investor information, product technology information, customer service, employment opportunities, and annual reports on earnings. Sport gambling websites, the last category detailed by Caskey and Delpy, are focused on providing consumers with opportunities to bet on sporting events on the Internet (e.g., [sportsbook.ag](http://sportsbook.ag), [sports.bovada.lv](http://sports.bovada.lv), [topbet.edu](http://topbet.edu)).

Due to the dramatically increasing number of visitors to and revenue affiliated with sport websites over the past decade, both academicians and practitioners in the field of sport marketing have devoted much scholarly attention in an attempt to understand and exploit the marketing opportunities presented by the Internet (Hur, Ko, & Claussen, 2012; Seo & Green, 2008; Zhang & Won, 2010). While scholars have examined various aspects of sport websites, they are often investigating the content of sport websites, determining the motives behind consumers' visits to sport websites, and exploring the various technical functions of sport websites. For example, regarding scholars' interest in examining content, numerous content analyses have been conducted related to sport websites. Two of the earlier studies in this area were by Brown (2003) and McClung, Hardin, and Mondello (2004). Brown, in investigating whether professional baseball team websites provided traditional marketing mix content, found that most of the websites were mainly focused on product and place information. Among the various findings in McClung, Hardin, and Mondello's analysis of intercollegiate athletic websites, the researchers found significant differences in the marketing elements of programs in different divisions (i.e., the websites in the formerly named Division I-A provided significantly more marketing elements than did those in the formerly named Division I-AA).

Regarding scholars' interest in examining sport website consumer motivations, several studies have been published analyzing the various motives behind why sport fans visit sport websites. For example, Seo and Green (2008) suggested 10 motivational factors that lead sport fans to visit professional sport team websites. Their suggested factors included fanship, interpersonal communication, techni-

cal knowledge, fan expression, entertainment, economic, pass time, information, escape, and support. Another study by Hur, Ko, and Valacich (2007) proposed a conceptual model of five motivations (i.e., convenience, information, diversion, socialization, and economic motive) and four concerns (i.e., security and privacy, delivery, product quality, and customer service) for online sport consumers.

In comparison to the number of studies focused on sport website content and sport website consumer motivation, research examining the technical functions of sport websites has been somewhat limited and dated. For example, in a study of professional leagues, Milne and McDonald (1999) suggested two significant technical functions to evaluate sport websites: interactivity and functionality. They noted that interactivity included such aspects as graphics, activities, visuals, and online questions and that functionality consisted of elements such as ease of exploration, links to other sites, speed, and organizational structure. These two factors were significantly related with the overall impression of the websites, with interactivity accounting for most of the total variance. This finding implied that interactivity can be one of the critical factors in creating positive attitudes toward sport websites. Brown (2003) also referred to interactivity when noting that marketing in the sport industry “should ensure that their sites are constructed using elements that allow the visitor to interact with the organization.” The scholar added that in order to capitalize on the “potential interactive marketing, sites cannot be static, unidirectional suppliers of information” (p. 54). In the years following Brown’s suggestion, research has revealed that most sport websites have increased their offerings in terms of technical functions. For example, Ahn (2010) found that in a comparison across three years that the ESPN website had doubled its amount of technical functions related to interactivity including elements such as instant video clips, sport blogs, and online chats. While there have been numerous studies on various aspects of sport websites and scholars have pointed out the importance of interactivity functions on sport websites, because of the growth and influence of sport websites there is a need for a systematic examination of this topic in sport management.

### **Conceptualization and Dimensionality of Interactivity**

Interactivity has recently become a hot topic in several fields of study (e.g., advertising, communication, information systems, marketing) due to the explosion of usage and growth associated with the Internet and emerging technologies (Voorveld, Leijens, & Smit, 2011). Researchers over the past quarter century across various fields of study have defined the concept in different ways. In early studies dealing with the functionality websites, Rafaeli (1988) defined interactivity as “an expression of the extent that, in given series of communication exchanges, any third (or later) transmission (or message) is related to the degree to which previous exchanges referred to even earlier transmissions” (p. 111). Similarly, Williams, Rice, and Rogers (1988) defined interactivity as “the degree to which participants

in a communication process have control over, and can exchange roles in, their mutual discourse” (p. 10). These definitions focused on “two-way communication” systems from senders to receivers in mediated communication (Morris & Ogan, 1996). While the traditional mass communication model is limited to being a “one-to-many” communication method (e.g., radios, newspapers, TVs), with the Internet’s interactive functions (e.g., e-mails, group discussion boards, chat rooms) people are able to communicate through “two-way” and “many-to-many” channels (Hoffman & Novak, 1996). Liu and Shrum (2002) also defined interactivity as “the degree to which two or more communication parties can act on each other, on the communication medium, and on the messages and the degree to which such influences are synchronized” (p. 54) and identified three related components (i.e., two-way communication, synchronicity, and active control).

Furthermore, several recent researchers have stated that interactivity in computer-mediated communication cannot be explained by only a single component, but rather the concept can be explained through various underlying dimensions including two-way communication (Liu, 2003, McMillan & Hwang, 2002), active user control (Liu; McMillan & Hwang), and real-time information (McMillan & Hwang; McMillan, Hwang, & Lee, 2003). For example, interactivity functions in a website allow web visitors to control the preferences or types of information on a website, which is positively associated with reciprocal communication (Liu, 2003). In addition, synchronicity, which refers the speed of response, is also an important function within the online environment (Liu & Shrum, 2002). Based on this compound concept, Liu (2003) defined interactivity as “a communication that offers individuals active control and allows them to communicate both reciprocally and synchronously” (p. 208).

Among several different concepts of interactivity, previous studies have found that active user control, two-way communication, and real-time information are the three most important dimensions of interactivity (e.g., Chiang & Su, 2011; Liu, 2003; Liu & Shrum, 2002, McMillan & Hwang, 2002; Voorveld et al., 2011). Such dimensions of interactivity can also be found in sport websites.

