

# Confirmatory Factor Analysis of the Sport Organizational Effectiveness Scale According Competing Value Framework

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**Abstract** The purpose of this study was to examine the factorial validity of the eight-factor model of sport organizational effectiveness scale developed by Shilbury and Moore (2006). This instrument consists of 65 items that assess eight composite effectiveness dimensions pertinent to the operation of sport organizations: Flexibility, Resources, Planning, Productivity, Availability of Information, Stability, Skilled Workforce and Cohesive Workforce. The competing value approach (CVA) was used as a theoretical framework for developing this scale. Data were obtained from respondents affiliated with 6 Iranian sport federations with a questionnaire. Results indicated that the eight-factor model of effectiveness is an effective instrument to assess the organizational performance of non-profit sport federations. The application of the CVA in studying sport organizational effectiveness was also confirmed.

**Keyword** Confirmatory Factor Analysis, Organizational Effectiveness, Competing Value Approach

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## 1. Introduction

Defining and measuring the effectiveness of an organization attracts an important research interest into the organizational theory. Many of the theoretical and practical approaches underline an existing conflict between the researchers who seek a determination of a series of criteria to measure the effectiveness [13, 16, 23]. Difficulties that relate to the study of concept have both conceptual and practical dimensions. Theorists have postulated four approaches to measuring organizational effectiveness. The first is the goal attainment approach [12] and is characterized by an identification of goals to measure performance. There are weaknesses in the goal approach, as the right goals require identification, and they should be measurable and time bound [31]. The weakness in this approach is clearly manifest in the sporting environment. That is, the propensity

to measure effectiveness in terms of gold medals and success at international competitions is too great to overlook. Much of sport's history is cluttered with administrators' myopic views of success [7]. The second framework is the system resource approach. As is the case with systems theory in general, this view of effectiveness focused on an organization's ability to attract resources to ensure viability. Once again, this approach highlights the ability to measure some inputs and outputs, but this is not necessarily a measure of effectiveness [8].

The third framework is the internal process approach and recognizes a shift in thinking; thinking that suggests that the dynamic between employees is an important effectiveness criterion. Factors such as trust, integrated systems, and smooth functioning are viewed as more accurate measures of organizational effectiveness compared to, for example, the goal attainment approach [24].

The emphasis on human resources leads to the fourth framework, known as the strategic constituencies approach. Emanating from the work of Connolly, Conlon, and Deutsch (1980), the identification of the key stakeholder's view of effectiveness is considered paramount. Each constituent group may have a different interest in the way the organization performs. Equally, each constituent group provided support in some way as an employee, board member, sponsor, player, official, or volunteer. The actions of the constituent groups are critical to this approach, as is their perception of effectiveness [7, 11].

The strategic constituencies approach has been the precursor to the CVA and it is therefore logical to extend the measurement of effectiveness incorporating constituent groups within the three dimensions composing the CVA. Recent approaches to understanding sport organization effectiveness emphasize the Competing Value Approach (CVA). Based on this approach, Shilbury, Moore (2006) [7] developed a new instrument to assess the effectiveness of non-profit sport organizations. This questionnaire consists of 66 items that assess eight effectiveness dimensions including Flexibility, Resources, Planning, Productivity, Availability

of Information, and Stability, Skilled Workforce and Cohesive Workforce which influence the operations of the national sport organizations such as board members, paid administrative staff, technical staff, international officials, and national athletes. Although there has been some limited work in examining the psychometric properties of scales used to operationalize the CVA [7, 10, 20, 28] some research, Shilbury and Moore (2006), Balduck and Baleens (2009), Eydi et al (2012) and Ibrahim et al (2013) work has been specific to sport [1, 3, 7, 12]. In fact, studies in this area are limited. In the present study, confirmatory factor analysis was used to examine the appropriateness of shilbury and Moore (2006) eight-dimension model for explaining a set of effectiveness measures relevant to the Iranian national sport organizations. In the light of the limited available research of multivariate effectiveness models, especially in the sporting literature, this is considered to broaden the definition space of effectiveness in a sporting organizational setting, and to confirm the factorial validity of the newly developed scale of the sport organizational effectiveness. The CVA to organizational effectiveness has also been adopted because of its capacity to encompass both the means undertaken and the ends achieved by an organization [30].

