

Measuring school leaders' adaptability in the UAE: development of a scale to measure leadership adaptability

Ali Aldhaheeri

College of Business, Abu Dhabi University, Abu Dhabi, United Arab Emirates

Abstract

Purpose – This paper presents a quantitative measurement instrument for Leadership Adaptability.

Design/methodology/approach – Qualitative themes are examined, grouped and developed into 13 quantitative statements of Leadership Adaptability. A robust analysis is conducted to understand the relationships and underlying dimensions in the statements. Three types of dimension reduction techniques are employed: principal components analysis and two types of exploratory factor analysis. The instrument is tested in the form of a survey for the first time with public and private school leaders in the Emirate of Abu Dhabi ($n = 167$).

Findings – The quantitative Leadership Adaptability scale is validated by applying robust tests of dimensionality, validity and reliability. The three dimension reduction tests identified that the 13 statements are measuring a single dimension of Leadership Adaptability, and should therefore be treated as a single homogeneous scale. Reliability analyses further confirmed the results of the dimension reduction results, with a high score for Cronbach's alpha of 0.953, classified as an "excellent" level of reliability. Discriminant validity tests of the 13 statements, analysed alongside the 20-item Cultural Intelligence Scale, further confirmed the statements as being a distinct scale. Applying the instrument to Abu Dhabi school leaders showed they have high levels of adaptability.

Originality/value – This paper presents the first known quantitative measurement instrument for understanding Leadership Adaptability. This instrument addresses a need by developing a quantitative tool for researchers studying Leadership Adaptability, and it can be used to facilitate further exploration of this topic.

Keywords Organisational leadership and leadership development, Adaptability, Cross-cultural values and beliefs, Quantitative Scale

Paper type Research paper

1. Introduction

Increasing globalisation is challenging for leaders due to greater diversity in the workforce (Ang *et al.*, 2006). Globalisation is a complex issue, with social, political and economic implications that go beyond individual countries and societies. It has prompted the need for leaders to develop experiences and skills to enable them to manage in culturally diverse settings, acknowledging that the cultural composition of the workplace can impact its effectiveness (Ng *et al.*, 2012). Consequently, there is a strong demand for leaders who have the skills required to lead culturally diverse teams (Groves and Feyerherm, 2011; Ang *et al.*, 2007).

Cultural diversity is very much reflected in the make-up of the UAE education system and its schools; both staff and pupils represent numerous countries and cultures from across



the world. UAE's cultural diversity leads to challenges for the leaders of the schools as it requires significant knowledge and understanding of cultural differences and, furthermore, the ability to adapt in situations characterised by cultural diversity.

1.1 Cultural intelligence

Cultural intelligence (CQ) is a construct which has been especially “motivated by the practicality of globalisation in the workplace”, and can be described as a means to gauge an individual's capacity to operate and manage in multicultural environments (Ang and Van Dyne, 2008). A leader who is culturally intelligent will exhibit a range of flexible behaviours that allow him to quickly adjust to a multicultural environment (Ang and Van Dyne, 2008).

CQ is based on a multidimensional framework of intelligence. It is defined as “an individual's capability to function and manage effectively in culturally diverse settings. ...a multidimensional construct targeted at situations involving cross-cultural interactions arising from differences in race, ethnicity and nationality” (Earley and Ang, 2003, p. 101). CQ has also been defined as “a capability, which increases the manager's ability to effectively interact with people belonging to other cultures” (Jyoti and Kour, 2017, p. 306).

Individuals with high CQ have the ability to gather pertinent information, make conclusions based upon it and then appropriately respond with cognitive, emotional or behavioural actions (Earley and Ang, 2003). Intercultural competencies are indications of an individual's adaptability; research has identified a positive relationship between CQ and adaptive leadership. Ang *et al.* (2007) found that individuals who are more aware of their environment are better able to understand and practise culturally appropriate role expectations; they are more capable of accordingly adjusting their behaviour. Ang *et al.* (2007) explain that such individuals demonstrate a more accurate understanding of role expectations and behaviours in diverse cultural settings.

Earley and Ang (2003) explain that CQ has a positive effect on Leadership Adaptability because it can support individuals to adapt to their host environment. By contrast, a negative relationship between CQ and Leadership Adaptability is likely to be found in situations where a leader does not apply adaptive behaviours that suit alternative cultural environments (Earley and Ang (2003)).

1.2 Leadership adaptability

Adaptive leadership can be summarised as appropriately altering behaviour as the situation changes. This has been expressed in a wide variety of ways – “flexible”, “adaptable”, “agile”, “versatile” – but all aim to describe leaders who are capable of accurately understanding a particular situation and modifying their behaviour accordingly (Kaiser *et al.*, 2007; Pulakos *et al.*, 2000, Wong and Chan, 2018).

Adaptive leadership has been termed a “theory of practice”, and was pioneered by Ronald Heifetz in *Leadership Without Easy Answers* (1994). At its most fundamental level, the approach developed seeks to distinguish technical problems from adaptive challenges, consequently producing distinct qualities of an adaptive challenge. Heifetz's theory is based upon people experiencing a sense of loss or reduced effectiveness as a result of change.