**Active user control.** As noted by Liu and Shrum (2002), active user control refers to the “voluntary” actions that have a direct impact on the user’s experience. Thus, this dimension can be explained as volitional activities (i.e., selecting, adding, and modifying content) performed by users on a given website (McMillan & Hwang, 2002; Song & Zinkhan, 2008). Whereas users have little or no control over messages in traditional media, Internet users can have an abundance of choices to modify and control the messages they receive and send (Downes & McMillan, 2000; Voorveld et al., 2011). For example, website interactivity allows users the ability to perform select searches on the website through simply typing in key words into the search engine. Users can also add certain information as a favorite link, so that they can recall the specific information at will.

With sport websites, users are provided with various active user control functions. For instance, the front page of the Manchester United official website (i.e., manutd.com) provides seven different language options (i.e., English, French, Spanish, Chinese, Arabic, Japanese, and Korean) to attract and accommodate international users. Another example is that the users who choose to interact with the “My ESPN” window of ESPN’s website (i.e., espn.go.com) can receive personalized and customized information regarding inside information, specific game results, and breaking news.

**Two-way communication.** Two-way communication has had different names in previous studies including *reciprocal communication* (Ha & James, 1998), *responsiveness* (Heeter, 1989), *direction of communication* (Liu & Shrum, 2002), and *perceived personalization* (Wu, 2006). While this dimension goes by various names, the basic concepts are similar. In traditional media such as with magazine, radio, and television platforms, the users were unable to directly and immediately respond with their opinions regarding the advertisement messages they received from media. However, with Internet websites, users can communicate with others through various tools such as message boards, chat rooms, comment sections, affiliated social media/networking applications, bulletin boards, emails, and other electronic word-of-mouth opportunities. Therefore, companies can directly get feedback and comments from users via emails, forum posts, and message boards for their advertising.

Like in other websites, two-way communication plays an important role in sport websites. For example, two-way communication tools, such as forums and blogs, are utilized as platforms where sport fans can interact with other fans, sports journalists, and sometimes even athletes, administrators, and coaches. Question and answer venues and voting polls are often fun two-way communication tools with which sport fans are frequently engaged. Furthermore, a variety of fantasy sports leagues provided by major sport websites (e.g., espn.go.com, sports.yahoo.com, cbssports.com) are also good examples of two-way communication.

**Real-time information.** The simultaneous communication between users’ contributions to a communication and the responses they receive as a result of that communication is often referred to as real-time information (Liu & Shrum, 2002; Song & Zinkhan, 2008). Marketers can with relative ease understand what consumers want and need immediately from direct communication with consumers. With this electronic dialogue, it is expected that marketers can respond to their consumers faster than their competitors through the real-time information functions.

The speed of response can be an important concern for both sport marketers and users of sport websites. Sport website users need the ability to navigate through information quickly and easily with little or no delay. As a result, sport marketers and web developers put significant efforts toward providing and developing real-time information content on sport websites. Sites such as the *Sports*

*Illustrated* website (i.e., sportsillustrated.cnn.com) offer several real-time information functions, live scoreboards, multimedia videos, highlight video clips of games, live chats with other fans, up-to-the-minute photo galleries, and newly updated game schedules, which combined are expected to ultimately lead to increases in website user involvement.

### **Relationships among Interactivity, Attitude, and Intention to Revisit**

According to Katz (1960), attitude can be defined as “the predisposition of an individual to evaluate some symbol or object or aspect of his world in a favourable or unfavourable manner” (p. 168). Eagly and Chaiken (1993) conceptualized attitude as “psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor” (p. 1). The concept of attitude has been widely used in social psychology and marketing literature (Ajzen, 2008; Rodgers & Chen, 2002). For instance, Foxall, Goldsmith, and Brown (2002) mentioned that an understanding of consumers’ attitudes makes possible the ability to develop, promote, and evaluate those products most desired by consumers. Especially in Internet research, the concept of attitude plays a significant role by connecting how consumers feel about a certain website (e.g., attitude) and how they take action, such as their purchasing of products through the website (e.g., behavioral intention). Therefore, various researchers have made concentrated efforts to understand the evidence of positive correlations between attitude and behavioral intention in relation to websites. For example, several scholars have postulated that that attitude toward a website is positively related to behavioral intentions such as purchasing activities (Bruner & Kumar, 2000), revisit rates (Luo, 2002), and intentions to revisit to a website (Gao & Koufaris, 2006). According to Ko et al. (2005), consumers who have a positive attitude toward the brand associated with a website are more likely to have a high frequency of visits to that website. Furthermore, attitude toward the website played a mediating role between interaction and purchase intention. It is also assumed that if consumers visit a website more frequently, the possibility that they will click on advertisements and/or buy products on the website will increase. Similarly, Gao and Koufaris identified that there was a positive relationship between attitude toward the website and behavioral intention (e.g., purchase intention). In addition, the attitude toward the website was postulated to be a mediate variable between perceived information, entertainment, and irritation and intention to return to the website. Jiang and Benbasat (2007) also explored how the functional mechanisms such as interactivity and vividness affect consumers’ attitudes and intentions to purchase and return. Their findings showed that consumers’ attitudes positively affected their intentions to purchase products and to return to the website. Consequently, it is assumed that the understanding of consumers’ attitudes toward a website is a crucial part for predicting their potential behaviors. The following hypothesis was proposed:

H1: Attitudes toward a sport website will be positively associated with intentions to revisit.

