ABCD analysis- A New Validation Model for Dubai Government Excellence Program (DGEP)

SAMEH M. SAAD AND MAAN N. AL AFIFI
Department of Engineering and Mathematics
Sheffield Hallam University
City Campus, Sheffield, South Yorkshire S1 1WB
UNITED KINGDOM
s.saad@shu.ac.uk and maan_binali@hotmail.com

Abstract— The purpose of this paper is to test a new developed validation model called ABCD Model Analysis through validating Dubai Government Excellence Program (DGEP) model for the first time. The validation carried out on DGEP model 2009 version has led to some alteration in both the ABCD model and DGEP Model and has been compared and matched with the modification implemented as part of the internal continuous process improvement in the subsequent versions of DEGP. The ABCD Model Analysis can be thought of as "Achievement Because Continuous Development" and the validation tool based on the set of steps i.e. Analyze, Build, Check, and then Decide. The core of the validation tool development is formed by combination of well-known quality management tools: Deming Cycle, RADAR logic and using the application of statistical tools: structural equation modelling, SPSS and AMOS.

In this paper the focus is to analyze the DGEP criteria, Building the model according to the ABCD model analysis, building the measurement instrument through questionnaires distributed in the Emirate of Dubai, using research hypotheses and ABCD path analysis which is developed to facilitate, analyze, test the model and Check the built model to verify the analysis that was made on DGEP.

The critical analysis carried out on the nine DGEP criteria distributed into 38 main sub criteria and 200 sub-sub criteria found to be valid and reliable. The DGEP adopted the structure of the EFQM model and adapted to the UAE culture settings. Most of the DGEP model component linked strongly the five enablers "Leadership", "Strategy", "People", "Partnership" and "Resources and Process" with the model outcomes represented in the four types of results; people result, customer result, society result and key result.

The study shows that for the first time and by using the ABCD Model Analysis the DGEP Model was validated successfully and confirmed to be fit for use. In addition, it is evident that the proposed ABCD Model Analysis is a very useful management tool for validation due to its systematic, simple, easy to remember, implement and to refine. In addition, the Path Analysis in the ABCD Model is a better version of the known Path Analysis techniques.

Keywords— Dubai Government Excellence Award (DGEP), Business Excellence Model, Validation Process, ABCD Model Analysis.

I. INTRODUCTION

ost business excellence models especially the European Mfoundation quality management (EFQM), has developed from continuous improvement and verification process. This process is called validation. Validation is needed to sustain the

S. M. Saad is Chair in Enterprise Modelling and Management, Sheffield Hallam University, City Campus, Sheffield, South Yorkshire S1 1WB, UK (e-mail: s.saad@shu.ac.uk).

M. N. Al Afifi is with the Department of Engineering and Mathematics, Sheffield Hallam University, City Campus, Sheffield, South Yorkshire S1 1WB, UK (e-mail: maan_binali@hotmail.com).

development and to gain overall acceptance by all concerns. In other words, testing the goodness fit of the structure model is called validation. The EFQM and all other business excellence has evolved from a means of recognizing and promoting excellence service based on the eight excellence dimensions and based on total quality management as can be seen in fig. 1. As such, it determines the theoretical platform for world class performance. The Dubai government excellence program is one unique business excellence model that allocates substantial resources towards improvement of the participated organizations process based on the best practice excellence models such as European Foundation Quality management (EFQM) and Malcolm Baldridge National Quality award (MBNQA). As per the best practice approach, all business excellence models that are under proposal or revision need to be validated to sustain the development, obtain the comments and feedback and gain overall acceptance by all concerns. In other words, testing the goodness fit of the structure model is called validation process for business excellence model validation.

Fig. 1 The eight dimensions of Excellence [1]

To assess the validity of the DGEP between the leadership dimension and each of the remaining four enablers, a set of regression analyses were conducted. The relationships between each of all the five enablers in three groups were strong and statistically significant. It was concluded that the leadership requirement for people may not be the same for Partnership and Resources and verse versa. The strategy was found to be the heart of the model and should be embedded in each of the enablers. The inter link between the three groups were found to be lack of direct effect on the results. When the three groups were trimmed, the test was showing an acceptable level of goodness of fit with the data. While the

DGEP has captured the attention of validation, there has been little or no empirical research examining the usefulness of the award program criteria to guide the actions of organization that seek improvement. This research takes the first step in providing scientific approach to test and validate it. This study seeks to examine the model in its larger context as a theoretical model for organizations in Dubai.