A leader's level of adaptability is related to their capacity to adjust their thoughts and behaviours in order to develop responses to changing decision-making situations (Luu, 2017). Linsky and Lawrence (2011) described adaptive leadership as an approach to leadership that demonstrates some distinct qualities and differences in its underlying focus. These include (Linsky and Lawrence (2011)) the following:

- (1) The concept of leadership revolves around understanding, behaviours and actions. It can, therefore, be learned, and is not an innate trait.

- (2) An organisation's ability to adapt rests on it possessing widespread leadership that can emanate from across an organisation – not simply from those at the top.
- (3) There is an inherent danger and difficulty to leading through adaptive change, as change typically generates resistance. As a consequence, adaptive leadership relies on understanding adaptive pressures and dynamics, and then applying those insights to greater success in leading through the change.

There remains a considerable lack of clarity in leadership and management research about the actual nature of adaptive leadership, as well as how it might best be assessed. Part of this ambiguity arises from the fact that it can occur in a variety of contrasting contexts, making it difficult to define and measure. Flexibility is needed in dynamic contexts and when moving between leadership positions with different demands and challenges (Northouse, 2016).

1.3 The absence of a leadership adaptability research instrument

Research, to date, from across the world has identified the importance of Leadership Adaptability (see Heifetz, 1994; Bass *et al.*, 2003; Owens and Valesky, 2007; Kouzes and Posner, 2002; James, 2006; Mobbs, 2004; DeGenring, 2005; Nanstanski, 2002; Linsky and Lawrence, 2011; Glover *et al.*, 2002), but further exploration remains limited, arguably hampered by the lack of an appropriate measurement instrument. This paper aims to address this limitation and contribute to the empirical literature with the development of a quantitative measurement instrument for understanding Leadership Adaptability. The new scale is based upon findings from a study of the qualitative facets of Leadership Adaptability, identified in focus groups (Aldhaferi, 2017). Beyond the new scale, this paper provides an empirical contribution in its thorough testing of the instrument, which is of international importance as it describes the first known quantitative expression of Leadership Adaptability.

2. Development of quantitative scale statements

The development of a quantitative scale builds on a qualitative study (Aldhaferi, 2017), utilising focus groups previously undertaken in order to understand the themes of Leadership Adaptability. A brief summary of the qualitative study follows, to provide context and to demonstrate the process of analysing focus group data in order to derive the quantitative scale statements used in the current study.

2.1 Focus group study

The focus groups were all held on 26 November 2014 and aimed to bring together principals and vice-principals from public and private schools in the Emirate of Abu Dhabi. Three sessions took place in total: with private school leaders, with public and a with group having a mix of both.

2.2 Focus groups methodology

The focus group approach utilised semi-structured questions in small groups. The intention was that this methodology would encourage an open conversation between the subjects and elicit an understanding of the experience of school leaders in adapting their leadership style when working in multicultural environments. The questions were designed to allow for an exploration of the impact of CQ on the level of adaptation of leadership style when operating in a multicultural environment. They included:

- (1) What kind of challenges does cultural diversity among stakeholders create for you as leaders?
- (2) In your experience, do leaders adapt their leadership style in the multicultural educational sector? Give examples.
- (3) Describe an experience where you have encountered a conflict or challenging leadership situation as a result of cultural differences among stakeholders. Describe the actions you took in order to resolve this situation?
- (4) Think of a time when you had the same situation/experience with two culturally different stakeholders. Did you handle each situation in a similar way or did you have to change your behaviour and actions in order to resolve each situation? Give reasons.

2.2.1 Analysis to determine themes of leadership adaptability. Analysis of the focus group sessions identified several themes of Leadership Adaptability. Some of these are inherent characteristics of leaders (personal characteristics of leaders, language and communication ability) and of behaviours which they exhibit (flexibility and adaptability, use of cultural strategies). Other factors are more context-driven, as context imposes rules and behaviours on leaders (Aldhaheri, 2017).

Participants identified issues relating to Leadership Adaptability in the Abu Dhabi education sector, which were then developed into sub-themes and used to formulate statements for the quantitative survey.

2.2.2 Development of the Leadership Adaptability Scale. Six main themes, each with sub-themes, were identified (Aldhaheri, 2017). From the main themes and their sub-themes, 13 scale statements were developed, as displayed in Table 1.

A 7-point Likert response scale was chosen, which asks respondents to what degree they agree or disagree with a statement, with 1 indicating “strongly disagree”, 7 indicating “strongly agree” and 4 indicating “neither agree nor disagree”.