Studies have also examined how the interactivity features on a website are evaluated and structured in the minds of users. For example, researchers have utilized several different factors to understand the effectiveness of a website related to the users' website satisfaction, duration of each visit, revisit rates, frequency of purchasing, attitudes toward a website, and intentions to revisit a website (e.g., Bezjian et al., 1998; Chen & Wells, 1999; Chen, Clifford, & Wells, 2002; Liu, 2003; McMillan et al., 2003; Rafaeli, 1988; Sundar, 2004). According to Ghose and Dou (1998), interactive websites are perceived more favorably than non-interactive websites, because information can be controlled (e.g., searching, modifying, and eliminating content and information in a website) by web users. As well, the researchers proposed that there were positive relationships between interactivity functions and users' attitudes toward the website. Similarly, Teo, Oh, Liu, and Wei (2003) investigated the effects of interactivity on users' attitudes toward commercial websites and found that interactive features are positively related to users' website satisfaction levels, attitudes toward the website, and effectiveness of information delivery. Ko et al. (2005) also identified how the perceived level of interactivity in online advertisements affects users' attitudes toward websites. The results showed that high levels of interactivity delivered a positive impact on users' attitudes toward the website. Accordingly, it is expected that interactivity features are positively connected with consumers' attitudes toward a website. Based on the findings of the previous literature, the following hypotheses were proposed:

H2a: Two-way communication will be positively associated with attitudes toward a sport website.

H2b: Active user control will be positively associated with attitudes toward a sport website.

H2c: Real-time information will be positively associated with attitudes toward a sport website.

Numerous studies have also suggested that intention to revisit is another critical factor that should be considered when evaluating web effectiveness. For instance, Teo and colleagues (2003) suggested that appropriate usages of interactivity functions on a website make it possible to bring about favorable behavioral intentions from website visitors. In the same manner, Suntornpithug and Khamalah (2010) investigated two functions of interactivity (i.e., machine interactivity and person interactivity) as antecedent factors of consumers' purchase intentions. The findings of their study revealed that the two interactivity dimensions played a key role leading to product sales and the scholars concluded that there

was a positive relationship between interactivity features in a website and online purchase intentions. Chiang and Su (2011) also suggested that a high degree of interactivity on a website allows users to stay longer on a website and visit it more frequently. As a result, there is a need for understanding whether interactivity functions are a predictor of users' intentions to revisit a sport website. Based on the existing literature, the following hypotheses were proposed:

H3a: Two-way communication will be positively associated with intention to revisit.

H3b: Active user control will be positively associated with intention to revisit.

H3c: Real-time information will be positively associated with intention to revisit.

## Method

### Sample and Data Collection

Data were collected using undergraduate and graduate students enrolled at a large university in the Southeastern region of the United States. As noted by Shank (2009), the use of college students as study participants is reasonable for Internet studies because of the students' demographical characteristics. Using a convenience sampling method, the sample was collected from undergraduate and graduate classes. Before collecting the data, the approval from the university Institutional Review Board (IRB) was attained. Questionnaires were managed by using an online survey system (i.e., Survey Monkey). An invitation email including the URL of the online survey questionnaire was delivered to students registered for sport management courses. Of the 345 questionnaires returned, 110 surveys were deemed unusable because they were not completely filled out. Therefore, 235 questionnaires were considered usable surveys for the current study. With a sample greater than 200, the sample size of this study was suitable for conducting Structural Equation Modeling (SEM) (Hair et al., 2006). Of the participants, 32.8% ( $n = 70$ ) were female and 67.2% ( $n = 158$ ) were male. In terms of ethnicity, 75.7% ( $n = 158$ ) were Caucasian and 11.5% ( $n = 27$ ) were African American. The mean age of the participants was 22 (see Table 1).

### Measurement

The survey questionnaire included four parts: (1) an interactivity scale, (2) an attitude scale, (3) a behavioral intention scale, and (4) demographic questions. First, students were asked to write the name of the sport website that they visit most frequently and then, to answer the remaining questions in part I, II, and III based on the specific sport website that they listed. In part I, the interactivity scale,

**Table 1***Demographic Characteristics*

	Category	Frequency	%
Gender	Female	77	32.8
	Male	158	67.2
Total		235	100.0
School Year	Freshmen	5	2.1
	Sophomore	12	5.1
	Junior	70	29.8
	Senior	136	57.9
	Graduate student	12	5.1
Total		235	100.0
Race	Black/African American	27	11.5
	White/Caucasian	178	75.7
	Latino/Latina	11	4.7
	Native American	1	.4
	Asian or Pacific Islander	13	5.5
	Other	5	2.1
Total		235	100.0

which was modified from interactivity questionnaires used in previous research (e.g., Liu, 2003), included three dimensions of interactivity: active user control (3 items), two-way communication (3 items), and real-time information (3 items). All three dimensions and their affiliated items were included and measured with 7-point Likert-type scales ranging from *strongly disagree* (1) to *strongly agree* (5). An example of an active user control item is, "I have a lot of control over my visiting experience." An example of a two-way communication item is "The sport website facilitates two-way communication between visitors." An example of a real-time information item is "I can obtain what I want to find without any delay." In part II, three 7-point Likert-type items from Chen and Wells (1999) were used to measure attitude toward a sport website. An example of an attitude item is "I am satisfied with the service provided by the sport website." In part III, intention to revisit was measured by using three items with 7-point Likert-type scales (i.e., *likely/unlikely*, *probable/improbable*, and *possible/impossible*), which were originally developed by Mackenzie, Lutz, and Belch (1986). An example of an intention to revisit item is "I am likely to visit the sport website in the future." The scales had a 7-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (5). In part IV, items measuring demographic characteristics (e.g., age, gender, ethnicity) were also included.