## 2. Competing Value Approach (CVA)

The competing values model was developed to explain

differences in the values underlying organizational effectiveness models and operates by combining two values in each of three areas. CVA was derived from a study by Quinn and Rohrbaugh (1981). In the two stage study, Quinn and Rohrbaugh (1981) asked a group of individuals, who had all presented or published papers in the area of organizational effectiveness to evaluate similarities between every possible pair of 30 indices of organizational effectiveness. These indices were derived from the criteria Campbell (1977) used to evaluate the performance of organizations [21]. The results of this analysis produced four competing sets of values organized around three dimensions. These three dimensions are: organizational focus emphasising the wellbeing and development of the organization (internal/external); organizational structure emphasizing stability/control or flexibility/innovation; and the third dimension: organizational means and ends; emphasising important processes such as planning/goal setting or resource acquisition [4, 22]. (See figure 1)

Quadrant 1: Human relations model—internal focus and flexible structure (2 cells).

Quadrant 2: Internal process model—internal focus and stable (control) Structure (2 cells).

Quadrant 3: Open systems model—external focus and flexible Structure (2 cells).

Quadrant 4: Rational-goal model—external focus and stable (control) Structure (2 cells).

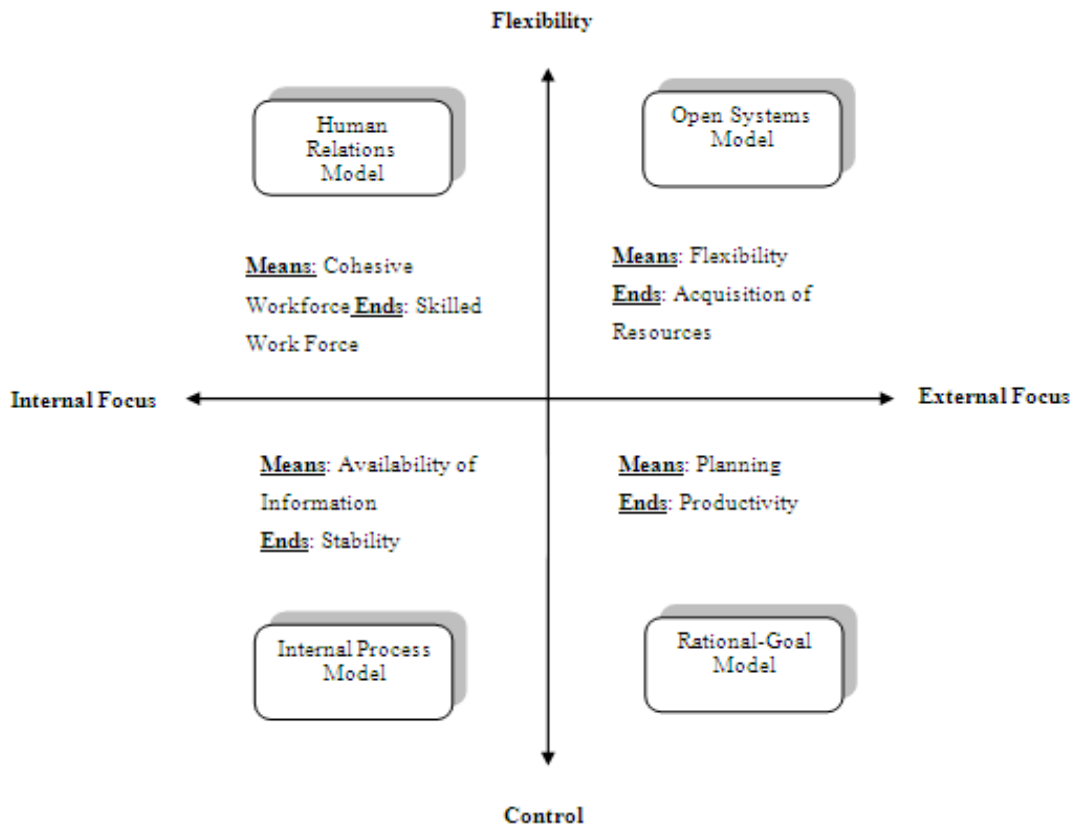


Figure 1. Four Models of Organizational Effectiveness Source: Robbins & Barnwell (1998), Shilbury & Moore (2006).

Slack (1997) noted that the strength of the CVA is that it takes into account the paradoxical nature of organizational effectiveness. It also acknowledges that different constituents use different types of criteria in their assessment of an organization, that some of these criteria may be conflicting, and that some may change over time.

Quinn and Spreitzer (1991) [20] assessed the psychometric properties of two CVA instruments using multitrait-multimethod analysis and multidimensional scaling. Both techniques provided support for the validity of the framework. Kallaith, Bluedorn and Gillespie (1999) [28] validated the CVA using structural equation modeling. The results also supported the viability of the theoretical framework. Although the CVA was originally designed to measure effectiveness, the framework has been extensively used in numerous areas of organizational research such as organizational culture [20, 26] organizational climate [15], and organizational transformations [25]. A criticism on the CVA is that it reflects effectiveness value judgments of academics and organizational theorists. The CVA explored how academics think about the effectiveness construct.