CQ impact on the ability of the school leaders to adapt their leadership style

LA1	I have a high level of tolerance and acceptance towards other cultures
LA2	I modify the way to influence people to achieve organisational goals depending on an individual's particular culture
LA3	I adapt my approach to planning and scheduling tasks to accommodate the preferences (structured vs. flexible) of a diverse workforce
LA4	I change the way I provide feedback depending on the culture of the other person
LA5	I alter my leadership style when leading a culturally diverse workforce to maximise the impact on them
LA6	I have a consistent behaviour in adapting and adjusting my leadership style when dealing with a diverse workforce
LA7	I adapt my leadership style (transformational, transactional, laissez-faire) based on the culture of the subordinates
LA8	I adapt and flex the way I manage stakeholder relationships to best fit different cultural expectations
LA9	I seek culturally different views in solving problems
LA10	I am adaptable and prepared to change plans as circumstances change
LA11	I adapt and flex my leadership style based on the influence of the institutional environment such as geographic location and regulatory framework
LA12	I amend my leadership style to reach a compromise solution by which all stakeholders maintained self-respect
LA13	I recognise the need to continually improve my language capabilities in order to better communicate with culturally diverse/multilingual stakeholders

Table 1.
Thirteen statements developed to assess the impact of CQ on the ability of school leaders to adapt their leadership style

The results of the analysis of the focus group sessions support the findings of [Ang and Inkpen \(2008\)](#), who similarly concluded that CQ is a critical leadership competency in a multicultural environment. This was further corroborated by [Deng and Gibson \(2009\)](#), who found that CQ is a crucial competency for effective leaders in a cross-cultural role. [Dagher \(2010\)](#) argued that a leader who has adjusted to a multicultural environment will be better placed to adapt his or her leadership style, whereas an individual who has not adapted may need to devote greater cognitive resources to adaptation, leaving fewer available to focus on leadership style.

2.3 Quantitative survey methodology

To test the newly developed scale, a quantitative study was conducted (as part of a larger study not discussed in this paper). The context selected was school leadership in Abu Dhabi, as the Emirate is a culturally diverse country with Emiratis comprising only ~10% of the country's population (UAE National Bureau of Statistics). Schools are a microcosm of the diversity in the country, and school leaders face many challenges given the diverse staff and students.

The researcher obtained contact details of school leaders from the local regulatory body, the Abu Dhabi Department of Education and Knowledge (ADEK). The list included all 443 schools in the Emirate, 257 of which were public schools (58%) and 186 of which were private. The register of school leaders provided was used only to contact the total population of school leaders in Abu Dhabi and to invite them to participate in the study. It was not used in any further analysis, as might be the case in linked survey and register data studies.

A total of 443 questionnaires were emailed on 11 November 2015 to one school leader per school. To allay any fears pertaining to confidentiality or authenticity, the questionnaires were accompanied with an email covering contextual information and offering explanation of the aims of the study, its benefits, the importance of each leader's reply for the study's success, a guarantee of confidentiality and a statement that the results would be used for academic purposes only. Each questionnaire was accompanied by a letter of endorsement from ADEK, to add validity and credibility to the request.

A record was kept in order to monitor receipt of responses and to identify non-respondents. One week after the initial email and questionnaire were sent out, a follow-up email was sent to non-respondents. To further encourage participation, a second follow-up email was sent another two weeks after the first. This email encouraged participation by reaffirming the importance of the study and emphasised that the participation of all school leaders was vital to the success of the research.

Each subsequent reminder served its purpose and had the effect of generating further responses. In all, 167 responses were received, that is, a response rate of 37.7%. The respondents were representative of the school type (public / private) in the UAE, with 92 of the 167 responses (55%) from public school leaders, virtually identical to the proportion of public schools in the population (58%). Further comparisons were made between respondents and non-respondents to ascertain whether non-response was random (such as co-education/single gender school, location, school grade levels), but sample proportions were all approximately equal to population proportions, and thus there was no evidence to suggest non-response was not random.

3. Results

3.1 Descriptive statistics

Descriptive statistics ([Table 2](#)) show the mean score for each variable is high, with scores ranging from 5.48 to 6.48, indicating a sample with high Leadership Adaptability.

Table 2.
Descriptive statistics
for the leadership
adaptability scale

Variable	<i>N</i>	Mean	Std. Error of mean	Standard Deviation	Variance	Skewness	Kurtosis
LA1	166	6.48	0.08	1.04	1.09	-3.69	16.47
LA2	166	5.90	0.10	1.27	1.61	-2.30	6.42
LA3	166	5.90	0.10	1.27	1.62	-1.74	3.70
LA4	162	5.73	0.11	1.44	2.06	-1.50	1.90
LA5	165	5.99	0.10	1.30	1.70	-2.11	4.94
LA6	166	6.04	0.08	1.06	1.13	-2.23	7.88
LA7	166	5.48	0.11	1.46	2.12	-1.29	1.40
LA8	165	5.85	0.10	1.24	1.53	-1.96	4.93
LA9	166	6.02	0.09	1.20	1.45	-2.19	6.21
LA10	165	6.27	0.09	1.11	1.23	-2.82	10.42
LA11	165	5.94	0.09	1.19	1.42	-1.91	4.94
LA12	166	6.17	0.09	1.12	1.25	-2.65	9.46
LA13	166	6.11	0.10	1.31	1.73	-2.03	4.40

The standard error of the mean for each variable is low, with scores ranging from 0.08 to 0.11. Responses are narrow in their distribution, with standard deviation scores ranging from 1.04 to 1.46.