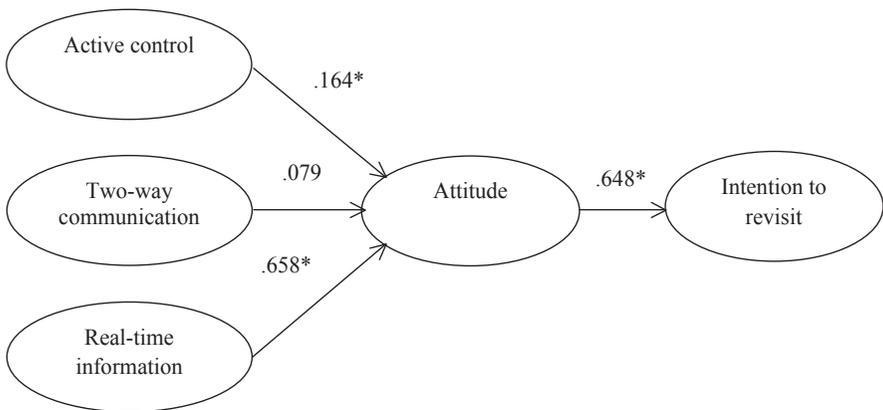
## Data Analysis

The analysis was conducted with the Statistical Package for the Social Sciences (SPSS) 20.0 and AMOS 20.0. Descriptive statistics were employed to provide the sample characteristics. The model fit for the constructs was tested by Confirmatory Factor Analysis (CFA). SEM was also utilized to test hypothesized relationships among constructs. According to previous literature (e.g., Bollen & Long, 1992; Morgan & Hunt, 1994), a rival model should be compared with the proposed model in SEM in order to represent different hypothetical structural relationships. Thus, the current study made a comparison of the proposed model with a rival model. The proposed model (see Figure 1) postulated that attitude (AT) fully mediates the relationships between active control (AC), two-way communication (TC), real-time information (RI), and intention to revisit (IR) while the rival model suggested only direct paths from each of antecedent variables (e.g., AC, TC, RI, AT) to behavioral outcome (e.g., IR). The rival model is presented in Figure 2, which allows only direct effects. The value of Akaike Information Criterion (AIC) was used to assess the fit that includes a parsimony adjustment for the comparison of the proposed model with the rival model. Furthermore, to examine the goodness-of-fit of the model, several fit statistics were examined, including a Chi-square tests with related degrees of freedom (df), the Root Mean Square Error of Approximation (RMSEA), the Comparative Fit Index (CFI), the Normed Fit Index (NFI), the Incremental Fit Index (IFI), and the Tucker-Lewis index (TLI).

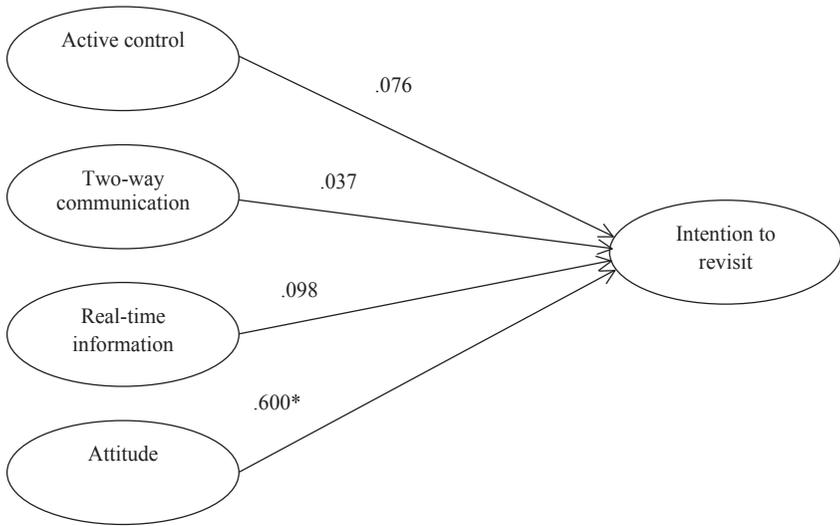
## Results

### Measurement Model

The CFA of the measurement model was performed to assess the relationships between the observed and latent variables, as well as the reliability and validity of



**Figure 1.** Proposed model



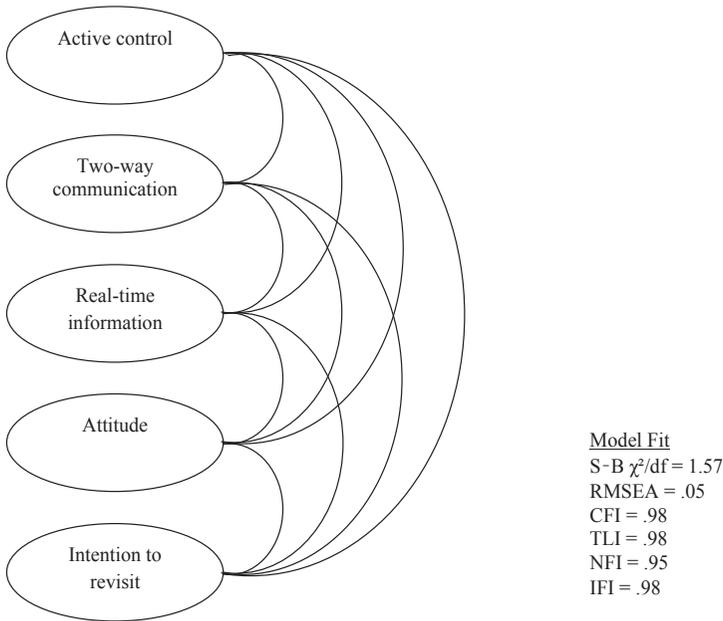
**Figure 2.** Rival model

constructs (see Figure 3). The results of the measurement model showed an acceptable fit. The Storra-Bentler scaled Chi-square ratio (S-B  $\chi^2/df$  ratio = 1.57,  $p < .001$ ) was lower than the suggested threshold of 3.0 (Kline, 2005). The RMSEA was .050, which is lower than the recommended value of .08 (Hu & Bentler, 1999). Other fit indices (i.e., CFI; .98, NFI; .95, IFI; .98, and TLI; .98) also indicated that the measurement model fits the data well.