Recently some work held for measuring Sporting federation in Iran and Iraq that applied CVA as a theoretical framework. Eydi et al (2011) [10] measuring Iranian sporting federations effectiveness that used Shilbury, Moore (2006) [7] questionnaire, result of study showed that productivity and planning (rational goal quadrant) was the critical determinant of effectiveness in sporting federations. Also, Ibrahim et al (2013) [3] survey on measuring Sporting federation of Iraq used this questionnaire reveal that Stability and interaction (internal process quadrant) was the critical determinant of effectiveness in Iraq sporting federations.

### 3. Method

Proportional sample allocation was employed to identify respondents for completing the postal questionnaire. As a result, a total of 362 postal questionnaires were addressed to board members, paid employees, player, coaches and officials of six sporting federations of Wrestling, Wight lifting, Taekwondo, Volleyball, basketball and Handball. 258 surveys were completed and returned for analysis (response rate 72 %). The five constituent groups were represented in the following proportions: board members 5%, national coaches 13%, players 26%, officials 12%, and employees 44%. (See figure 2).

However, due to one or more missing items, the confirmatory factor analysis of the Sport Organizational Effectiveness Scale (Shilbury & Moore, 2006) was conducted on 258 surveys. This questionnaire is theoretically based on the competing value framework and was used to measure the sporting federation's organizational effectiveness. It totally consists of 66 indexes of effectiveness, adapted to a Likert-type graded scale (1 = totally disagree, 5 = totally agree), which relate to 4 quadrant of Human relations model, Internal process model, Open

systems model, Rational-goal model and 8 factors: a) Flexibility ( 13 indexes), b) Resources (4 indexes), c) Planning (6 indexes), d) Productivity (6 indexes) e) availability of Information (4 indexes), f) Stability (6 indexes), g) Cohesive Workforce(6 indexes), h) Skilled Workforce (6 indexes).

Respondents from the constituent groups of the eight federations participating in this study were asked to rate the level of effectiveness (for their respective sport) for each statement contained in the questionnaire. A high rating would naturally indicate a perception. For example, in the first cell, flexibility, the statement "The organization is seeking opportunities to develop the sport" required respondents to provide a rating based on their perception of how effective the sport was or was not in seeking opportunities to develop the sport.