3.2 Dimension reduction

Dimension reduction techniques identify coherent subsets of statements that are independent of one another (Tabachnick and Fidell, 2013). The independent subsets of statements are combined into components or factors, depending upon the technique employed. Underlying relationships, which may be present in the data, are reflected in the generated factors or components. For the Leadership Adaptability Scale, there are no known dimensions that have been identified by previous research, due to this being the first use of the scale. Dimension reduction techniques are employed therefore to understand whether the Leadership Adaptability Scale can be represented by a smaller number of components or factors, rather than treated as 13 individual statements.

There are various options for dimension reduction: principal components analysis (PCA), exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). PCA provides a simple empirical summary of the data set, extracting maximum variance from the data set with each component (Tabachnick and Fidell, 2013). EFA assumes no underlying structure to be tested, as is the case with the 13 Leadership Adaptability statements. CFA tests the set of statements against a known structure. Results of both PCA and EFA are described in this section to rigorously assess dimensionality.

3.2.1 Principal components analysis. The oblique rotation method of PCA was utilised as it allows for the components to be correlated with one another, unlike orthogonal rotation (Field, 2013). Both promax and direct oblimin methods of rotation were tested. The results from the promax rotation were analogous to those generated by the direct oblimin method, and so are not described here.

The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.933, exceeding the accepted standard for good (0.6). Bartlett's test of sphericity was significant ($p < 0.001$), thus rejecting the null hypothesis that the statements in the correlation matrix are uncorrelated.

Components with an eigenvalue above 1 were retained, following Kaiser's criterion. The scree plot showed the point of inflexion after one component was identified. The single component had an eigenvalue greater than 1 and explained 64.28% of the variance. The second component had an eigenvalue of 0.882 and explained only an additional 6.78% of the variance.

3.2.1.1 Exploratory factor analysis. EFA is different to PCA as it analyses covariance rather than variance (Tabachnick and Fidell, 2013). Of the various methods of EFA, for the current analysis, two of the most common (Field, 2013) were used: principal axis factoring (PAF) and maximum likelihood method (MLM).

3.2.1.2 Principal axis factoring. The results from PAF require the same suite of tests to be met as for PCA. Again, oblique rotation was employed, and results from both direct oblimin and promax rotations were generated. Results from the direct oblimin and promax rotations were analogous, and so are not described here.

The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.936, exceeding the accepted standard for good (0.6). Bartlett's test of sphericity was significant ($p < 0.001$) thus rejecting the null hypothesis that the statements in the correlation matrix are uncorrelated. Components with an eigenvalue above 1 were retained, following Kaiser's criterion. The scree plot showed the point of inflexion after one component was identified. The first component had an eigenvalue greater than 1, and explained 65.17% of the variance. The second component had an eigenvalue of 0.886, and explained only an additional 6.81% of the variance.

Maximum Likelihood Method

Again, oblique rotation, with both direct oblimin and promax rotations, was chosen; however, only the direct oblimin results are shown as the promax results are analogous.

As with the PAF, the sample met the required standards for analysis. The Kaiser-Meyer-Olkin measure of sampling adequacy was the same as it was for PAF at 0.936, exceeding the accepted standard for good (0.6). Bartlett's test of sphericity was significant ($p < 0.001$), thus rejecting the null hypothesis that the statements in the correlation matrix are uncorrelated. Components with an eigenvalue above 1 were retained, following Kaiser's criterion. The scree plot showed the point of inflexion after one component was identified, in line with the results from both PCA and PAF. The first component had an eigenvalue greater than 1, and explained 65.17% of the variance. The second component had an eigenvalue of 0.886, and explained only an additional 6.81% of the variance.

3.2.1.3 Conclusion – dimension reduction. Three separate analyses of the Leadership Adaptability Scale data, using three different dimension reduction methods, have each revealed a single dimension containing all 13 of the Leadership Adaptability statements. For each analysis, all of the minimum thresholds that are required for accepting the dimension reduction technique results are met, thus allowing for the scale to be treated as a single dimension.

3.3 Discriminant validity

Results from discriminant validity tests are described here to identify whether the statements in the Leadership Adaptability Scale are separate from the statements in the CQ Scale. To validate the scale developed in this research, it is used in dimension reduction tests alongside the 20-statements from the CQ Scale. If the Leadership Adaptability Scale truly is a “new concept”, it will be identified as separate from the CQ Scale during dimension reduction techniques.

3.3.1 Discriminant validity – principal components analysis. The method for analysing the discriminant validity of the Leadership Adaptability Scale using PCA follows the choices made for analysing the scale by itself. The oblique method for rotation, using both direct oblimin and promax types, was employed. The results from the promax rotation were analogous to those generated by direct oblimin, and so are not described here.

The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.911, exceeding the accepted standard for good (0.6). Bartlett's test of sphericity was significant ($p < 0.001$), thus rejecting the null hypothesis that the statements in the correlation matrix are uncorrelated.

Components with an eigenvalue above 1 were retained, following Kaiser's criterion. The scree plot showed the point of inflexion after five components were identified.

The five components had an eigenvalue greater than 1, and explained 71.19% of the variance. The sixth component had an eigenvalue of 0.968, and explained only an additional 2.93% of the variance.

The component loadings from both the pattern and structure matrices are shown below (see Tables 3 and 4).