II.BACKGROUND TO THE DUBAI GOVERNMENT EXCELLENCE PROGRAM (DGEP)

Fig. 2 DGEP Role [6]

Dubai Government Excellence Program (DGEP) is a pioneer program established with a clear vision, values and objectives (fig. 2) in 1997 by the UAE Vice President, Prime Minister and Ruler of Dubai, aiming at engraving the culture of excellence in Dubai government and recognizing distinguished departments, teams and individuals [2]. The program aims at spreading the concept of excellence, innovation, quality, best management and professional practices in the Government Sector. The DGEP Model for institutional excellence as described by Kahlout [3] "is built around the European Foundation Quality Management (EFQM) model with an extra emphasis on innovation and transparency". Calvo-Mora Schmidt, Arturo, Picón Berjoyo, A., Ruiz Moreno, C., & Cauzo Bottala, L. [4] indicate the direction of the arrows in EFQM model shows the model's dynamic nature i.e. innovation, learning or creativity boost and empower the impact that the model's agents have on the results and continuous improvement for excellence. In other words, adaption of UAE culture ensures the most vital subjects such as risk management, contingency plans, emiratisation, governance, environmental management and Integrated Management System are addressed. The DGEP model for institutional excellence uses RADAR concept (results, approach, deployment, assessment and refine) in principle along with the other well-known continuous improvement like Deming cycle and PDCA cycle. DGEP has many other excellence programs other than the institutional excellence, which is also backed up with additional criteria for assessing and rewarding distinguished projects, initiatives and

employees, customer satisfaction, employees' satisfaction and mystery shoppers' surveys.

"This program is the force behind improvements of the public sector. It propagated a spirit of competition not known by governmental departments before. All managers, officials, and employees seek to compete to provide the best and win one of the awards" [5]

HH Sheikh Mohamed Bin Rashid Al Maktoum."My vision" book p141.

The DGEP Process, as shown in fig. 3, consists of 6 steps, developing the model, communicating, carrying on the assessment, recognizing achievement, feedback and documenting it.

Fig. 3 DGEP Process Cycle [6]

While the DGEP is basically an award program that contributed significantly to the development of organization excellence in Dubai Emirate, this research takes the first step toward providing the implementation of validation process on the DGEP and accordingly allowing a theoretical examination of the relationships between categories and overall linkages among the nine criteria as can be seen in fig. 4 below.
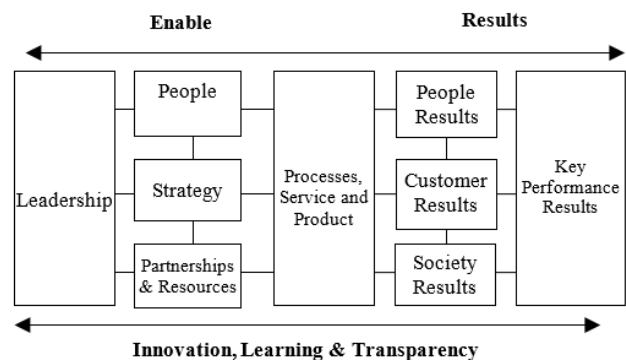

Fig. 4 DGEP 2012

Fig. 4 is the DGEP model in its 2012 version which indicates the evaluation criteria for the category of the distinguished Government which is similar to EFQM. The DGEP is an effective model worldwide. It complies and is in line with the international standards, results oriented, it has 83 sub-criteria, 179 areas of enablers and 112 measures/indicators of results. The evaluation is based on RADAR of results. The results are a combination of performance outcomes such as

trends, targets, comparisons, causes, appropriateness of use such as scope and relevance, integrity and segmentation.

III. ASSESSMENT MECHANISM

The mechanism of the assessment passes through four phases, interviews, site visit, winner recommendations and the jury. The first phase (interviews), interviewing all candidates at The Executive Council. The second phase is the (site visit) where the interviewing short listed candidates with the highest results not less than 40% at their respective work. The third phase (Winner recommendation) is recommending a winner based on the site visit results. And the fourth phase (The jury) conducting specialized sessions with assessment teams to verify reports awarded to each Government entity.

IV. DGEP CATEGORIES

There is at least a total of 20 categories award, each one of them represents Business excellence model, and these categories are divided into two parts: Organization Excellence and Employee Excellence.

V. ABCD VALIDATION MODEL

The validation process for DGEP is based on ABCD Model for validation and analysis. The validation processes were described and addressed in the model. Most of the steps were covered in this section.
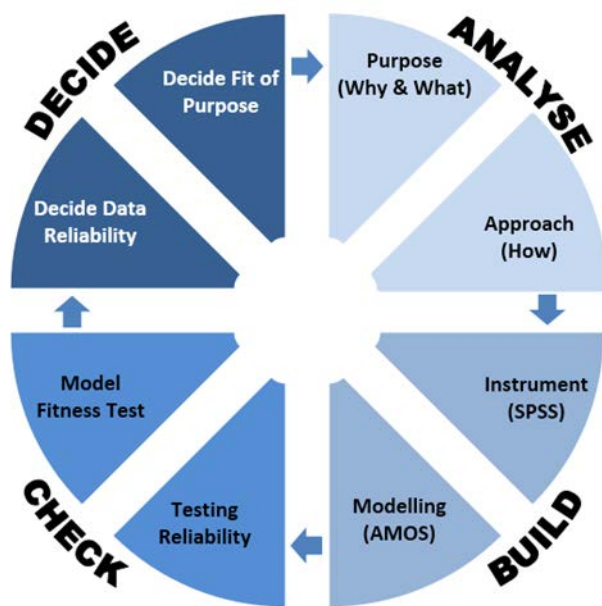