Cronbach's alpha, construct reliability, average variance extracted (AVE), and factor loadings were tested in order to measure the reliability and validity of the each factor (see Table 2). The Cronbach's alpha scores ranged from .79 to .96 and thus all of the scores reached the satisfactory reliability level (Nunnally & Bernstein, 1994). The construct reliability of measures ranged from .81 to .96, all of which are higher than the recommended value of .70 (Bagozzi & Yi, 1988). The AVE values for each construct ranged from .60 to .83 and thus all were greater than the .50 significant level (Hair et al., 2006). Convergent validity was established as all the factor loadings showed statistical significance at the .05 level. Discriminant validity was also established using a correlation analysis among the latent factors (see Table 3). The estimated correlations between the latent factors were lower than the .85 suggested value (Kline, 2005).

### Test of the Proposed Model and Rival Model

The SEM was conducted to examine the hypothesized relationships between interactivity, attitudes toward a sport website, and intentions to revisit a sport website. The overall model fit of the SEM analysis was acceptable in the proposed model (i.e., S-B  $\chi^2/df$  ratio = 2.73,  $p < .001$ , RMSEA = .086, CFI = .95, NFI=.92, IFI=.95, TLI=.94). In addition, this study made a comparison between the pro-



**Figure 3.** Measurement model

posed model and a rival model in order to better understand the mediating role of attitude. The following criteria were utilized to compare the two models: overall fit of the model, path coefficients, and parsimonious concern (James, Mulaik, & Brett, 1982; Morgan & Hunt, 1994). Table 4 summarizes the comparison between the proposed model and rival model. The CFI for the rival model was lower than the proposed model (.95 versus .90). In terms of the parsimonious concern, the value of AIC indicated that the proposed model (303.43) was much better than the rival model (432.99). In addition, only one hypothesized path (H3) was supported at the .05 level in the rival model, which suggested that attitude toward a sport website was found to have a positive effect on intention to revisit. However, H3a (two-way communication), H3b (active user control), and H3c (real-time information) were not statistically significant at the .05 level. In contrast, three of four hypothesized paths in the proposed model were statistically significant at the .05 level. H2b (active user control) and H2c (real-time information) were positively associated with attitudes toward a sport website. Additionally, the result of H1 was evidenced by a positive path coefficient (.648). However, H2a (two-way communication) was not significantly associated with attitude toward a sport website at the .05 level.

**Table 2**

*Cronbach's Alpha ( $\alpha$ ), Loadings, Construct Reliability (CR), Average Variance Extracted (AVE), and Means*

Factor and Items	Loading	CR	AVE	Means
Two-way Communication ( $\alpha = .96$ )		.96	.83	
<i>TC 1</i> : The sport website gives visitors the opportunity to provide feedback.	.92			3.20
<i>TC 2</i> : The sport website facilitates two-way communication between visitors.	.94			2.95
<i>TC 3</i> : The content of the sport website encourages me to provide feedback.	.93			2.91
Active Control ( $\alpha = .87$ )		.81	.60	
<i>AC 1</i> : I can choose freely what I want to see.	.53			5.23
<i>AC 2</i> : I have a great deal of control over what I can do.	.86			4.87
<i>AC 3</i> : I have a lot of control over my visiting experience.	.88			4.97
Real-time Information ( $\alpha = .79$ )		.88	.71	
<i>RI 1</i> : The website is very fast in responding to my request.	.71			5.67
<i>RI 2</i> : I can obtain what I want to find without any delay.	.91			5.42
<i>RI 3</i> : I can get information very quickly.	.90			5.58
Attitude ( $\alpha = .90$ )		.90	.76	
<i>AT 1</i> : I am satisfied with the service provided by the sport website.	.83			5.53
<i>AT 2</i> : I am comfortable surfing the sport website.	.90			5.44
<i>AT 3</i> : Surfing the sport website is a good way for me to spend my time.	.90			5.55
Intention to Revisit ( $\alpha = .93$ )		.93	.83	
<i>IR 1</i> : I am likely to visit the sport website in the future.	.88			5.92
<i>IR 2</i> : I probably will visit the sport website in the future.	.98			5.93
<i>IR 3</i> : I will possibly visit the sport website in the future.	.88			5.92

## Discussion

This study examined whether the interactivity functions on a sport website lead to positive outcomes. Specifically, this examination identified three major functions of interactivity and investigated the relationships between these three functions, attitudes toward a sport website, and intentions to revisit a sport web-

**Table 3***Factor Correlations between Constructs*

	IR	AT	AC	RI	TC
IR					
AT	.66				
AC	.42	.53			
RI	.49	.70	.64		
TC	.06	.03	.14	-.09	

Note. IR=Intention to Revisit; AT=Attitude; AC=Active Control; RI=Real-time Information; TC=Two-way Communication.

**Table 4***Analysis of Competing Model*

Proposed Model		Rival Model	
Path	Estimate	Path	Estimate
TC → AT	.079	TC → IR	.037
AC → AT	.164*	AC → IR	.076
RI → AT	.658*	RI → IR	.098
AT → IR	.648*	AT → IR	.600*

S-B  $\chi^2/df = 2.73$ ; RMSEA = .086; CFI = .95; NFI=.92; IFI=.95; TLI=.94; AIC = 303.43

S-B  $\chi^2/df = 4.24$ ; RMSEA = .118; CFI = .90; NFI=.87; IFI=.90; TLI=.88; AIC = 432.99

Note. IR=Intention to Revisit; AT=Attitude; AC=Active Control; RI=Real-time Information; TC=Two-way Communication.