The results from the PCA clearly confirm the discriminant validity of the Leadership Adaptability Scale. It is clearly defined as a separate dimension when analysed alongside the 20 CQ-statements, as can be seen in both matrices, but is especially clear in the pattern matrix.

Further examinations of the discriminant validity of the Leadership Adaptability Scale were analysed using both types of EFA used previously in this paper (maximum likelihood and PAF). In all analyses, the Leadership Adaptability Scale was found to be separate from the CQ Scale, and on no occasions was an item from the CQ Scale identified amongst the Leadership Adaptability dimensions, or *vice versa*.

	Pattern matrix				
	1	2	3	4	5
LA1	0.718	-0.083	0.119	-0.125	-0.197
LA2	0.714	0.121	-0.263	0.151	-0.058
LA3	0.779	0.014	-0.094	0.102	0.008
LA4	0.769	0.145	-0.144	0.123	0.047
LA5	0.681	-0.014	-0.088	0.112	-0.18
LA6	0.581	-0.004	-0.083	-0.002	-0.383
LA7	0.755	0.125	-0.062	0.001	0.281
LA8	0.78	0.039	-0.079	0.037	-0.094
LA9	0.635	0.016	0.017	-0.182	-0.14
LA10	0.731	-0.109	0.151	-0.23	-0.205
LA11	0.883	-0.039	-0.021	-0.139	0.146
LA12	0.8	-0.097	0.097	-0.173	-0.109
LA13	0.66	-0.037	0.048	-0.029	-0.233
CQS1	0.2	0.087	-0.063	-0.082	-0.725
CQS2	0.112	0.05	-0.131	-0.012	-0.749
CQS3	0.096	0.139	-0.11	-0.068	-0.779
CQS4	0.033	0.163	-0.101	-0.067	-0.791
CQK1	-0.011	0.78	0.092	0.111	-0.157
CQK2	0.205	0.749	-0.084	0.178	0.141
CQK3	-0.049	0.72	-0.055	-0.105	-0.193
CQK4	-0.124	0.824	-0.044	-0.136	0.004
CQK5	0.024	0.761	0.099	-0.289	0.021
CQK6	-0.038	0.783	0.064	-0.191	-0.09
CQM1	0.04	0.031	-0.14	-0.71	-0.113
CQM2	0.154	0.033	-0.058	-0.761	-0.101
CQM3	0.02	0.033	-0.213	-0.764	-0.1
CQM4	0.012	0.053	-0.085	-0.815	0.091
CQM5	-0.007	0.204	-0.09	-0.741	0.006
CQB1	0.025	-0.036	-0.851	-0.044	-0.03
CQB2	0.153	0.074	-0.744	-0.087	-0.044
CQB3	0.078	-0.065	-0.679	-0.245	-0.053
CQB4	-0.078	-0.014	-0.905	-0.034	-0.083
CQB5	-0.033	-0.059	-0.921	-0.035	0.005

Note(s): Extraction method: principal component analysis
Rotation method: oblimin with Kaiser normalisation

Table 3.
Pattern matrix

	Structure matrix				
	1	2	3	4	5
LA1	0.77	0.091	-0.217	-0.298	-0.496
LA2	0.82	0.266	-0.505	-0.155	-0.379
LA3	0.789	0.141	-0.343	-0.109	-0.3
LA4	0.8	0.266	-0.396	-0.122	-0.285
LA5	0.76	0.127	-0.337	-0.137	-0.438
LA6	0.769	0.184	-0.384	-0.304	-0.642
LA7	0.683	0.217	-0.293	-0.119	-0.068
LA8	0.846	0.199	-0.379	-0.213	-0.427
LA9	0.731	0.198	-0.314	-0.377	-0.469
LA10	0.793	0.09	-0.224	-0.391	-0.536
LA11	0.855	0.129	-0.349	-0.282	-0.267
LA12	0.831	0.091	-0.262	-0.336	-0.462
LA13	0.738	0.121	-0.25	-0.239	-0.498
CQS1	0.556	0.289	-0.352	-0.443	-0.869
CQS2	0.48	0.235	-0.361	-0.375	-0.839
CQS3	0.497	0.338	-0.377	-0.454	-0.895
CQS4	0.439	0.351	-0.352	-0.447	-0.884
CQK1	0.133	0.762	-0.044	-0.116	-0.234
CQK2	0.269	0.729	-0.199	-0.039	-0.035
CQK3	0.201	0.785	-0.251	-0.372	-0.358
CQK4	0.067	0.845	-0.196	-0.335	-0.158
CQK5	0.179	0.818	-0.145	-0.449	-0.214
CQK6	0.157	0.83	-0.153	-0.396	-0.275
CQM1	0.304	0.268	-0.436	-0.818	-0.433
CQM2	0.395	0.287	-0.411	-0.863	-0.468
CQM3	0.318	0.292	-0.517	-0.889	-0.45
CQM4	0.199	0.265	-0.363	-0.827	-0.247
CQM5	0.227	0.41	-0.383	-0.822	-0.326
CQB1	0.35	0.14	-0.876	-0.349	-0.25
CQB2	0.475	0.268	-0.854	-0.418	-0.329
CQB3	0.391	0.145	-0.794	-0.503	-0.324
CQB4	0.291	0.161	-0.905	-0.361	-0.274
CQB5	0.298	0.111	-0.91	-0.334	-0.201

Table 4.
Structure matrix

Note(s): Extraction method: principal component analysis
Rotation Method: oblimin with Kaiser normalisation

3.4 Reliability

To further test the resulting single Leadership Adaptability dimension, tests of reliability were conducted to assess the consistency of individual participants' responses. Cronbach's alpha was calculated for every respondent, in every way possible, for all 13 items. The resulting value of alpha is the mean of all of the correlations; the alpha value for the Leadership Adaptability dimension was 0.953 ($N = 158$, list-wise deletion), indicating excellent internal consistency and that the dimension identified is reliable.