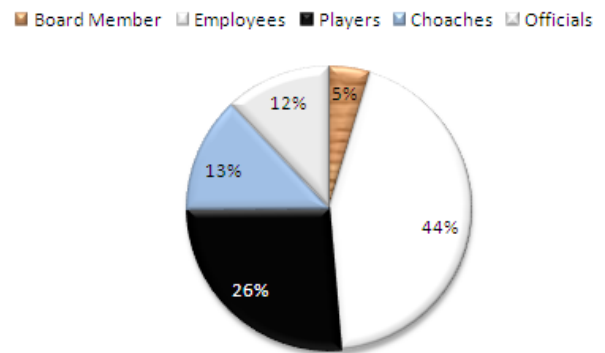


Figure 2. Respondent Return Rates

### 4. Results

Table 1 presents means and standard deviations of the eight factor of questionnaire according to CVA. The eight separate factors of the hypothesized model were moderately correlated and Indicate desirable internal consistency attributes for all of the subscales.

Evaluation of the confirmatory factor analysis results (See Table 2) indicates that the eight-factor model produced a better fit in terms of the CFI (.93), NNFI (.92), and RMSEA (.039).

However, as Table 2 shows, the fit of the unidimensional model was considered satisfactory. In fact, the fit statistics – GFI, AGFI, CFI and RMSEA equal to .98, .95, .99, respectively, showed the Good fit of the observed data. In summary, the results of these analyses confirm the hypothesized factor structure of the organizational effectiveness measures.

Confirmatory factor analysis was used to load each summated factor onto its respective latent factor, and the intercorrelations among these latent factors were examined clearly, each manifest (measured) factor contributes to the relevant theoretical quadrant; however, these quadrants are themselves moderately correlated (r = .46 to r = .63). Also, relationship between quadrants and eight sub factor was high

( $r = .61$  to  $r = .96$ ) (See Figure 3).

Confirmatory factor analysis result (Figure 4) showed that eight factor has a direct correlation to organizational effectiveness. Productivity, recourse and stability had high correlation to organization effectiveness and this showed

important of this factor on effectiveness. Also, the factor loadings of the five-factor structure were all statistically significant at the .05 level, varying from .42 to .75. (see Table 3)

**Table 1.** Mean Standard Deviations and Correlation Matrix of eight variables

		M	SD	1	2	3	4	5	6	7	8
1	Flexibility	19.32	2.20	1							
2	Resources	34.12	6.41	.360	1						
3	Planning	32.72	4.93	.445	.506	1					
4	Productivity	48.35	6.84	.445	.484	.569	1				
5	Information	20.03	4.72	.269	.175	.163	.153	1			
6	Stability	32.35	5.46	.200	.545	.446	.457	.216	1		
7	Cohesive Workforce	24.76	8.54	.247	.233	.432	.369	.056	.341	1	
8	Skilled Workforce	28.83	4.76	.281	.147	.248	.341	.637	.364	.152	1

**Table 2.** Fit Statistics for Confirmatory Factor Model

Model	$\chi^2$	Df	GFI	CFI	AGFI	RMSEA
EFFESPO (1 factor)	26.50*	9	.98	.99	.95	.039

Note. CFI = comparative fit index; NNFI = non-normed fit index; AGFI= adjusted goodness of fit index , GFI goodness of fit index RMSEA = root mean square error of approximation  
\*  $p < .001$ .