\*  $p < .05$

site. In addition, this study made a comparison of the proposed model with the rival model to better understand the role of attitude as a mediator (Morgan & Hunt, 1994). The SEM results indicated that the proposed model was more parsimonious and performed better than the rival model.

For the function of active user control, the results reinforced previous research, which mentioned that high control conditions in a website create better information processes for web users (Ariely, 2000, Chiang & Su, 2011). In other words, the function of active user control in a sport website, which includes the capability to personalize and customize information, might have influenced users' positive attitudes toward a sport website. This finding was also consistent with previous research regarding the impact of interactivity features on users' satisfaction and attitudes toward websites (Teo et al., 2003) and the effects of perceived level of interactivity in online advertisement on consumers' attitudes toward websites.

In addition, the function of real-time information, which refers to simultaneous communication, was found to be a significant component for a sport website and it was positively related to the attitude a user held toward a sport website. Such findings are in line with previous research in areas of Internet marketing (Dellaert & Kahn, 1999; Zhang, Pease, & Smith, 1998). One possible explanation for this finding is that sport fans have a tendency to get statistics and live scores for today's games immediately as soon as those are officially updated.

However, the function of two-way communication was not significantly related to users' attitudes toward a sport website. This result is somewhat different from previous website studies (Liu, 2003; Liu & Shrum, 2002; McMillan & Hwang, 2002) which have suggested that there is a positive relationship between two-way communication and users' attitudes toward a sport website. One possible interpretation for this conflicting finding is that this study only investigated sport-content websites. As noted above, Caskey and Delpy (1999) referred to content websites as sport Internet sites that provide information such as scores, expert analyses, and news about sport industry stakeholders. Based on this definition, the primary function of content websites might be accessing information on a daily basis rather than two-way communication such as forums or discussion boards. Another possible explanation for these results is related to the two interactivity dimensions (i.e., human-message and human-human) proposed by Ko et al. (2005). The human-message interactivity refers to the extent to which people can choose and control the messages on a website. The human-human interactivity refers to the degree to which there is two-way, reciprocal communication between senders and receivers (Cho & Leckenby, 1999; Ko et al., 2005). This study showed that sport website users are more likely to prefer to use human-message interactivity, which is related to both active user control and real-time information. However, human-human interactivity, which is related to two-way communication, is not related to attitude toward sport websites. Additionally, Chiang and Su (2011) stated that web users focus more on gaining information than entering into discussion with others, which indicates that two-way communication function is less likely to be utilized by web users.

With regard to the relationships between three interactivity functions and intentions to revisit, the results of this study showed that two-way communication, active user control, and real-time information were not significantly related to intentions to revisit for web users. This result was not supported by previous research (Chiang & Su, 2011; Suntornpithug & Khamalah, 2010; Teo et al., 2003), which has posited that proper usages of interactivity functions on a website enables web users to evoke favorable behavioral intentions (e.g., purchase intentions, revisit intentions). This finding can be explained by the results relating to a comparison between the proposed model and rival model, which showed that the proposed model presented better performance than the rival model in terms of overall fit, path coefficient, and parsimonious concern. In other words, the di-

mension of attitudes toward a sport website was the mediating effect and, therefore, connected three interactivity functions (i.e., two-way communication, active user control, and real-time information) and intentions to revisit.

### **Implications and Limitations**

The findings of this study have several pragmatic implications for sport practitioners. First, because active user control was positively related to the attitude toward a sport website, sport website marketers should consider increasing the level of user control functions to increase the interaction between users and messages. For example, sport marketers should give website users the ability to have the power (i.e., control) over website form and content based on the users' needs (Roehm & Haugtvedt, 1999). Specifically, the control or power over website form includes page layout, language change, and color content, and the control or power over website content includes modifying and creating information and messages (e.g., customizing information) based on users' preferences. Furthermore, sport marketers engaged with, facilitating, or overseeing websites should provide some technical functions to customize the front page of their websites to directly show a favorite team's game results, schedules, and information, which in turn entices fans to become more involved in the content.

With regard to real-time information, it is important that sport websites incorporate up-to-the-minute and fast information to satisfy customers. This is increasingly important as instant updates are becoming the norm for sport stakeholders who have embrace social media. Developers and marketers of sport websites should quickly and constantly update necessary information such as game results, schedules, rosters, transactions, and statistics. They should also create sections for users to watch updated live video and audio clips, podcasts, videocasts, and real time scoreboards and upload and update them as frequently as possible. Finally, even though in this study two-way communication was not found to be positively associated with the users' attitudes toward a sport website, sport marketers should not overlook the importance of two-way communication in a sport website. Because social media platforms (e.g., Facebook, Pinterest, Twitter, LinkedIn, YouTube) provide exceptional opportunities for increased two-way communication, many sport websites have made a tremendous effort to strengthen the interactivity functions through the connection with those social media platforms. Specifically, social media networking is considered to be a key tool for allowing web users the ability to communicate with a sport organization or a sport brand. Thus, two-way communication through social media services in a sport website enables sport marketing practitioners to receive immediate feedback regarding what content sport fans are looking for and how sport organizations can help sport fans.

For academics, this study developed and empirically examined the proposed model, which was based on the findings of previous research. In addition, the

findings of this study provide the foundation for a better understanding of the relationships between interactivity functions, attitudes, and behavioral intentions. The results of the current study indicate that the interactivity functions cannot be applied directly to behavioral intentions. That is, the variable related to the attitudes toward a sport website fully mediated the relationship between the interactivity functions and intentions to revisit. However, as with all research investigations, there were some limitations in this study that could be addressed in future work. First, the current study utilized a convenience sampling from university students who reported visiting sport websites. Although students are categorized as typical Internet users (Shank, 2009), it is difficult to generalize the results to other populations of Internet users. For example, because the data collection originated from a well-known college football school, the students' answers in the questionnaire might be based on specific sport websites related to the university's college football that other college students might rarely visit. Therefore, it is recommended that future studies build on this research study by utilizing a diverse group of participants. In addition, although the model in this study fit the data very well, future studies should attempt to verify the reliability and validity of the scales by using different samples.