3.4.1 Single dimension – descriptive statistics. Descriptive statistics for the single dimension indicated a sample with a high Leadership Adaptability. The mean score was 5.95 with standard error 0.08, and standard deviation is narrow at 1.082. The skewness is large at below -3 , and the kurtosis is also large at over 12.

4. Discussion and conclusion

Despite the need to understand adaptive forms of leadership (Heifetz, 1994), there remains a considerable lack of clarity in leadership and management research about the actual nature of Leadership Adaptability, as well as how it might best be assessed and measured.

Certainly, some of the ambiguity arises from the fact that adaptive leadership can occur in a variety of contrasting contexts, making it difficult to define (Northouse, 2016). Measuring the concept of adaptability is also a challenging task that is dependent on many factors, perhaps contributing to the fact that there are no known studies found to quantitatively measure Leadership Adaptability.

This paper has described a new quantitative measurement instrument for understanding Leadership Adaptability. Three focus group sessions with school leaders in the Emirate of Abu Dhabi revealed six themes (each with sub-themes) of Leadership Adaptability. From these six themes, a set of 13 statements was developed and used in a questionnaire addressed to each of the 443 school leaders in the Emirate, to which 167 leaders responded. School leaders were asked to what extent they agreed with the 13 Leadership Adaptability statements and additionally asked to identify other characteristics of themselves, including CQ and leadership style, which are beyond the scope of this article.

Due to it being a new scale, a robust analysis was required to understand the relationships and underlying dimensions in the 13 Leadership Adaptability statements. Three types of dimension reduction techniques were employed; PCA and two types of EFA. In each of these techniques, only a single component had an eigenvalue above 1, explaining only a small proportion of additional variance. Therefore, each of the three dimension reduction tests gave the same conclusion; the 13 statements measure a single dimension of Leadership Adaptability and should therefore be treated as a single homogenous scale. Reliability analyses further confirmed the results of the dimension reduction results, with a high score for Cronbach's alpha of 0.953, classified as an "excellent" level of reliability (George and Mallery, 2003).

One possible outcome from the dimension reduction tests was that the 13 items of the scale represented all six themes identified in the qualitative research. However, the results of the dimension reduction techniques unequivocally show that this is not the case and, as noted, instead combined them into a single dimension. A possible explanation for this is the high mean scores found for each of the 13 items, from respondents typically strongly agreeing with the Leadership Adaptability statements. During rotation, the dimension reduction techniques group similarly high scores for statements and consider them to be a distinct component (and likewise group similarly low scores as a distinct component). However, in this case, high scores were found for all 13 items, resulting in a single dimension being identified.

Such high scores could be attributable to self-report bias; asking school leaders to self-report their own levels of Leadership Adaptability may have resulted in these school leaders *over-stating* their abilities. However, such high scores may indeed be accurate and could equally have been found through other methodological techniques that are not susceptible to self-report bias, such as observation. As noted, the education sector in the Emirate of Abu Dhabi is culturally diverse; respondents may have become school leaders *because* of their ability to successfully manage in their culturally diverse sector, or they could have developed this ability during their time in the role. Either way, it is arguable that Leadership Adaptability is an accomplished and practiced necessity for them in their roles and that their self-reports are accurate reflections of their ability.

The discriminant validity tests, namely PCA and two types of EFA, identified that the Leadership Adaptability Scale was distinct from each of the four components that made up the CQ Scale (and each of these four are distinct from each other, validating the methodology). The 13 statements measuring Leadership Adaptability most heavily loaded on a single component or factor in all three analyses, and the loading scores were all acceptably high for that single component. This finding provided evidence that the 13 statements not only measure a single element of leadership, they are also conceptually distinct from other well-established leadership scales.

Despite the strong performance against several statistical tests, it is recommended that future studies use the Leadership Adaptability Scale developed in this paper before it can be

considered an established scale. Robust tests of dimensionality, validity and reliability should be applied, and results can be compared with the findings presented in this paper. The external validity of the findings presented here remains untested.

It is an acknowledged limitation that the subjects in this study were drawn from a single sector and from a single country. For future research to overcome this limitation, and test external validity, the scale should be tested on different types of leaders from sectors other than education and in other countries and cultures from around the world. The culturally diverse context of Abu Dhabi has potentially contributed to the findings presented in this paper; future research in less culturally diverse parts of the world may find more variability. Although *all* school leaders in the Emirate of Abu Dhabi were invited to participate in this study, inviting school leaders from other emirates or countries may have enhanced the findings presented here.