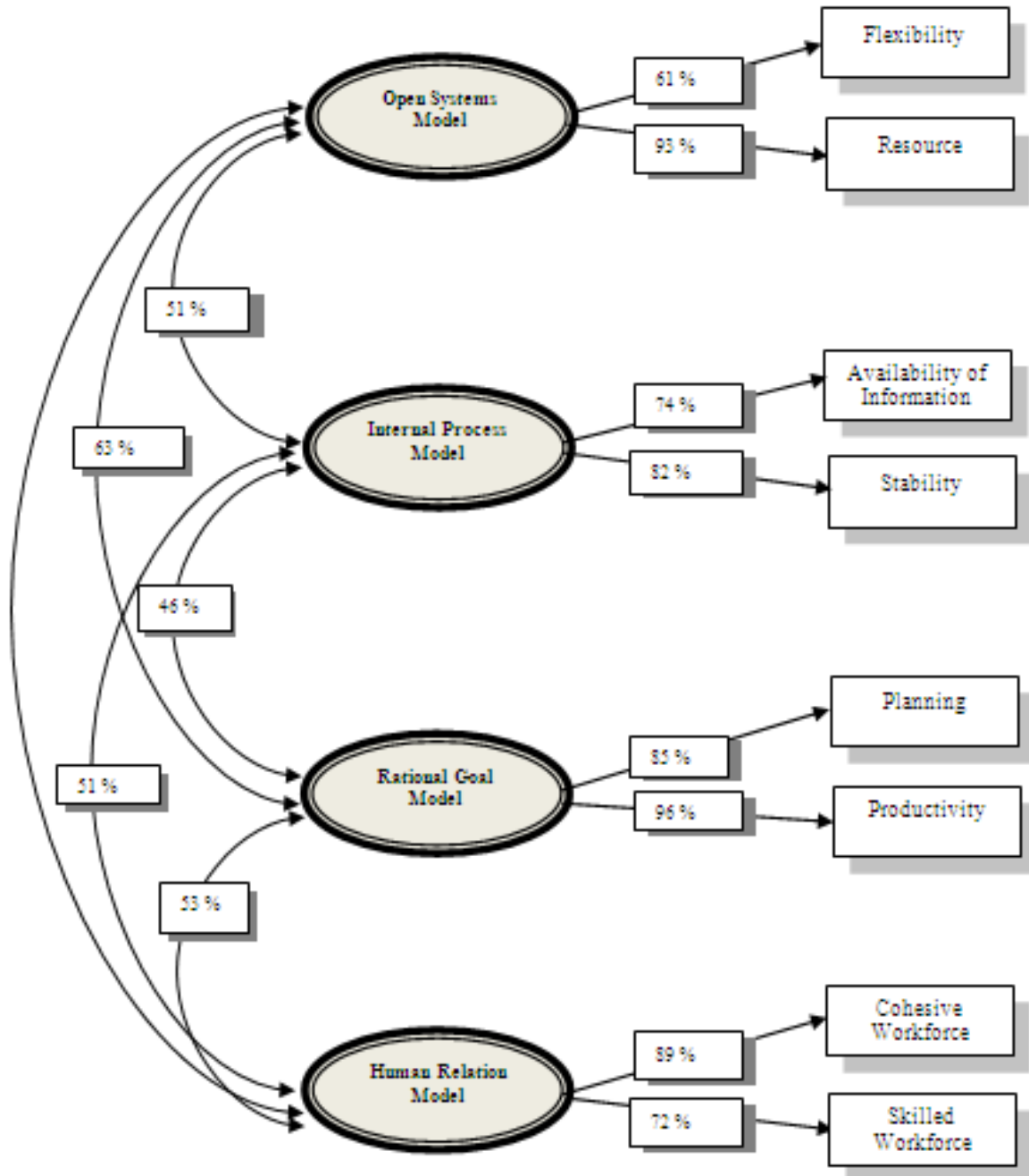


Figure 3. Intercorelations among Quadrants

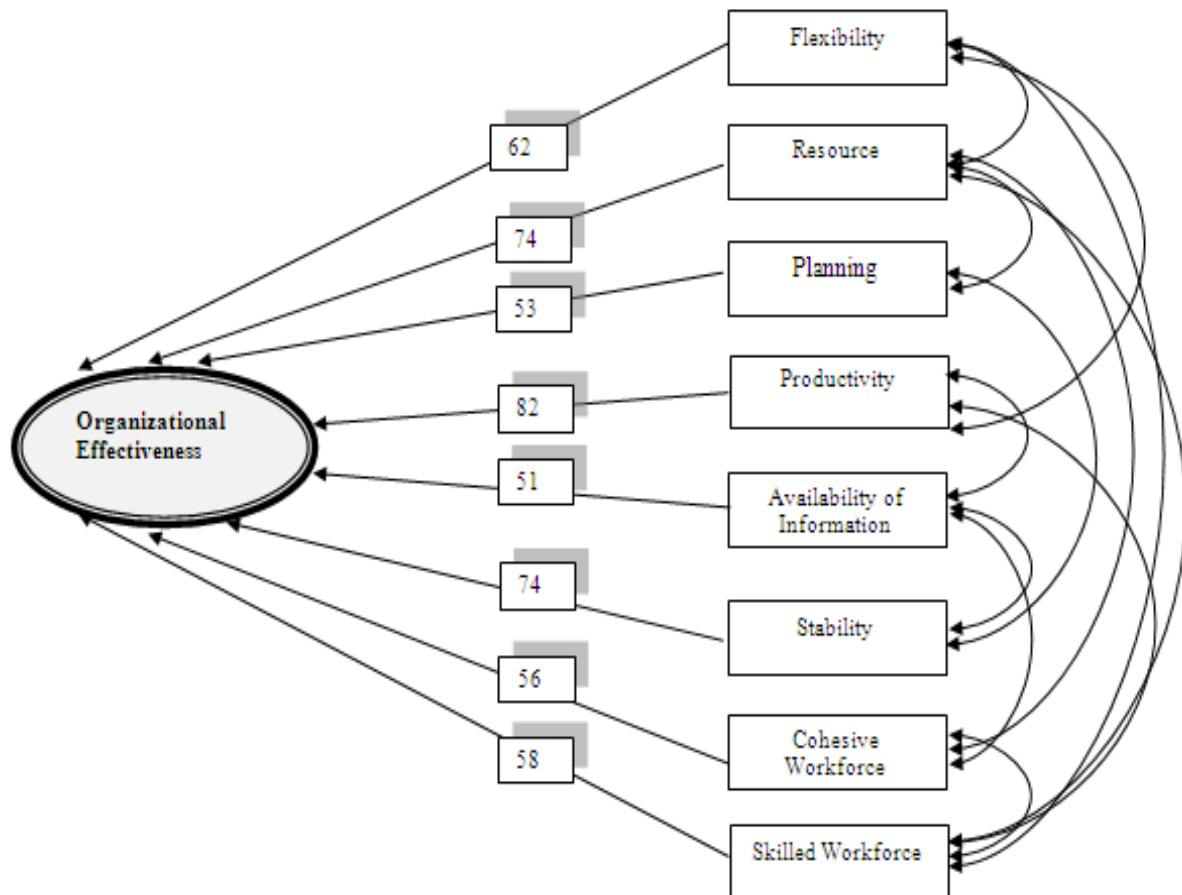


Figure 4. Confirmatory Factor Analysis of Organizational Effectiveness

Table 3. Factor loadings for the 65-item Organizational Effectiveness Scale for a single-factor and 8-factor model.

	Component	Factor Loading
<b>Flexibility</b>		
1	The board is receptive to suggestions for change.	0.57
2	The organization monitors changes in media and public perceptions of its operations	0.56
3	The organization is seeking opportunities to develop the sport.	0.44
4	The organization monitors changes in constituents' expectations	0.42
5	The organization monitors changes in government funding, legislation, and the economic environment	0.42
	Cronbach's $\alpha$	0.78
	% variance	49.12
<b>Recourse</b>		
6	The organization is able to acquire funds from a variety of sources.	0.75
7	The organization attracts satisfactory numbers of coaches	0.74
8	The organization gains adequate government funding	0.69
9	The organization attracts satisfactory numbers of players.	0.67
10	The organization is successful at attracting spectators	0.62
11	The organization gains substantial private sector sponsorship	0.56

