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RELATIONSHIP BETWEEN SPORT WEBSITE QUALITY AND CONSUMPTION INTENTIONS: APPLICATION OF A BIFACTOR MODEL¹

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Summary.—This study investigated the cognitive structure of sport website quality constructs by comparing a bifactor model (a.k.a., a general-specific model) to a second-order model. The models are two alternative approaches for representing general constructs consisting of several highly related but distinct domains. In addition, the link between sport website quality and the revisitation and media consumption intentions was empirically tested. Data ($N=272$) were collected through an online survey, and the majority of respondents were men (66.3%) between 21 and 30 years old (63.0%). The bifactor and second-order models of sport website quality were also assessed and compared, and a simultaneous equation modeling analysis was used. The bifactor model fit the data significantly better than the second-order model, indicating that the five sub-constructs revealed both the specific dimensions of sport website quality and the holistic nature of sport website quality. Results from the simultaneous equation model indicated that sport website quality explained 70.2% of the variance in revisitation and 58.7% of intention to consume sports media.

Website quality has been defined in terms of consumers' judgments of the excellence and ratings of superior quality of a website service offered in the virtual marketplace (Santos, 2003). Due to the rapid growth of the Internet, there has been growing research on the quality of websites and the effects on online consumer behavior. In particular, sport-related websites are often used as a medium by sports organizations to provide consumers with various services and additional enjoyment (Hur, Ko, & Valacich, 2007). Sport websites might differ from other websites in that sport team websites have more functional and interactive features. For example, users can watch video clips, buy products/licensed merchandise and chat with players. Furthermore, sport websites typically involves large components of information consumption, such as news and statistics on teams and players (Gonzalez, Quesada, Davis, & Mora-Mong, 2015). These sport websites are also businesses, so the quality of the services they provide typically generate additional revenue streams, help brand and build consumer loyalty to their organizations, and improve the reputation and value of their organizations (Hur, *et al.*, 2007; McClung, Eveland, Sweeney, & James, 2012). Hence, sport website quality has multiple facets as an extension of sports organizations.

Sport website quality can be characterized as a multifaceted construct composed of several distinct but related facets, such as information, interaction, design, system, and fulfillment, each of which taps one facet of the overall construct to assess sport consumers' perception of quality (Hur, Ko, & Valacich, 2011; Suh, Ahn, & Pedersen, 2013). However, in the multifaceted construct of sport website quality, the central scientific interest lies primarily in the general construct but not the underlying constructs (i.e., information, interaction, design, system, and fulfillment). There may also be a secondary interest in whether more focused specific factors may make a unique contribution to the prediction of external outcomes such as intentions or actual behaviors (Chen, West, & Sousa, 2006). Previous research only investigated the influence of general website quality on consumers' behavior (e.g., Hur, *et al.*, 2011; Suh, *et al.*, 2013). However, these studies did not explore the contribution of the domain-specific factors.

Bifactor modeling is an approach that simultaneously assesses the general and specific concepts of multifaceted psychometrics (Chen, *et al.*, 2006). Accordingly, this study tested the conceptual model of sport website quality proposed by Hur, *et al.* (2011) empirically. The first objective of this study was to investigate the cognitive structure of the constructs by conceptually and empirically comparing a bifactor model of sport website quality to a hierarchical model. Because bifactor and hierarchical models are two alternative methods for accounting for multifaceted constructs, both models were tested to determine which model is more appropriate in explaining cognitive structure of sport website quality. Second, the relationship between sport website quality and online consumption behaviors was examined empirically.

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Sport Website Quality

Several researchers have investigated online consumers' perceptions of website quality, specifically *e-service* quality (e.g., Li, Tan, & Xie, 2002; Ranganathan & Ganapathy, 2002; Negash, Ryan, & Igbaria, 2003; Santos, 2003). More recent studies have developed the conceptualization of quality of sport websites and measured it in additional ways (Gonzalez, et al., 2015; Suh & Pedersen, 2010; Hur, et al., 2011; Suh, et al., 2013). Gonzalez, et al. (2015) argued that sport websites quality need to be assessed in a comprehensive way as sport team websites are usually informative and multi-functional to fulfill users' need. Hur, et al. (2011) reviewed the relevant literature from various fields, including marketing, information systems, retailing, and computer science, and integrated several existing models to develop a five-dimensional scale, the Sport Website Quality Scale. According to their study, the five quality dimensions are defined as follows: (1) Information quality assesses a consumer's perception of the quality of information illustrated within a sports website; (2) Interaction quality measures the interactions between sports fans and service providers as well as interactions among sports fans; (3) Design quality is measured by assessing ease-of-use and the aesthetic qualities of sport websites; (4) System quality measures the assessment of fans' perceptions of a website's security, privacy and reliability; and (5) Fulfillment quality measures consumers' enjoyment, fun, and pleasure when using a website's feature and capabilities.