As noted, Leadership Adaptability can occur in a variety of contrasting contexts, making it difficult to define and measure. Having tested leaders from the same context for both the qualitative and quantitative study may mean the scale only works in this context; further testing is required to determine whether these statements are valid beyond the Abu Dhabi education sector and whether they require revision if used elsewhere.

In sectors other than education, leaders may be less concerned with adapting their leadership or may not need this ability, perhaps due to the culture of the organisation or the sector. Where cultural diversity in a sector or organisation is stable, it is possible that Leadership Adaptability is consequently less important, in which case different scores may be identified and alternative dimensionality solutions may be proposed. However, being immune from change is not a permanent state for any organisation or sector, nor individual leader or employee, and therefore it can be argued that Leadership Adaptability is a necessary trait required of all leaders. Heifetz (1994) is the first to formally recognise this requirement, his theory of Leadership Adaptability defining a dynamic practice of leadership rather than a static position with predetermined protocols. The work of Heifetz (Ibid.) gains further traction and clarity from the development of a measurement tool such as that described in this study.

The relationship between CQ and adaptability is acknowledged (Aldhaferi, 2017); the level of education and self-efficacy of an individual has also been shown to be related to their ability to be culturally intelligent (MacNab and Worthley, 2012). A leader with a higher level of education in a multicultural environment may therefore exhibit greater CQ; further, changes that a leader implements will be more easily adopted by the workforce if they also have a higher level of education (McGuinness and Cronin, 2016). McGuinness and Cronin (McGuinness and Cronin, 2016) found level of education to be more powerful in this regard than any other factor, finding education can prepare an individual to absorb and adapt to change (McGuinness and Cronin, 2016).

Despite the need for future research to address the aforementioned concerns, researchers looking to measure and quantify Leadership Adaptability can find confidence in the solid scores found for dimensionality and reliability of the newly developed scale. Furthermore, the scores for Leadership Adaptability presented in this study provide a normative data set for use in comparisons in future studies. Further testing can add to the understanding of Leadership Adaptability, further validate the scale and the approach used in this study and test it in different contexts.

Descriptive statistics for the 13 statements treated separately and as a single dimension revealed a sample with high Leadership Adaptability characteristics. The mean scores for the 13 individual statements ranged from 5.48 to 6.48; for the scale as a single dimension, the mean score was 5.95, suggesting school leaders in the Emirate of Abu Dhabi have high Leadership Adaptability.

These findings can be generalised to the population of school leaders in the Emirate of Abu Dhabi; the response rate was high, and available evidence suggests response and

non-response was representative of the population. For policymakers in educational authorities in the UAE and in schools, having highly adaptive leaders is a positive finding. Leadership Adaptability is a highly desirable attribute that will greatly enable school leaders to navigate various challenges. Having leaders who are capable of adjusting their behaviour and leadership according to the situations and contexts they are in is an encouraging finding, especially given the culturally diverse environment that school leaders work in and that demands adaptability. Educational authorities in the Emirate of Abu Dhabi should capitalise on the findings presented in this paper. Leadership Adaptability is a dynamic construct that can be changed and improved upon, and so school leaders in the Emirate of Abu Dhabi must actively be encouraged to seek out situations and challenges whereby they can practise, develop and improve their Leadership Adaptability skills. By empowering leaders, having faith that they will competently deal with challenging and complex situations that require them to display their leadership adaptability, authorities, schools and pupils alike will benefit.

References

- Aldhaferi, A. (2017), "Cultural intelligence and leadership style in the education sector", *International Journal of Educational Management*, Vol. 31 No. 6, pp. 718-735.
- Ang, S. and Inkpen, A.C. (2008), "Cultural intelligence and offshore outsourcing success: a framework of firm-level intercultural capability", *Decision Sciences*, Vol. 39 No. 3, pp. 337-358.
- Ang, S. and Van Dyne, L. (2008), "Conceptualization of cultural intelligence: definition, distinctiveness, and nomological network", in Ang, S. and Van Dyne, L. (Eds), *Handbook of Cultural Intelligence: Theory, Measurement and Applications*, M. E. Sharpe, Armonk, New York, NY, pp. 3-15.
- Ang, S., Van Dyne, L. and Koh, C. (2006), "Personality correlates of the four factor model of cultural intelligence", *Group and Organization Management*, Vol. 31 No. 1, pp. 154-173.
- Ang, S., Dyne, L.V., Koh, C., Ng, K.Y., Templer, K.J., Tay, C. and Chandrasekar, N.A. (2007), "Cultural intelligence: its measurement and effects on cultural judgment and decision making, cultural adaptation and task performance", *Management and Organization Review*, Vol. 3 No. 3, pp. 335-371.
- Bass, B.M., Avolio, B.J., Jung, D.I. and Berson, Y. (2003), "Predicting unit performance by assessing transformational and transactional leadership", *Journal of Applied Psychology*, Vol. 88 No. 2, pp. 207-218.
- Dagher, G. (2010), "The relation between motivational and behavioral cultural intelligence and the three dimensions of cross-cultural adjustment among Arabs working in the USA", *The Business Review*, Cambridge, Vol. 15 No. 1, p. 137.
- DeGenring, S. (2005), *The Adaptive Leader: Risky Business: Staying Alive as a Leader in Times of Change*, Interaction Associates White Paper, Boston, MA.
- Deng, L. and Gibson, P. (2009), "Mapping and modeling the capacities that underlie effective cross-cultural leadership: an interpretive study with practical outcomes", *Cross Cultural Management: An International Journal*, Vol. 16 No. 4, pp. 347-366.
- Earley, P.C. and Ang, S. (2003), *Cultural Intelligence: Individual Interactions across Cultures*, Stanford Business Books, Stanford, Calif.
- Field, A. (2013), *Discovering Statistics Using IBM SPSS*, Sage, Los Angeles.
- George, D. and Mallery, P. (2003), *SPSS for Windows Step by Step: A Simple Guide and Reference. 11.0 Update*, 4th ed., Allyn & Bacon, Boston.
- Glover, J., Jones, G., Rainwater, K. and Freidman, H. (2002), "Adaptive leadership: four principles for being adaptive (Part 2)", *Organization Development Journal: (Winter, 2002)*, Vol. 20 No. 4, pp. 23-41.
- Groves, K. and Feyerherm, A. (2011), "Leader cultural intelligence in context: testing the moderating effects of team cultural diversity on leader and team performance", *Group Organisation and Management*, Vol. 36 No. 5, pp. 535-566.
- Heifetz, R. (1994), *Leadership without Easy Answers*, Harvard University Press, Cambridge, Mass.

