

Journal of New Studies in Sport Management

Journal homepage: <https://jnssm.uk.ac.ir>

Vol 2 Issue 1/ February 2021/59-67



Online ISSN: 2717-4069

Sport JourQual: A Scale for Measuring the Service Quality in Sport Journals

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Doi: 10.22103/jnssm.2021.17018.1017

A B S T R A C T

A R T I C L E I N F O

Article history:

Received: October 2020

Accept: November 2020

Online publish: February 2021

Keywords:

Service quality

Sport journals

JourQual

The purpose of this study was to develop a scale for measuring the service quality in sport scientific journals. A mixed approach was conducted to fulfill the research objectives. In qualitative phase 15 sport paper writer were interviewed and in quantitative phase, 357 sport researchers were studied through systematic random sampling. The face and content validity of the scale was confirmed by 15 experts and the final questionnaire of the scientific journals service quality was provided to 29 subjects. 26 items were ranked in five factors (accountability speed, executive structure, trustworthiness, employees and updating) based on exploratory factor analysis with orthogonal rotation. Cronbach's alpha, KMO, Bartlett Test and confirmatory factor analysis were used by SPSS and LISREL for data analysis. It is worth noting that the results of confirmatory factor analysis and Cronbach's alpha coefficient (0.91) supported the five-factor structure of JourQual scale and confirmed its validity and reliability.

Introduction

Scientific journals as a significant media of knowledge transfer have played critical roles in knowledge promotion and knowledge advancement (Khatibi et al., 2011). The journals are the most important components of transferring the findings to the peers around the world. The scientific articles published in these journals show the contribution of the researcher in knowledge advancement and these articles are considered as a criterion for evaluating the researchers' performances (Naseri and Diani, 2010). There are some reports on the number of scientific journals in the world (Jinha, 2010). In one of these reports, Gu and Blackmore (2016) reported the number of scientific journals in the world from 1965 to 2015 equal to 36442 journals. On the other hand, evaluating the research

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performance whether at the level of individuals, institutions, research groups, and universities have become a significant issue. Focusing on the quality of research led to the focus on the quality of journal which can be evaluated by different factors such as journal impact factor (JIF) (Mingers and Yang, 2016). Although the quality of journal is of great significance, another important issue can be the service quality provided by journals.

The service quality has become one of the most significant issues in academic research during the recent decades (Bruce and Lin, 2010). The presence of different definitions of the service quality in different studies and from different perspectives has made it difficult to give an appropriate definition for the service quality. The reason for this issue can be related to its multi-factor dimensions and different perceptions of the service quality by costumers (Gulc, 2017). Philip Cotler (1999) believed that service is an intangible activity or benefit supplied by one party of exchange to the other party. Othman and Owen (2002) defined the service quality as a degree of difference between the perceptions and expectations of customers from services. According to different definitions, customer is an important part of the service quality concept. In case of scientific journals, the readers of scientific articles and the researchers submitting the articles can be regarded as the service customers. In the past, customers had to select limited services but today they have more options for selecting their desired products and services. Due to the process of privatization and income generation of journals, regarding the service quality provided by journals is crucial for the satisfaction of researchers. When the service provider understands how customers evaluate their services, it can positively affect their expectations (Roses et al., 2009). For this reason, journals can improve their services according to the researchers' demands by recognizing the qualities perceived by researchers. Various studies have already attempted to make and develop some scales for measuring the services quality. SERVQUAL scale, one of the first scales being widely used, was proposed by Parasuraman et al. (1985) and it was modified several times during the next years. This scale, based on gap theory, defines the service quality based on the gap between customer's expectations and customer's perceptions and its final version includes a 22-item scale in five dimensions of tangibles, reliability, accountability, assurance and empathy measuring the service quality in expected and perceived situations. However, Cronin and Taylor (1992) questioned the gap between expectations and performance as a basis for measuring the service quality and suggested the SERVPERF scale which directly explains customer perceptions of performance while facing the services. Based on their studies, the performance-based scale is the modified concept of measuring the service quality structure with SERVQUAL scale. Although this scale can measure the service quality in many service organizations, its components and its items in some services require modifications and reviews. Based on this limitation, scales were made to measure the service quality in different services such as internet websites (Loiacono, 2007), academic environments, etc.