Bifactor Model and Second-order Model

Bifactor models, also known as general-specific models, represent an approach that is particularly well suited to testing the psychometric characteristics and factor structure of multifaceted constructs that consist of related and yet distinct multiple facets (Chen, et al., 2006; Reise, Morizot, & Hays, 2007). Bifactor models are less familiar because they were used primarily in the area of intelligence research in previous studies (e.g., Gustafsson & Balke, 1993; Luo, Petrill, & Thompson, 1994). A bifactor model has a general factor that is hypothesized to account for the commonality of items, much like a one-factor model. Moreover, there are multiple specific factors, each of which explicitly accounts for the item variance in a specific domain over and above the general factor (Chen, Hayes, Carver, Laurenceau, & Zhang, 2012).

Second-order models, which are traditionally nested within bifactor models, are also alternative models for testing the psychometric characteristics and factor structure of multifaceted constructs. Like bifactor models, second-order models are suitable when measurement instruments assess several related and distinct facets. A second-order model has multiple lower-order (first-order) factors that are substantially correlated with each other, as well as a higher-order (second-order) factor that is hypothesized to account for the item variance among lower-order factors.

However, numerous researchers have argued that there are several advantages of bifactor models over second-order models for testing the structure of multifaceted constructs and the links of each construct to external variables (Chen, et al., 2006). Previous studies have provided empirical evidence that bifactor modeling is more flexible and has unique advantages (Chen, et al., 2012; Chen, Jing, Hayes, & Lee, 2013; Gignac & Watkins, 2013; van Dinther, Dochy, Segers, & Braeken, 2013; Wiesner & Schanding, 2013). First, the parameter estimates (i.e., factor loadings) in a bifactor model are more precise because the bifactor model generally has smaller standard errors than those of second-order models. Second, the bifactor model provides a more accurate representation of the data because this model fits the data better than a second-order model. Third, the contribution of specific factors in predicting external variables, such as antecedents and consequences, can be tested in bifactor models. This would be difficult to do with a second-order model because only the paths between higher factors and external variables can be estimated. Finally, bifactor models are useful for developing a new multifaceted scale or for re-evaluating an existing instrument intended to measure a general construct and specific facets.

Given these advantages, the bifactor model was chosen as a more appropriate approach to represent the multifaceted constructs of sport website quality and to examine the construct reliability and validity of the Sport Website Quality Scale. The bifactor model was also compared with a second-order model because they are two plausible alternatives to account for the structural nature of the construct.

The Relationship Between Sport Website Quality and Behavioral Intentions

In line with the physical service environment (Cronin, Brady, & Hult, 2000), the linkage between website quality and behavioral intention has been theoretically supported in previous studies (e.g., Chiu, Hsieh, & Kao, 2005; Udo, Bagchi, & Kirs, 2010; Chang, Chen, Hsu, & Kuo, 2012; Sun, Wang, Yang, & Zhang, 2015). Furthermore, researchers argued that a higher quality of sports websites enhances consumers' intentions to visit and browse the sports website repeatedly (Suh & Pedersen, 2010; Hur, *et al.*, 2011; Suh, *et al.*, 2013). Moreover, because many sports websites are equipped with multiple media functions, consumers may engage in various consumption behaviors while browsing the sites. Hur, *et al.* (2011) found that consumers can watch live games or highlights and obtain updated information and/or statistics on players and teams, all of which are frequently used. Additionally, according to the theory of planned behavior, an individual's behavioral intention is a powerful predictor of his or her actual behavior (Ajzen, 1991, 2011; Manning, 2009). Thus, the behavioral intentions of revisitation and media consumption were adopted here as the outcome variables with which to investigate their relationships to sport website quality.

Research goal. The approach of bifactor modeling was used to simultaneously test the relationship between sport website quality and the behavioral intentions of revisitation and media consumption.

METHOD

Participants and Procedure

Data collection for the current study involved a convenience sampling method conducted through an online survey. The study participants were invited to respond to the pen-and-paper survey without monetary compensation. A URL link to an online survey was posted on Chinese Professional Baseball League (CPBL) forums and discussion boards of four CPBL teams (Elephants, Lions, Monkeys, and Rhinos). To avoid the bias of online sampling, some functions of an online survey website were utilized. First, using IP addresses, only one response per respondent was allowed to avoid repeated responses. Second, the responses completed within 2 minutes or less were omitted to exclude invalid responses. Finally, of the 325 questionnaires returned, 272 questionnaires were kept and used for the analysis. The final sample was dominated by male respondents (66.3%, $n=181$) between the ages of 21 to 30 years (63.0%, $n=172$). Most of them held college degrees (69.6% $n=190$). In addition, 41.4% of the respondents ($n=113$) noted that they visited the official CPBL website at least once per day.

Measures

The Sport Website Quality Scale consists of three items for each of the five quality dimensions: Information, Interaction, Design, System, and Fulfillment (Hur, *et al.*, 2011). To measure Revisitation and Media consumption intentions, the three-item scale for each construct was modified from Kim, Trail, and Ko (2011). As a next step, the original English version of the questionnaire was translated into a Chinese version based on Brislin's (1970) guidelines. Two experts independently translated the original items to Chinese. After comparing and adjusting any discrepancy between these two drafts, a final draft of a Chinese version was completed. Next, another two experts independently back translated the Chinese version into two English versions. Then the researchers compared the two back-translated English versions with the original English questionnaire to make sure the item meanings were conceptually equivalent. All scale items were evaluated with a 7-point rating scale with the following anchors 1: Strongly disagree and 7: Strongly agree.