12	The organization attracts quality professional staff	0.54
13	The organization attracts satisfactory numbers of officials	0.51
14	The organization has adequate facilities for all levels of competition	0.48
15	The organization attracts satisfactory numbers of volunteer administrators.	0.46
	Cronbach's $\alpha$	0.76
	% variance 61.23	42.37
	<b>Planning</b>	
16	The strategic plan includes vision for the future	0.72
17	The organization regularly reviews the strategic plan	0.70
18	The organization attempts to include the views of all constituent groups	0.67
19	The strategic plan includes clear action.	0.65
20	The organization regularly evaluates its performance based on the strategic plan	0.61
21	The strategic plan includes performance measures	0.57
22	The strategic plan includes clear and attainable objectives	0.53
23	The strategic plan includes identification of how the plan can be resourced	0.46
24	The organization regularly engages in long-term strategic planning	0.42
	Cronbach's $\alpha$	0.74
	% variance	56.22
	<b>Productivity</b>	
25	The organization is successful at providing services that meet the expectations of players	0.74
26	The organization is able to maximize the use of its financial resources	0.72
27	The organization is successful at providing services that meet the expectations of coaches.	0.70
28	The board focuses on the management and direction of the sport	0.69
29	The organization is successful at providing services that meet the expectations of spectators	0.66
30	The organization achieves its strategic plan.	0.65
31	The executive director (or equivalent) has the autonomy to make operational decisions.	0.63
32	Equipment and facilities	0.60
33	The organization is successful at providing services that meet the expectations of volunteer administrators	0.57
34	The organization utilizes current information technology	0.53
35	Decisions are made efficiently at board level	0.49
36	The organization is successful at increasing affiliated membership numbers	0.45
	Cronbach's $\alpha$	0.76
	% variance 61.23	52.08
	<b>Availability of information</b>	
37	The organization communicates well with affiliated state sporting organizations.	0.68
38	The organization communicates well with government agencies	0.67
39	The organization is able to communicate with all constituent groups	0.62
40	The organization communicates well with other sporting organizations	0.56
41	The organization is successful at gaining feedback information from constituent groups	0.52

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	Cronbach's $\alpha$	0.73
	% variance	45.30
	<b>Stability</b>	
42	The organization has good retention numbers of coaches	0.73
43	The organization is able to maintain a sound financial base.	0.70
44	The organization is able to control the growth of the sport	0.66
45	The organization has good retention numbers of players.	0.61
46	The organization is able to maintain a consistently good public profile	0.57
47	The board is able to maintain consistency in direction and decision making	0.57
48	The organization has good retention numbers of officials	0.53
49	The organization has good retention numbers of professional staff	0.48
50	The organization has good retention numbers of volunteer administrators.	0.46
	Cronbach's $\alpha$	0.75
	% variance	57.43
	<b>Cohesive workforce</b>	
51	The organization effectively utilizes a formal performance review for professional staff	0.71
52	The organization appoints professional staff based on the basis of skills they can bring to the organization	0.68
53	Paid staff receives adequate compensation.	0.65
54	The organization encourages and supports further training for professional staff	0.60
55	The organization appoints board members based on the basis of skills they can bring to the organization	0.56
56	The organization has an adequate reward and recognition system for its officials	0.53
57	The organization conducts appropriate training & development courses for its coaches.	0.47
58	The organization has an adequate reward and recognition system for its volunteer administrators	0.43
	Cronbach's $\alpha$	0.78
	% variance 61.23	40.75
	<b>Skilled workforce</b>	
59	The organization has an adequate reward and recognition system for player achievement.	0.68
60	The organization has an adequate reward and recognition system for coaches.	0.65
61	Professional staff and volunteers are working toward achieving common goals. .20 .90	0.63
62	The organization has an adequate reward and recognition system for officials.	0.60
63	The organization appoints board members based on the basis of skills they can bring to the organization.	0.59
64	The organization has an adequate reward and recognition system for volunteer administrators.	0.55
65	The organization has minimal conflict between paid staff and volunteers.	0.50
	Cronbach's $\alpha$	0.74
	% variance	43.57