In sport, there are several models for evaluating service quality. Models have been presented in different years such as REQUAL by MacKay and Crompton (1990), TEAMQUAL by McDonald et al (1995), QUESC by Kim and Kim (1995), CERM-CSQ by Howat et al (1996), SPORTSERV by Theodorakis et al. (2011), SQFS by Chang and Chelladurai (2003), SQAS by Lam et al. (2005), SSQRS by Ko and Pastor (2005), Service quality models in health and wellness industry by [Lagrosen](#) and [Lagrosen](#) (2007) and Moxham and Wiseman (2009), respectively. In one of the newest studies, Sarani and Elahi (2016) has developed and validated a service quality scale in sport and showed that four factors including "Accessibility and security, accountability, reliability and tangibles" were explained.

Based on the literature review, different scales have been developed to measure the service quality in diverse areas such as the sports industry. Unfortunately, no study was found to evaluate the service quality in sport scientific journals and only few studies can be cited in the field of education and research. For example, Bazargan et al. (2014) used a scale for measuring academic services including six factors of electronic services, interactions, physical space, educational services, library, and welfare services. In addition, Shahverdani (2010) used SERVQUAL model to measure the service quality in research context. This model includes research services parameters and five components of tangibles, reliability, accountability, assurance and empathy. Sport sciences have been extensively

developed in the recent decades. The scientists and researchers of sport sciences conduct many studies in various fields of physical education and sport sciences and publish their findings in scientific journals as well as regional, national and international conferences (Asgari et al., 2014). To get a complete understanding of the researchers' expectations and making effort to improve the service qualities, conducting studies in this field is of great importance. Therefore, the present study was set up to develop a validated scale for measuring the service quality of scientific journals in the Iranian physical education journals.

Material & methods

A mixed approach was conducted to fulfill the research objectives. In qualitative phase 15 sport paper writer were interviewed and in quantitative phase, 357 sport researchers were studied through systematic random sampling. The samples were selected from sport authors due to the time scope of published articles and the change in the service quality by journals and since many researchers of older articles did not have the status of provided services, the time scope was considered from 2011 until 2018. The number of articles published in these journals was equal to 5134. Based on Cochran sampling formula, the appropriate statistical sample size was found to be 357. The research sample were selected through systematic random sampling, therefore, 357 authors of articles were selected as the statistical sample from 27 journals. The face and content validity of the questionnaire were confirmed by these individuals using the two-step Delphi method. After the end of this stage, the final questionnaire with 29 items in the 5-point Likert scale (completely opposing = 1, completely agree = 5) was provided to the subjects to conduct the construct validity through exploratory and confirmatory factor analysis. In a pilot study on 30 subjects, the reliability of the questionnaire was found to be 0.91 using Cronbach's alpha. Descriptive and inferential indices such as Cronbach's alpha, Kaiser-Meyer-Olkin index, Bartlett test, and confirmatory factor analysis were conducted for data analysis by applying SPSS and LISREL software.

Results

In order to identify the components of the service quality questionnaire in scientific journals and to confirm the construct validity of the research scale, the exploratory factor analysis with orthogonal rotation was used. Moreover, the Kaiser-Meyer-Olkin index (KMO) was used to fit the sample size for exploratory factor analysis. The value of this index was equal to 0.804 and since the values greater than 0.7 for this index are an acceptable level, thus the value of this index indicates the appropriateness of the sample size for exploratory factor analysis. Furthermore, Bartlett test was used to determine the accuracy of the factors separation. Additionally, the significance of the Bartlett test at 0.05 level confirmed the appropriateness of the factors separation in exploratory factor analysis.

Table 1. Kaiser-Meyer-Olkin and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	Bartlett's Test of Sphericity		
	Approx. Chi-Square	df	sig
0.804	6493.09	325	0.001

The scree plot (Figure 1) demonstrates the exploration of five factors with the Eigen value greater than 1. The results of Table 2 indicate that from 29 items, 26 items of the scale were classified under five components (6 questions for responsiveness speed, 7 questions for executive structure, 5 questions for trustworthiness, 4 questions for updating, and 4 questions for employees) due to having a factor load above 0.45 while 3 questions were deleted due to having a factor load under 0.45. It should be noted that the five factors extracted in this study indicated 67.23% of the variance and naming the factors was based on the provisions of the items describing each factor.