Analysis

Data analysis proceeded in three stages using Mplus software (Muthén & Muthén, 2010). First, the reliability and convergent and divergent validity of all measures were assessed using confirmatory factor

analysis (CFA). Second, the bifactor and second-order models of Sport Website Quality scores were also examined and compared. Finally, a simultaneous equation modeling analysis was used to test the conceptual model.

RESULTS

Measurement Model

A CFA was performed to evaluate the Sport Website Quality measurement model and the Revisitation and Media consumption behaviors. The measurement model had an adequate model fit, as proposed by Hu and Bentler (1999): $\chi^2=394.53$, $df=168$, $\chi^2/df=2.66$; CFI=.95, TLI=.94, RMSEA=.07, SRMR=.06.

The reliability of the measures was investigated using Cronbach's α and composite reliability (CR) analyses. As reported in Table 1, the Cronbach's α s for the subscales were all greater than .70 (Nunnally, 1978), and the values of CR ranged from .82 to .92, all above the threshold value of .70 (Fornell & Larcker, 1981). The validity of the measures was also examined using construct validity and discriminant validity. Construct validity was supported by factor loadings of the construct indicators, which were all higher than .50, and AVE values all greater than .50 (Hair, Black, Babin, & Anderson, 2010). Discriminant validity is supported when the AVE square roots are greater than inter-construct correlations (Fornell & Larcker, 1981). The correlation coefficients (from .35 to .74) were far less than the AVE square roots for the individual variables (ranging from 0.78 to 0.89), supporting discriminant validity of the constructs in this study.

<Table 1 about here>

Bifactor Model and Second-Order Model

The bifactor model was tested first and then the second-order model. Subsequently, we compared the bifactor model to the second-order model, as previous researchers have reported that second-order models are nested within bifactor models (Rindskopf & Rose, 1988). A χ^2 difference test was therefore performed to compare the two models statistically (Chen, et al., 2006; Chen, et al., 2012). As shown in Fig. 1, the items of the Sport Website Quality Scale could be explained by one general factor, plus a number of specific factors corresponding to each of the construct's facets. The model fit the data adequately ($\chi^2=118.24$, $df=75$, $\chi^2/df=1.58$; CFI=.99, TLI=.98, RMSEA=.05, SRMR=.03). On the other hand, the second-order model, as illustrated in Fig. 2, fit the data marginally ($\chi^2=238.53$, $df=85$, $\chi^2/df=2.81$; CFI=.95, TLI=.94, RMSEA=.08, SRMR=.06).

<Figure 1 and 2 about here>

The χ^2 difference test for the comparison of the bifactor model and the second-order model was significant ($\Delta\chi^2=120.29$, $\Delta df=10$, $p<.001$). Moreover, the fit indices of the bifactor model were better than those of the second-order model (Table 2), suggesting the bifactor model provided a better representation of the data than the second-order model.

<Table 2 about here>

Relationships Between the General and Specific Factors of SWQ with Regard to Consumption Behavior

The simultaneous equation model (Fig. 3) of the sport website quality, which consisted of one general factor, five domain-specific factors, and Revisitation and Media consumption intention behaviors, achieved a good fit to the data ($\chi^2=300.36$, $df=162$, $\chi^2/df=1.85$; CFI=.97, TLI=.96, RMSEA=.06, SRMR=.05).

General sport website quality was significantly related to Revisitation ($\beta=.76$, $p<.001$). Among the five specific factors of SWQ, the path from Interaction quality to Revisitation was statistically significant

($\beta = 0.14, p < .05$), along with Design quality ($\beta = 0.19, p < .001$), and Fulfillment quality ($\beta = 0.26, p < .001$). However, the paths from Information and System quality to Revisitation were not significant. Overall, general Sport Website Quality along with Interaction, Design, and Fulfillment factors collectively explained 70.2% of the variance in Revisitation.

General sport website quality had a significant, positive relationship with Media consumption intention behaviors ($\beta = 0.60, p < .001$). Among the five specific factors of SWQ, the paths from Interaction quality to Media consumption intention was statistically significant ($\beta = 0.20, p < .05$), as well as Design quality ($\beta = 0.23, p < .001$), System quality ($\beta = 0.21, p < .001$), and Fulfillment quality ($\beta = 0.30, p < .001$). However, the path from Information quality to Media consumption intention was not significant. Overall, General sport website quality and Interaction, Design, and Fulfillment factors collectively explained 58.7% of the variance in Media consumption intention.