Another limitation of the current investigation relates to the category of sport website used. As noted above (e.g., Caskey & Delpy, 1999), sport websites can be grouped into various categories. The current study only examined content sport websites and thus the results are not generalizable to other sport website categories such as commerce websites, gambling websites, or team websites. Investigations of the influence of interactivity functions on web effectiveness across various categories of sport websites are needed because the type of sport websites may influence users in unique ways and may involve different interactivity functions. It is also recommended that further studies include additional variables which can examine other aspects of consumers' attitudes toward sport websites. For instance, Li and Zhang (2002) proposed several potential factors (e.g., trustworthiness, competitors, demographics) related to sport websites that may influence attitudes. Thus, future research can extend the current conceptual framework with additional antecedents, which might provide a more comprehensive understanding of sport websites. While the current study identified three dimensions of interactivity and the study results suggested that attitudes toward the sport website were a significant mediating factor between interactivity and intentions to revisit the sport website, future investigations that include some of the additional factors noted above may lead to a more complete understanding of both the identity of the interactivity function as well as the role of attitude as a mediating factor.

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Management Whitepaper

## Sport Website Interactivity Effects

### *An Analysis of the Relationships between Interactivity, Attitudes, and Intentions to Revisit*

Young Ik Suh, Taesoo Ahn, and Paul Pedersen

#### I. Research Problem

The purpose of this study was to examine the theoretical relationships between three dimensions of interactivity (i.e., active user control, two-way communication, and real-time information) and website effectiveness variables (i.e., attitudes toward the sport website and intentions to revisit).

The findings of this study have pragmatic implications for sport practitioners. The research revealed that interactive features (i.e., active user control, two-way communication, and real-time information) were one of the key elements on a sport website that can be used to cultivate and maintain positive customer relationships. Especially, active user control and real-time information were positively related to the attitude toward a sport website. Two-way communication through social media services in a sport website also enables sport practitioners to understand what content sport fans are looking for and how sport organizations can help sport fans.

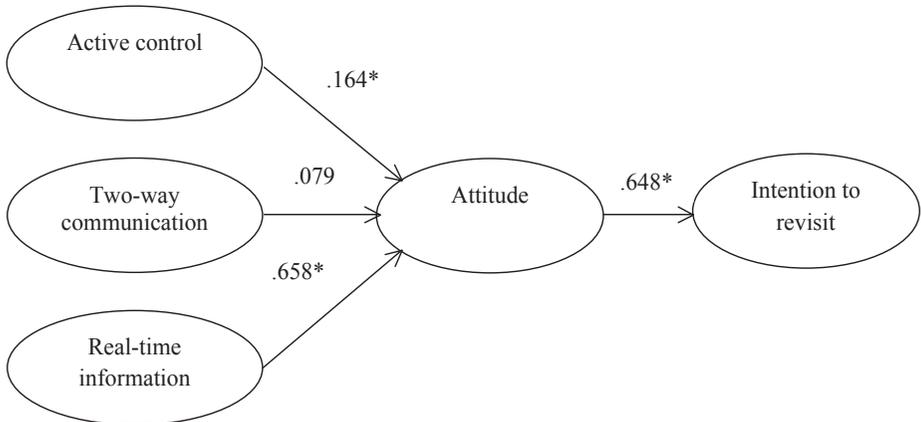
This research would be beneficial for developers and marketers of sport websites to fully understand the importance of interactivity functions (i.e., active user control, two-way communication, and real-time information) in a sport website.

#### II. Issues

Many efforts have been made by scholars to identify interactivity dimensions as well as to improve the understanding of whether the interactivity functions can lead to a positive consequence regarding visitors' attitudes toward a website and their behavioral intentions to revisit a website. However, inconsistencies from the findings of previous studies have triggered questions regarding the relationships between interactivity, attitudes, and intentions to revisit a website. In addition, although the importance of interactivity in a website has been well supported in previous literature, little attention has been devoted to understand the effects of website interactivity in the sport consumer behavior context. Thus, the current

study was designed to investigate whether the interactivity function on sport websites leads to positive outcomes.

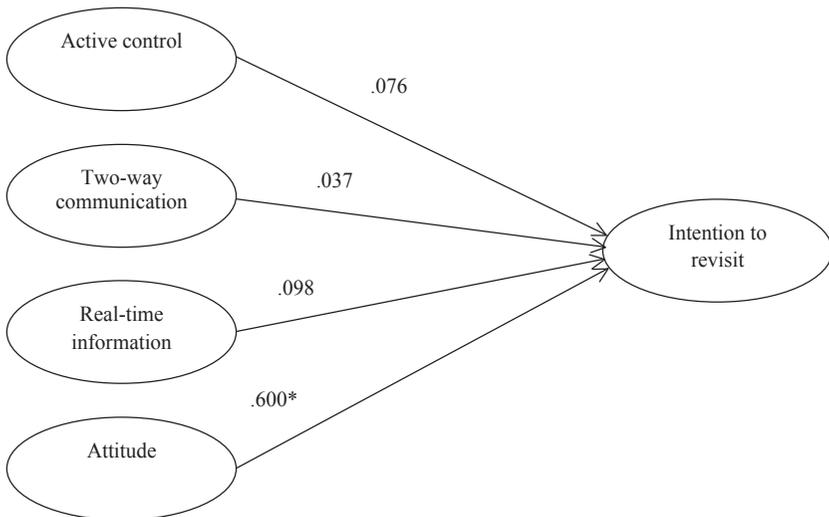
Interactivity can be defined as “the degree to which two or more communication parties can act on each other, on the communication medium, and on the messages and the degree to which such influences are synchronized” and three interactivity components has been identified (i.e., two-way communication, synchronicity, and active control). Active user control refers to the “voluntary and instrumental action” that has a direct impact on the user’s experience. It can be explained by active and voluntary actions (e.g., select, add, modify content) performed by users on a given website. Two-way communication is “a form of transmission in which both parties involved transmit information.” With Internet websites, users can communicate with others through various tools such as message boards, chat rooms, comment sections, affiliated social media/networking applications, bulletin boards, emails, and other electronic word-of-mouth opportunities. Real-time information is often referred to the simultaneous communication between users’ contributions to a communication and the responses they receive as a result of that communication. Various researchers have made concentrated efforts to understand how these interactivity functions are related to visitors’ attitudes toward a website and their behavioral intentions to revisit a website. Based on the findings of the previous literature, the following hypotheses were proposed: H1) attitudes toward a sport website will be positively associated with intentions to revisit, H2) interactivity functions will be positively associated with attitudes toward a sport website, and H3) interactivity functions will be positively associated with intention to revisit.