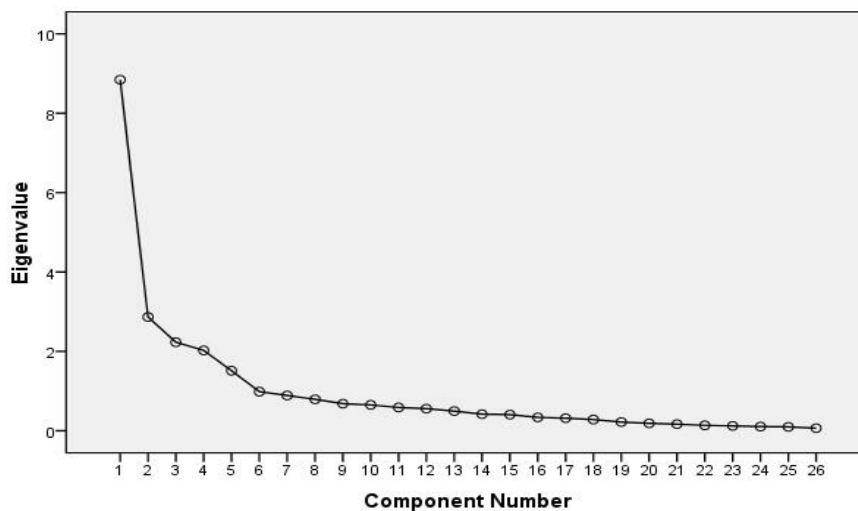


Figure1. Scree Plot of Extracted Factors

Table 2. Extracted Factors and Indices

Component	Items	Factor loading	% of Variance	Total	Cronbach's alpha
Responsiveness speed	Rapid response to the request of researchers	0.841	16.74	8.84	0.89
	The speed of the action in checking the articles submitted	0.841			
	Speed in the process of reviewing articles	0.847			
	The speed of the action in the publication of accepted articles	0.654			
	The speed of action in choosing reviewers	0.732			
	Publication of issue numbers at the appointed time	0.662			
Executive structure	Understanding the instructions for writing articles	0.830	16.29	2.86	0.85
	Ease of sending articles	0.746			
	Ease of access to printed copies of journal articles	0.583			
	Logical instructions	0.775			
	Simplicity of the website's website content	0.638			
	Ease of access to electronic editions of journal articles	0.697			
	Insert the appropriate template of a standard article on the site	0.641			
Trustworthiness	Recording the actual date of article receipt	0.828	13.86	2.23	0.87
	Recording the actual date of article acceptance	0.800			
	Publishing articles based on accepted articles priorities	0.605			
	Transparency of review process	0.811			
	Feel the safety of researchers in interactions with the journals	0.721			
Employees	Sufficient knowledge of journal's personnel to respond researchers	0.700	11.85	2.02	0.88
	Suitable and meticulous behavior of journal's personnel with researchers	0.810			
	The polite encounter of journal's personnel with researchers	0.844			
	Understanding the journal's personnel from the needs of researchers	0.607			
Updating	Use of new technologies to provide services to researchers	0.652	8.47	1.51	0.71
	Indexing articles in reputable scientific databases	0.456			
	Assigning special issues to some of the practical topics	0.858			
	Printing articles in various formats	0.768			
Total			67.23		0.91

In order to achieve a more accurate factor structure, the second-order confirmatory factor analysis was used. These models assumed that the latent variables in the common variance are due to one or more factors of higher order. Based on the reported T-values (Figure 2), in case of the relationship between the five factors and the quality of service in scientific journals being greater than ± 1.96 , the presence of a significant relationship between the five factors with the service quality in scientific journals was confirmed; so that all five factors can predict the service quality in scientific journals. Based on LISREL output presented in Table 3, all 10 reported indicators of the goodness of fit test confirmed the model fitness indicating that the presented model is generally an appropriate model.