DISCUSSION

The cognitive structure of Sport Website Quality was empirically assessed by comparing a bifactor model (consisting of General sport website quality and five domain-specific factors) to a second-order model (consisting of five first-order latent constructs that represented a second-order latent variable of general sport website quality). The bifactor model had a significantly better fit to the data. This finding is consistent with the results of previous studies (Chen, *et al.*, 2012, 2013; Gignac & Watkins, 2013; van Dinther, *et al.*, 2013; Wiesner & Schanding, 2013), suggesting that bifactor models offer a more precise representation of the data than second-order models. All of the items have appropriate and significant loadings on both sides of the general factor and specific factors (Chen, *et al.*, 2012; see Fig. 1). This also supports the construction of the Sport Website Quality Scale of Hur, *et al.* (2011). The bifactor model proposed in this study presents a theoretically and empirically conceptualization of sports website quality in the context of online sport consumer behavior.

General Sport Website Quality

The simultaneous equations model indicated the significant relationships of Sport Website Quality with Revisitation and Media consumption intention. With regard to Revisitation, the findings support those of previous studies, which showed that the quality of a website is an essential antecedent of Revisitation intention (Udo, *et al.*, 2010; Suh, *et al.*, 2013). Moreover, with respect to Sports media consumption intention, the result is consistent with previous studies as well, suggesting that consumers are willing to obtain information or watch games through high quality sports websites (Suh & Pedersen, 2010; Hur, *et al.*, 2011; Suh, *et al.*, 2013). Thus, it can be concluded that General sport website quality can significantly explain Media consumption intention.

Specific Domain Factors

Subsequently, the current study explored the relationship of specific domain factors of Sport Website Quality with Media consumption intentions. First, Information quality was not significantly related to intentions for Revisitation and Media consumption, indicating that the quality of information is a minor predictor of consumption behavior intentions. That is, the quality of information provided by sports websites is of secondary interest for attracting consumers. Such an inconsistent finding can be attributed mainly to the easy access to information on the Internet. A specific sport website is not the only way to obtain updated and related information, as consumers can access various websites or discussion boards to attain the desired information. When it comes to consuming media contents by sport fans, a website is not the only platform to watch games. Consumers can also watch games on cable TV, which may be easier and more convenient for them. Given the uniqueness of sport websites, these findings somewhat differ from those of other commercial websites such as electricity supplier (e.g., Thielsch, Blotenberg, & Jaron, 2014). Commercial websites need to offer more detailed information for consumers' purchase decision and as such, the content of websites is critical for consumers' revisitation.

The results indicated that the quality of Interactions is significantly related to Revisitation and Media consumption intentions. The findings suggest that the fans' interactions with service providers and with other fans may influence their perceptions of website quality and enhance their intentions to revisit and use the website (Janda, Trocchia, & Gwinner, 2002; Carlson, Suter, & Brown, 2008). Interactions among fans through a sports website may boost their cohesion, which is thought to be one of the most important determinants of fans' use of the website (Seo, Green, Ko, Lee, & Schenewark, 2007). Thus, the communication platform for expressing opinions regarding team performance, player recruiting, or chatting about various topics is likely to be crucial for fans. It has also become one of the most important motives for fans to visit websites through this type of interaction channel.

Design quality significantly explained variance for both Revisitation and Media Consumption intention. An implication of this is that sports websites equipped with better designs for ease-of-use and aesthetics may attract consumers who engage in revisitation and media consumption behaviors as is the case of the current study. This finding indicates that visual attractiveness and usability are crucial dimensions of a website's quality and key factors of online services (Janda, *et al.*, 2002; Flavián, Guinalú, & Gurrea, 2006; Van der Heijden, 2003). Furthermore, Moshagen and Thielsch (2010) identified that aesthetics of websites contains many different facets, including simplicity, diversity, colorfulness, and craftsmanship, which influence on online users' intention to revisit websites. For example, sports organizations use attractive layouts, colors, fonts, and graphs to catch consumers' eyes and build an easily accessible virtual environment to browse the website without hassle. Consequently, consumers may have a greater tendency to revisit the website and watch live games or highlights videos.

System quality was significantly linked to Media consumption intention but not to Revisitation. Although previous studies proposed that the perceived risk of system security and privacy is a critical issue in online business transactions (Featherman & Pavlou, 2003; Swinyard & Smith, 2003), it is not surprising that the quality of the system has no significant relationship with website revisitation in this study's context. It may be that visiting a website, compared to an online transaction, is perceived as a relatively low-risk behavior. Consumers do not need to leave personal and/or financial information on the website while browsing a sports website, and as such, there are no concerns over security or privacy violations. However, media consumption, such as watching a live game through a sports website, usually requires the users' personal and financial information to sign in as a member. For example, the official CPBL website requires consumers to purchase the rights to watch games and to input their personal and financial information. Consumers may perceive somewhat of a risk and become concerned about security when they provide their information for access authority to watch live games or to use other functions.

Finally, the results indicate that domain-specific Fulfillment significantly affected both Revisitation and Media consumption intentions. That is, when sport consumers enjoyed a website, experience fun, and feel pleasure while using its features and capabilities, they reported a greater preference to revisit the website. This finding was supported by previous research which showed that consumer benefits from websites can lead to satisfaction and repurchase intentions at the website (Zeithaml, Parasuraman, & Malhotra, 2002). Moreover, Parasuraman, Zeithaml, and Malhotra (2005) claimed that fulfillment is the most critical facet of website quality; therefore, the quality of fulfillment has the highest variance in both revisitation and media consumption intention. This indicates that sports organizations must build websites that are able to fill the "fulfillment gap" (Zeithaml, *et al.*, 2002).