- James, J. (2006), *Becoming an Adaptive Leader. The 27th Management Forum Series Executive Forum*, available at: <https://www.executiveforum.com>.
- Jyoti, J. and Kour, S. (2017), "Cultural intelligence and job performance: an empirical investigation of moderating and mediating variables", *International Journal of Cross Cultural Management*, Vol. 17 No. 3, pp. 305-326.
- Kaiser, R.B., Lindberg, J.T. and Craig, S.B. (2007), "Assessing the flexibility of managers: a comparison of methods", *International Journal of Selection and Assessment*, Vol. 15, pp. 40-55.
- Kouzes and Posner (2002), *The Leadership Challenge*, 3rd ed., Jossey-Bass Publishing, San Francisco, CA.
- Linsky, M. and Lawrence, J. (2011), "Adaptive challenges for school leadership", *Leading and Managing Schools*, Vol. 1, pp. 3-15.
- Luu, T. (2017), "Cultural intelligence and state suspicion: attachment styles as moderators", *Corporate Communications: An International Journal*, Vol. 22 No. 1, pp. 113-132.
- MacNab, B.R. and Worthley, R. (2012), "Individual characteristics as predictors of cultural intelligence development: the relevance of self-efficacy", *International Journal of Intercultural Relations*, Vol. 36 No. 1, pp. 62-71.
- McGuinness, S. and Cronin, H. (2016), "Examining the relationship between employee indicators of resistance to changes in job conditions and wider organisational change: evidence from Ireland", *Evidence-based HRM*, Vol. 4 No. 1, pp. 30-48.
- Mobbs, T. (2004), *Adaptive Leadership in Today's Modern Society*, IBM Business Consulting Services: Author, New York.
- Nastanski, M. (2002), *Dissertation: Managing Complexity: An Adaptive Approach*, University of Sarasota, Florida, [Abstract], Retrieved from UMI.
- Ng, K.M., Van Dyne, L. and Ang, S. (2012), "Cultural Intelligence: a Review, reflections and recommendations for future research", in Ryan, A.M., Leong, F.T.L and Oswald, F.L. (Eds), *Conducting Multinational Research: Applying Organisational Psychology in the Workplace*, American Psychological Association, Washington DC, pp. 29-58.
- Northouse, P.G. (2016), *Leadership: Theory and Practice*, 7th ed., Sage, Thousand Oaks, CA.
- Owens, R. and Valesky, T. (2007), *Behavior in Adaptive Leadership and School Reform*, 9th ed., Allyn & Bacon Publishers, Boston.
- Pulakos, E.D., Arad, S., Donovan, M.A. and Plamondon, K.E. (2000), "Adaptability in the workplace: development of a taxonomy of adaptive performance", *Journal of Applied Psychology*, Vol. 85, pp. 612-624.
- Tabachnick, B.G. and Fidell, L.S. (2013), *Using Multivariate Statistics*, 6th ed., Pearson, Boston.
- Wong, G.K.W. and Chan, D.L.H. (2018), "Adaptive leadership in academic libraries", *Library Management*, Vol. 39 Nos 1-2, pp. 106-115.

Further reading

- Cortina, J.M. (1993), "What is coefficient alpha: an examination of theory and applications", *Journal of Applied Psychology*, Vol. 78, pp. 98-104.
- UAE National Bureau of Statistics, *Report: UAE in Figures 2010*, available at: <http://www.uaestatistics.gov.ae>.

Corresponding author

Ali Aldhaheeri can be contacted at: alialdhaheeri@me.com

For instructions on how to order reprints of this article, please visit our website:

www.emeraldgroupublishing.com/licensing/reprints.htm

Or contact us for further details: permissions@emeraldinsight.com