**Figure 1.** Proposed model

### III. Summary

The current study examined the hypothesized relationships between interactivity, attitudes toward a sport website, and intentions to revisit a sport website. The findings of this research indicated that attitude toward a sport website had positive effect on intention to revisit, which supported H1. Active user control (H2b) and real-time information (H2c) were also positively associated with consumers' attitudes toward a sport website. However, two-way communication (H2a) was not significantly related to consumers' attitudes toward a sport website. In addition, two-way communication (H3a), active user control (H3b), and real-time information (H3c) were not significantly connected to intentions to revisit a sport website. The results also indicated that attitude toward a sport website was a significant mediating element between the three dimensions of interactivity and intentions to revisit the sport website. In addition, this study made a comparison of the proposed model with the rival model to better understand the role of attitude as a mediator. The results indicated that the proposed model was performed better than the rival model.



**Figure 2.** Rival model

### IV. Analysis

This study examined whether the interactivity functions on a sport website lead to positive outcomes. Specifically, this examination identified three major functions of interactivity (i.e., active user control, two-way communication, and real-time information) and investigated the relationships between three interac-

tivity functions, attitudes toward a sport website, and intentions to revisit a sport website. For the function of active user control, the results reinforced previous research, which mentioned that high control conditions in a website create better information processes for web users. Thus, sport Internet marketers should provide some technical functions to customize the front page of their websites to directly show a favorite team's game results, schedules, and information, which in turn entices fans to become more involved in content. In addition, the function of real-time information was found to be a significant component for a sport website and it was positively related to the attitude a user held toward a sport website. One possible explanation for this finding is that sport fans have a tendency to get statistics and live scores for today's games immediately as soon as those are officially updated. Thus, necessary information such as game results, schedules, rosters, transactions, and statistics need to be constantly updated. However, the function of two-way communication was not significantly related to users' attitudes toward a sport website. This result is somewhat different from previous website studies that have suggested that there is a positive relationship between two-way communication and users' attitudes toward a sport website. One possible interpretation for this conflicting finding is that this study only investigated sport-content websites. The primary function of content websites might be accessing information on a daily basis rather than two-way communication such as forums or discussion boards. Another possible explanation for this result is related to the two interactivity dimensions (i.e., human-message and human-human). The human-message interactivity refers to the extent to which people can choose and control the messages on a website. The human-human interactivity refers to the degree to which there is a two-way and reciprocal communication between senders and receivers. This study showed that sport website users are more likely to prefer to use human-message interactivity, which was related to both active user control and real-time information. However, human-human interactivity, which is related to two-way communication, was not related to attitude toward sport websites. With regards to the relationships between three interactivity functions and intentions to revisit, the results of this study showed that two-way communication, active user control, and real-time information were not significantly related to intentions to revisit for web users. This result was not supported by previous research, which has posited that proper usages of interactivity functions on a website enables web users to evoke favorable behavioral intentions (e.g., purchase intentions, revisit intentions). This finding can be explained by the results relating to a comparison between the proposed model and rival model, which showed that the proposed model presented better performance than the rival model in terms of overall fit, path coefficient, and parsimonious concern. In other words, the dimension of attitudes toward a sport website was the mediating effect and, therefore, connected three interactivity functions (i.e., two-way communication, active user control, and real-time information) and intentions to revisit.

## V. Discussion/Implications

This research would be beneficial for developers and marketers of sport websites to fully understand the importance of interactivity functions (i.e., active user control, two-way communication, and real-time information) in a sport website. For example, sport marketers should give users the ability to have “control over form” and “control over content” based on users’ needs. Specifically, the control over form includes page layout, language change, and color content, and the control over content includes modifying and creating information and messages (e.g., customizing information) based on users’ preferences. Furthermore, sport Internet marketers should provide some technical functions to customize the front page of their websites to directly show a favorite team’s game results, schedules, and information, which in turn entices fans to become more involved in content. With regard to real-time information, it is important that sport websites incorporate up-to-the-minute and fast information to satisfy customers. Developers and marketers of sport websites should constantly update necessary information such as game results, schedules, rosters, transactions, and statistics. They should also create sections for users to watch updated live clips and real-time scoreboards and update them as frequently as possible. Finally, even though two-way communication was not positively associated with the attitude toward a sport website, sport marketers should not overlook the importance of two-way communication in a sport website. Because social media platforms (e.g., Facebook, Pinterest, Twitter, LinkedIn, YouTube) provide exceptional opportunities for increased two-way communication, many sport websites have made a tremendous effort to strengthen the interactivity functions through the connection with those social media platforms. Specifically, social media networking is considered to be a key tool for allowing web users the ability to communicate with a sport organization or a sport brand. Thus, two-way communication through social media services in a sport website enables sport practitioners to understand what content sport fans are looking for and how sport organizations can help sport fans.