Limitations and Conclusion

There are a number of limitations that should be considered in future research. First, the conceptual model was examined with a sample of official CPBL website users. Therefore, generalization to different types of sport websites, such as a sports web portal (e.g., espn.go.com) or an online sporting goods store (e.g., OnlineSports.com), is necessary in future research. Second, the cross-sectional data herein cannot sufficiently test the causal relationships implied in the proposed model. Future research should attempt to conduct a before-and-after study to compare consumer perceptions of changes in the quality of websites. Lastly, the cultural effect should be also taken into careful consideration for future research.

The findings of this study practically provide sports marketers with a better understanding of how to build a better website so as to draw consumers' attention. However, findings from this study should be interpreted with cautions because this study based on a single stimulus. According to the findings of this study, the quality of fulfillment, which had the highest variance for both revisitation and media consumption intentions, should be regarded as the top priority for a sports website. Moreover, sports organizers need to build a more enjoyable environment from which fans can benefit. It must be noted that websites are not only media sources for acquiring sports information but also interactive communication platforms for fans. In addition, the visually appealing appearance of a sports website is also a key factor to retain and attract more people.

REFERENCES

- Ajzen, I. (1991) The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179 – 211.
-
- Ajzen, I. (2011) The theory of planned behavior: reactions and reflections. *Psychology & Health*, 26(9), 1113 – 1127.
-
- Brislin, R. W. (1970) Back-translation for cross-cultural research. *Journal of Cross-Cultural Psychology*, 1(3), 185-216.
-
- Carlson, B. D., Suter, T. A., & Brown, T. J. (2008) Social versus psychological brand community: the role of psychological sense of brand community. *Journal of Business Research*, 61, 184-191.
-
- Chang, K. C., Chen, M. C., Hsu, C. L., & Kuo, N. T. (2012) Integrating loss aversion into a technology acceptance model to assess the relationship between website quality and website user's behavioural intentions. *Total Quality Management & Business Excellence*, 23(7-8), 913-930.
-
- Chen, F. F., Hayes, A., Carver, C. S., Laurenceau, J. P., & Zhang, Z. (2012) Modeling general and specific variance in multifaceted constructs: a comparison of the bifactor model to other approaches. *Journal of Personality*, 80(1), 219-251.
-
- Chen, F. F., Jing, Y., Hayes, A., & Lee, J. M. (2013) Two concepts or two approaches? A bifactor analysis of psychological and subjective well-being. *Journal of Happiness Studies*, 14(3), 1033-1068.
-
- Chen, F. F., West, S. G., & Sousa, K. H. (2006) A comparison of bifactor and second-order models of quality of life. *Multivariate Behavioral Research*, 41(2), 189-225.
-
- Chiu, H. C., Hsieh, Y. C., & Kao, C. Y. (2005) Website quality and customer's behavioural intention: an exploratory study of the role of information asymmetry. *Total Quality Management and Business Excellence*, 16(2), 185-197.
-
- Cronin, Jr., J. J., Brady, M. K., & Hult, G. T. M. (2000) Assessing the effects of quality, value, and customer satisfaction on consumer behavioral intentions in service environments. *Journal of Retailing*, 76(2), 193-218.
-
- Featherman, M. S., & Pavlou, P. A. (2003) Predicting e-services adoption: a perceived risk facets perspective. *International Journal of Human-Computer Studies*, 59(4), 451-474.
-
- Flavián, C., Guinalú, M., & Gurrea, R. (2006) The role played by perceived usability, satisfaction and consumer trust on website loyalty. *Information & Management*, 43(1), 1-14.
-
- Fornell, C., & Larcker, D. F. (1981) Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50.
-
- Gignac, G. E., & Watkins, M. W. (2013) Bifactor modeling and the estimation of model-based reliability in the WAIS-IV. *Multivariate Behavioral Research*, 48(5), 639-662.
-
- Gonzalez, M. E., Quesada, G., Davis, J., & Mora-Monge, C. (2015) Application of quality management tools in the evaluation of websites: The case of sports organizations. *Quality Management Journal*, 22(1), 30-46.
-
- Gustafsson, J. E., & Balke, G. (1993) General and specific abilities as predictors of school achievement. *Multivariate Behavioral Research*, 28(4), 407-434.
-
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010) *Multivariate data analysis* (7th ed.) Englewood Cliffs, NJ: Prentice Hall.
-
- Hu, L. T., & Bentler, P. M. (1999) Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1-55.
-
- Hur, Y., Ko, Y. J., & Valacich, J. (2007) Motivation and concerns for online sport consumption. *Journal of Sport Management*, 21(4), 521-539.
-
- Hur, Y., Ko, Y. J., & Valacich, J. (2011) A structural model of the relationships between sport website quality, e-satisfaction, and e-loyalty. *Journal of Sport Management*, 25(5), 458-473.