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## 5. Discussion

The aim of this study was to confirmatory factor analysis of organizational effectiveness scale applicable to national sporting organizations based upon the dimensions of Shilbury, Moore (2006) and Quinn and Rohrbaugh's (1981, 1983) competing values theory. Given Kalliath et al.'s (1999) recommendation regarding the limited value of combining the scale into a single omnibus effectiveness factor, the psychometric evidence derived from confirmatory factor analysis and reliability estimation is reasonably supportive for the organizational effectiveness scale in sport organization instrument. The results show that this scale is a valid instrument that can be employed by sport practitioners to assess and enhance organizational effectiveness in sporting organization. As Harrison and Shirom (1999) state, a successful diagnosis depends on effectiveness measures that are appropriate to the focal organization.

The identified eight effectiveness constructs represent meaningful categorizations of organizational effectiveness and seem to reflect the major thematic notions intended by the authors. The instrument, though may not address all possible effectiveness measures used in a sporting organizational setting, broadens the definition of organizational effectiveness towards a direction which is especially meaningful to non-profit sport organizations.

As, contrary to Kalliath et al. (1999), there were significant correlations among all the measured variables, a subsequent analysis was conducted to examine the relationships among the four latent factors. These results are different to Kalliath et al. where relatively small correlations were found between latent variables. In addition, significant correlations were observed between all eight cells, with some polar opposites (e.g., Stability and Flexibility) showing high correlations. Also, the result in line to Shilbury, Moore (2006) and Eydi (2012) that reported moderate and high correlations among all the measured variables particularly resource, productivity and Stability.

The suggested eight factor model provides a conceptual framework to operationalize the effectiveness construct in sports organizations. Furthermore, the adopted CVA ensures much more convincing evidence of the acceptability of the proposed model by different interest groups. One of the advantages of the CVA is its capacity to visually articulate effectiveness results on each of the four models and eight cells. Visualization in this form, referred to as an amoebagram, allows managers to quickly ascertain strengths and weaknesses of an organization in terms of effectiveness. Overall levels of effectiveness are shown, but more important, the perceptions of effectiveness of each of the major constituent groups can also be plotted onto the CVA (Shulburi & Moore, 2006, Eydi et al 2011, Balduck, A.L, Baleens' 2009).

Confirmatory factor analysis result (Figure 3 to All 8 manifest factors organizational effectiveness has a direct correlation to organizational effectiveness. it is Productivity (e.g., the organization is successful at providing services

which meet the expectations of players, coaches, administrators (i.e., its members, constituents, etc.) that is the marker variable for organizational effectiveness, at least as indicated by these data. In terms of the four quadrants composing the CVA, it is interesting to observe that aspects of three of these quadrants—productivity (rational-goal quadrant), resource (open systems quadrant), and Stability (internal process quadrant)—were the three major contributors and markers in their respective quadrants. A similar pattern can be discerned in Kalliath et al.'s (1999), Shilbury, Moore (2006) Eydi (2012) and Ibrahim (2013) study that in each of them reported one or more of this factors were dominant in organizational effectiveness.

Nevertheless, subsequent research should further assess the psychometric properties of the proposed scale with respect to different samples of sport organizations (i.e., local sport clubs, private profitable fitness centers, municipal sports organizations) and with respect to other constituent groups directly associated with the operation of national sport organizations (i.e. local clubs, state sport agency, sponsors, promising athletes etc.). As Chelladurai, Szyszlo and Haggerty (1987) indicate, the study of organizational effectiveness is surrounded by increased complexity when a multiple constituency perspective is followed. Future research might also consider the relative importance of each of the effectiveness dimensions identified. Additionally, research can examine how the suggested effectiveness measures can be linked to practical use by generating respective quantifiable indicators of effectiveness in different sport organizational setting. We suggest that this scale will be examining in different nations, culture and other sporting organizations to assured the reliability.

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