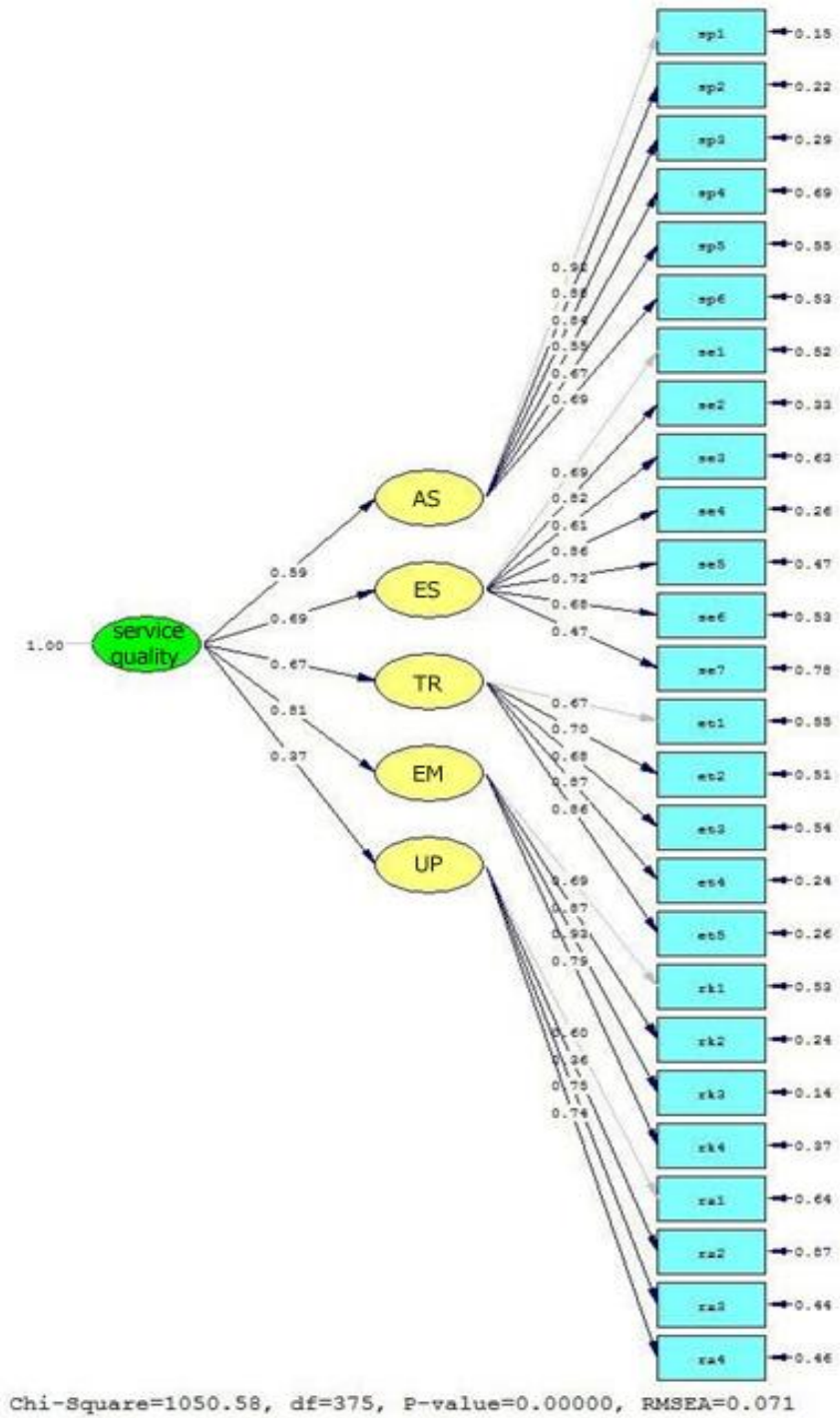


Figure 2. Confirmatory Factor Analysis for Sport JourQual Scale

Table 3. Results of the Goodness of Fit Test for the Second-order Confirmatory Factor Analysis

	Standard	Modified model	Result
X ²		1050.58	Ok
df		375	Ok
X ² /df	<3	2.80	Ok
RMSEA	<0.08	0.07	Ok
GFI	0.9>	0.90	Ok
AGFI	0.9>	0.91	Ok
NFI	0.9>	0.94	Ok
NNFI	0.9>	0.94	Ok
CFI	0.9>	0.95	Ok
IFI	0.9>	0.95	Ok
RFI	0.9>	0.92	Ok
PNFI	0.9>	0.96	Ok

Discussion

It seems that a competitive atmosphere will be created for journals in the near future due to the growing number of journals to attract the high-quality articles and the journals should try to attract researchers by applying efficient approaches. Although journals are not faced with the shortage of submitted articles, if they cannot attract researchers, they will receive lower-quality articles which cannot contribute to the quality promotion of the journals. Due to the privatization and income generation of journals and the arrival of private journals, the exclusive research market will turn into a competitive market. In such a competitive market, only the journals which attract more researcher satisfaction can survive. However, the lack of a standard scale in the field of measuring the service quality in journals led to the investigation of the validity and reliability of the service quality scale in scientific journals to have some reliable and credible indicators and factors for addressing this gap.