- Janda, S., Trocchia, P. J., & Gwinner, K. P. (2002) Consumer perceptions of Internet retail service quality. *International Journal of Service Industry Management*, 13(5), 412-431.
-
- Kim, Y. K., Trail, G., & Ko, Y. J. (2011) The influence of relationship quality on sport consumption behaviors: an empirical examination of the relationship quality framework. *Journal of Sport Management*, 25(6), 576-592.
-
- Li, Y. N., Tan, K. C., & Xie, M. (2002) Measuring web-based service quality. *Total Quality Management*, 13(5), 685-700.
-
- Luo, D., Petrill, S. A., & Thompson, L. A. (1994) An exploration of genetic g: hierarchical factor analysis of cognitive data from the western reserve twin project. *Intelligence*, 18(3), 335-347.
-
- Manning, M. (2009) The effects of subjective norms on behaviour in the theory of planned behaviour: A meta-analysis. *British Journal of Social Psychology*, 48(4), 649 – 705.
-
- McClung, S., Eveland, V., Sweeney, D., & James, J. D. (2012) Role of the Internet site in the promotion management of sports teams and franchise brands. *Journal of Promotion Management*, 18(2), 169-188.
-
- Moshagen, M., & Thielsch, M. T. (2010) Facets of visual aesthetics. *International Journal of Human-Computer Studies*, 68(10), 689-709.
-
- Muthén, L. K., & Muthén, B. O. (2010) *Mplus software*. (Version 6) Los Angeles: Muthén & Muthén.
-
- Negash, S., Ryan, T., & Igbaria, M. (2003) Quality and effectiveness in Web-based customer support systems. *Information & Management*, 40(8), 757-768.
-
- Nunnally, J. C. (1978) *Psychometric theory*. (2nd ed.) New York: McGraw-Hill.
-
- Parasuraman, A., Zeithaml, V. A., & Malhotra, A. (2005) E-S-QUAL: a multiple-item scale for assessing electronic service quality. *Journal of Service Research*, 7(3), 213-233.
-
- Ranganathan, C., & Ganapathy, S. (2002) Key dimensions of business-to-consumer web sites. *Information & Management*, 39(6), 457-465.
-
- Reise, S. P., Morizot, J., & Hays, R. (2007) The role of the bifactor model in resolving dimensionality issues in health outcomes measures. *Quality of Life Research*, 16(1), 19-31.
-
- Rindskopf, D., & Rose, T. (1988) Some theory and applications of confirmatory second-order factor analysis. *Multivariate Behavioral Research*, 23(1), 51-67.
-
- Santos, J. (2003) E-service quality: a model of virtual service quality dimensions. *Managing Service Quality*, 13(3), 233-246.
-
- Seo, W. J., Green, B. C., Ko, Y. J., Lee, S., & Schenewark, J. (2007) The effect of web cohesion, web commitment, and attitude toward the website on intentions to use NFL teams' websites. *Sport Management Review*, 10(3), 231-252.
-
- Suh, Y. I., Ahn, T., & Pedersen, P. M. (2013) Examining the effects of team identification, e-service quality (e-SQ) and satisfaction on intention to revisit sports websites. *International Journal of Sports Marketing & Sponsorship*, 14(4), 261-278.
-
- Suh, Y. I., & Pedersen, P. M. (2010) Participants' service quality perceptions of fantasy sports websites: the relationship between service quality, customer satisfaction, attitude, and actual usage. *Sport Marketing Quarterly*, 19(2), 78-87.
-
- Sun, J., Wang, Y., Yang, Z., & Zhang, Y. (2015) Rethinking e-commerce service quality: Does website quality still suffice? *Journal of Computer Information Systems*, 55(4), 62-72.
-
- Swinyard, W. R., & Smith, S. M. (2003) Why people (don't) shop online: a lifestyle study of the Internet consumer. *Psychology & Marketing*, 20(7), 567-597.
-
- Thielsch, M. T., Blotenberg, I. & Jaron, R. (2014) User evaluation of websites: From first impression to recommendation. *Interacting with Computers*, 26(1), 89-102.
-
- Udo, G. J., Bagchi, K. K., & Kirs, P. J. (2010) An assessment of customers' e-service quality perception, satisfaction and intention. *International Journal of Information Management*, 30(6), 481-492.
-
- Van der Heijden, H. (2003) Factors influencing the usage of websites: the case of a generic portal in The Netherlands. *Information & Management*, 40(6), 541-549.
-
- van Dinther, M., Dochy, F., Segers, M., & Braeken, J. (2013) The construct validity and predictive validity of a self-efficacy measure for student teachers in competence-based education. *Studies in Educational Evaluation*, 39(3), 169-179.
-
- Wiesner, M., & Schanding, G. T. (2013) Exploratory structural equation modeling, bifactor models, and standard confirmatory factor analysis models: application to the BASC-2 behavioral and emotional screening system teacher form. *Journal of School Psychology*, 51(6), 751-763.

Zeithaml, V. A., Parasuraman, A., & Malhotra, A. (2002) Service quality delivery through web sites: a critical review of extant knowledge. *Journal of the Academy of Marketing Science*, 30(4), 362-375.

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TABLE 1

SUMMARY RESULTS OF MEASUREMENT MODEL

Construct	Factor Loadings	CR	AVE	α
Information (Mean: 5.32, SD: 1.03)		.86	.66	.84
中華職棒網站是非常有用的資訊來源。 [CPBL website is a very useful source of information.]	.73			
中華職棒網站的資訊是鉅細靡遺的。 [Information contained on CPBL website is rich in detail.]	.84			
中華職棒網站提供廣泛的內容資訊。 [Information contained on CPBL website provides wide ranges of information.]	.87			
Interaction (Mean: 5.18, SD: 0.96)		.82	.61	.82
我可以透過中華職棒網站與其他的球迷互動而學習到有價值的東西。 [I can learn something valuable by interacting with other fans in CPBL website.]	.76			
我可以信靠網站管理者是友好的。 [I can count on web managers to be friendly.]	.81			
中華職棒的網站管理者及時地瞭解和處理我的特殊需求。 [CPBL web managers recognize and deal with my special needs promptly.]	.77			
Design (Mean: 4.91, SD: 1.10)		.91	.78	.91
在中華職棒網站瀏覽和尋找資訊是容易的。 [It is easy to navigate around and find what I want at CPBL website.]	.88			
中華職棒網站的設計是有吸引力的。 [The layout of CPBL's website is attractive.]	.94			
中華職棒網站有視覺上的吸引力。 [CPBL website is visually appealing.]	.83			
System (Mean: 4.84, SD: 1.11)		.92	.78	.91
中華職棒網站是無錯誤的。 [CPBL website is error-free.]	.76			
我覺得我的隱私在中華職棒網站受到保護。 [I feel like my privacy is protected at CPBL website.]	.95			
我相信中華職棒網站不會濫用我的的個人信息。 [I trust CPBL website will not misuse my personal information.]	.93			
Fulfillment (Mean: 5.15, SD: 1.01)		.88	.71	.87
我會有利地評估使用中華職棒網站的結果。 [I would evaluate the outcome of using CPBL website favorably.]	.85			
中華職棒網站有助於提高我的運動與球隊的知識。 [CPBL website helped improve my knowledge of the sport and team.]	.89			
瀏覽中華職棒網站是有趣的。 [It is fun to visit CPBL website.]	.78			
Revisitation (Mean: 5.55, SD: 1.11)		.92	.79	.91
我打算再次瀏覽這個網站 [I intend to revisit this website.]	.96			
我將來再瀏覽這個網站的可能性很高。 [The likelihood that I will revisit this website in the future is high.]	.74			
我將來會再瀏覽這個網站。 [I will revisit this website in the future.]	.95			
Media consumption (Mean: 5.74, SD: 1.13)		.90	.76	.89
我會透過這網站追蹤中華職棒的消息。 [I will track the news on the CPBL through the website.]	.95			
我會透過這個網站觀賞中華職棒的比賽或精彩剪輯。 [I will watch CPBL's games or highlights through the website.]	.94			
我會透過這個網站觀賞比賽或精彩剪輯並支持中華職棒。 [I will support CPBL by watching games or highlights through the website.]	.69			

TABLE 2

SUMMARY OF FIT STATISTICS FOR THE SIMULATED COMPLETE BIFACTOR AND SECOND-ORDER MODELS

Model	χ^2 (df)	$\Delta\chi^2$	Δdf	CFI	TLI	RMSEA	SRMR
Bifactor model	118.24 (75)			0.99	0.98	0.05	0.03
Second-order model	238.53 (85)	120.29	10	0.95	0.94	0.08	0.06

FIG. 1. Bifactor model of Sport Website Quality (SWQ) ($\chi^2=118.24$, $df=75$, $\chi^2/df=1.58$; CFI=.99, TLI=.98, RMSEA=.05, SRMR=.03). * $p<.001$.