In this study, the initial questionnaire was prepared after studying the theoretical fundamentals and interviewing the experts. Then, the exploratory factor analysis was used for extracting the components of the scale. The results indicated the identification of five factors with the Eigen value greater than 1. In addition, 26 questions out of 29 questions of the first scale version were classified under five components (6 questions for responsiveness speed, 7 questions for executive structure, 5 questions for trustworthiness, 4 questions for updating, and 4 questions for employees) due to having a factor load above 0.45 while a number of 3 questions were deleted due to having a factor load under 0.45. It should be noted that the five factors extracted in this study indicated 67.23% of the variance and naming the explored factors was based on the provisions of the items describing each factor. However, component naming was difficult due to the complexity, the expansion of items as well as the differences between the items that made it difficult to name the components with the maximum semantic coverage. For example, in case of “employees” component, there were different items relevant to knowledge, behavior, and understanding of employees which make it harder to name each component more accurately. Then, the second-order confirmatory factor analysis was conducted to obtain a more accurate factor structure. The results confirmed the presence of a significant relationship between the five factors with the service quality in scientific journals; so that all five factors could predict the service quality in scientific journals and the indicators reported in the goodness of fit test confirmed the model fitness indicating that the presented model is generally an appropriate model.

Responsiveness speed is one of the important components of the service quality in journals. An article, passes through a multi-stage process since it is sent to a journal until it is published. The notification of the journal to the researchers on the reception of the article, evaluating the article structure and observing the guidelines, sending the article to the reviewers, the results of arbitration, accepting the article, publishing the article, as well as answering different questions of the researchers are among the main tasks of journals and these are perceived by researchers as a significant service.

Responsiveness speed was also considered in other studies on the service quality. In line with this finding, Sarani and Elahi (2016), Shahverdani (2010), Chang and Chaldurai (2003), Theodorakis (2011), McDonald et al. (1995), McKay and Crampton (1990) and Parasuraman et al. (1985), focused on this factor as significant component of service quality. In addition, the instructions and executive structures of the journals, which can be considered as a barrier for article publication, should be considered by researchers before submitting their articles. The quality of published articles is something which adds to the validity and quality of the journals and the complexity of processes and structures cannot increase the quality and validity of the journals. Unlike responsiveness, the executive structure was also neglected in other studies which may be due to the difference in the nature of journal services or other services. According to this finding, the duration of service and the structure of providing services should be short and simple in different types of services. However, providing services in journals is much longer and has different stage from the time the article is submitted to the time of publication.

Trustworthiness is another dimension of journal service quality. Researchers should have enough trust in the journal about the issues such as the accurate registration of receiving and accepting the articles as well as publishing the articles based on the priority of accepted articles. In addition, the sense of security in researchers for their interactions with employees, the internet site should be considered on the subject, research findings and the cost of arbitration and publication. In various studies (Parasuraman et al., 1985; Sarani and Elahi, 2016; Shahverdiani, 2010; Theodorakis, 2011) trustworthiness have been considered as the major components of the service quality and this finding showed that the service quality in scientific journals is no exception. Employees is another component which has been introduced in various studies as an important component. In the studies conducted by Ko and Pastor (2005), Lam et al. (2005), Chang and Chelladurai (1992), Howat et al. (1996) and Kim and Kim (1995), like the present study, employees was considered as one of the main components of service quality. Employee dimension which includes the behavior, understanding, and knowledge of executive and service employees to researchers can be regarded as a part of the service quality. The last essential component of the service quality in journals is the issue of journal updating. Updating the services in journals is based on the fact that domestic journals should be in line with international journals to make their efforts for increasing the scientific credibility and indexation in citation databases, publishing articles in various formats such as original research, review, short articles, etc. This component was also used as other components in other studies under different titles. For example, the component equipment which evaluates the quality and updating of equipment was argued in the studies conducted by Lam et al. (2005) and Ko and Pastor (2005).

In general, it seems that the scale provided in this study can be used as an appropriate scale due to the lack of an appropriate scales for measuring the service quality in scientific journals. In addition, in some studies such as Parasuraman et al. (1985), a two-dimensional questionnaire (observed and expected service quality) was used. However, a three-dimensional questionnaire (service quality observed, minimum expected service quality and maximum expected service quality) was used in some other studies. In the present study, like the SERVPERF scale of Cronin and Taylor (1992), a single-dimensional model was used to measuring the service quality in scientific journals. The findings of this study can provide an agenda for future research in this field.

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