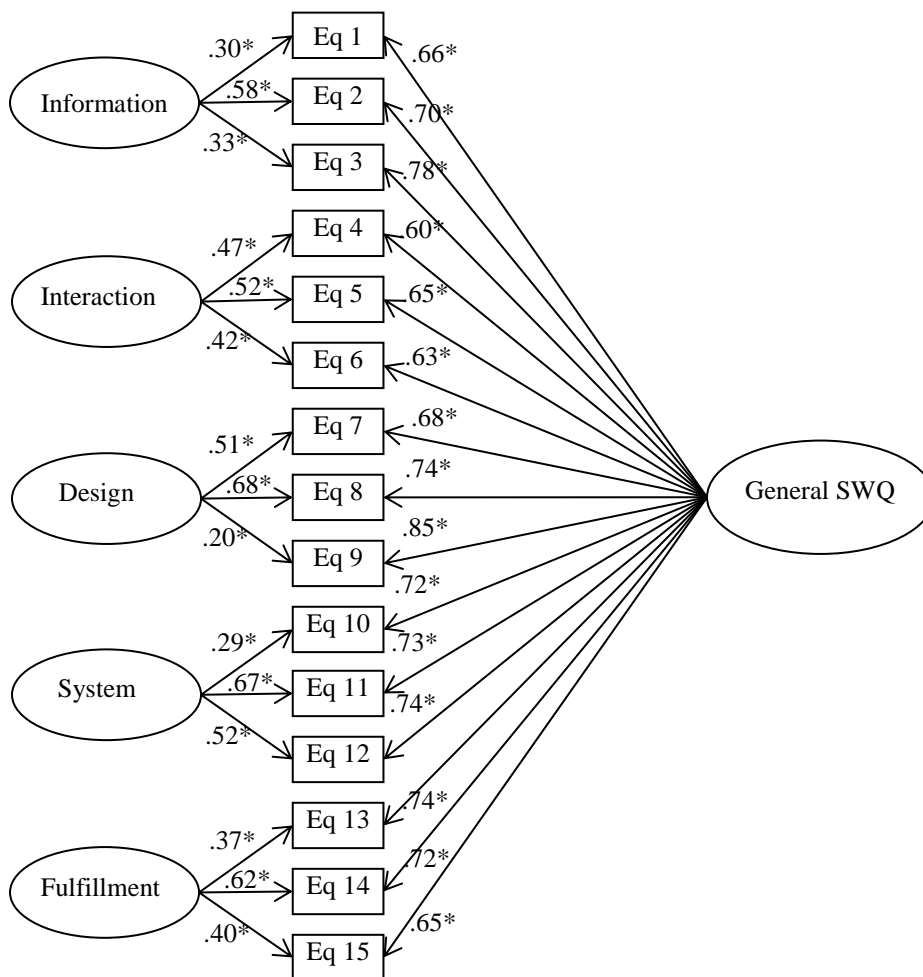


Fig. 2. Second-order model of Sport Website Quality (SWQ) ($\chi^2=238.53$, $df=85$, $\chi^2/df=2.81$, CFI=.95, TLI=.94, RMSEA=.08, SRMR=.06). * $p<.001$.

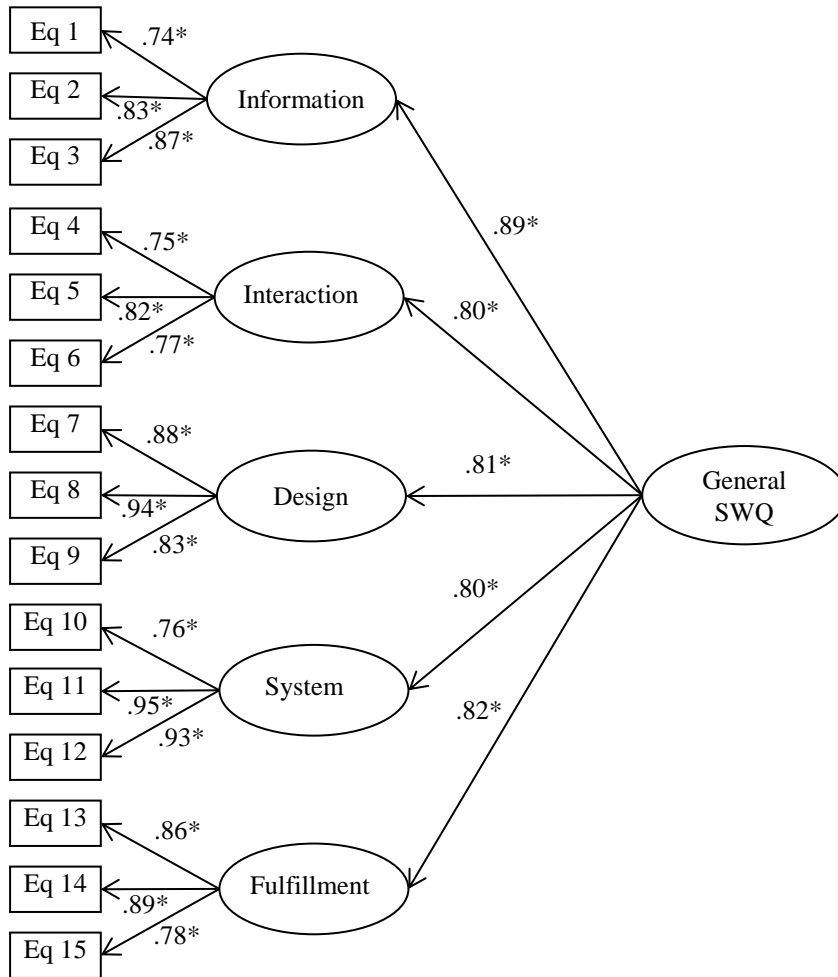


Fig. 3. Hypothesized simultaneous equations model of Sports Website Quality (SWQ) ($\chi^2=300.36$, $df=162$, $\chi^2/df=1.85$; CFI=.97, TLI=.962, RMSEA=.06, SRMR=.05). * $p<.05$. † $p<.001$.