	ABCD Validation Score	Step	Weight Score
Analyse (40%)	Purpose (What, Why, When) & Approach (How)	1	10%
	Exploratory Analysis	2	5%
	Degree of Well Enabled	3	5%
	Synthesis Analysis	4	5%
	ABCD Path Analysis	5	5%
	Hypothesis Analysis	6	5%
	Measurement Model Specification	7	5%
Build (15%)	Hypothesis Development to questionnaire	8	5%
	Instrument for data collection & processing (SPSS)	9	5%
	Modeling (AMOS)	10	5%
Check (25%)	Reliability Test	11	5%
	Measurement Model Identification (Degree of Freedom)	12	5%
	Breakdown (VIF & others)	13	5%
	Regression Estimation	14	5%
	Fitness Test	15	5%
Decide (20%)	Good Range of Model Fitness	16	5%
	Model Modification and Refitting	17	5%
	Interpretation of Valid Model	18	5%
	Fitness for Purpose	19	5%
	Total ABCD Score 100%		

Fig. 5 ABCD Model Analysis- Complete steps for model validation

There are four basic ABCD steps:

a. Analyze the Business Excellence Model validation by identifying the purpose and approach.

b. Build the business excellence model according to the purpose and approach.

c. Check the fitness of the business excellence model by a series of tests and analyses to determine the validation of the measurement model and to determine the fitness of purpose.

d. Decide the validity of business excellence model for the theory, measurement and final interpretation, and determine the correlation values, the regression and Model fitness tests and finally decide the fitness of the model and the fitness of purpose.

The analysis was conducted first by dividing the model into three parts instead of 9 components; Drive, System and Results, which corresponds to components of leadership for the drive, people, strategy, partnership and process as the system and the results which covers the four results (people result, customer result, society result and key results). Then

further the system was re-arranged into three main components, (see fig. 6 and fig. 7) each component merged with its own related process. Finally, each one of the three main components was thoroughly checked by means of linkage and satisfactory level of correlation to the driver (leadership) and results (all the four) and against each of the other two main components (People, Strategy and Partnership & Resources). The DGEP Model which was analyzed, is 2009 version, follows EFQM 2008/9 and a further revision will be issued on October 2012 following update of the latest EFQM.

VI. QUESTIONNAIRE DESIGN AND DEVELOP

ABCD Model analysis was developed to ease the analysis and testing of the model as in fig. 5. To investigate the DGEP criteria, a model is constructed in AMOS separating three groups; the leadership, people, process, people result and key result as one group called ABCD1, second group is Leadership, strategy, process, customer result and key results as ABCD2, and the third group is Leadership, Partnership &

Resources, process, society result and key results as ABCD3 as illustrated in fig. 7.

Most of the changes, differences and additions from the EFQM basic old version are due to either elaboration or detailed explanation. However, certain areas are being changed to adapt to the culture setting in UAE. However, DGEP 2009 is based on EFQM 2003 to 2008; from 2009 onwards, EFQM has changed significantly which cannot be compared with the earlier version. EFQM 2009 version or 2010 is reflecting the recent global business environment. The findings in these studies provided statistical support for the EFQM model relationships. Most of the studies found that the Leadership dimension is classified as a driver of quality [11], [12], [13] and [14] the remaining enablers are considered to be the system and all the four outcomes are results.

Since this is the first validation process applied on the DGEP model, this research addresses two questions:

a. Is the proposed relationship between the categories in the DGEP which based on EFQM model a valid relationship?

b. Are the driver (Leadership), System (Process) and Results for each of People, Strategy and Partnership & resources common?
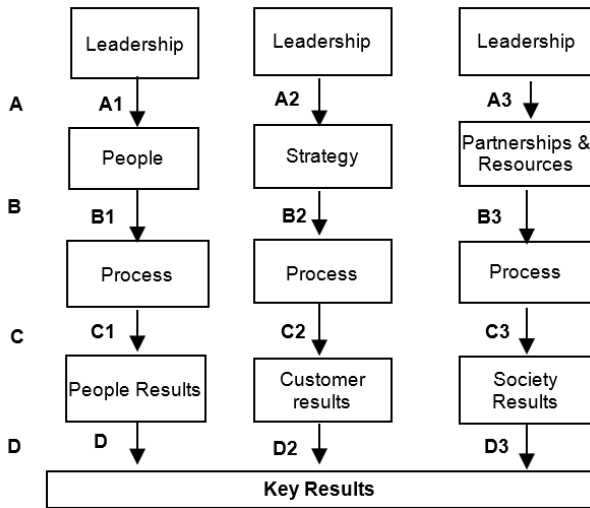

Fig. 6 Testing the DGEP model

The questionnaires are divided into three groups; the first group is called the ABCD vertical direct path which focuses on the strength of each of the three parallel lines, see fig. 8, which indicates a flowchart of the overall design validation model. The second group is the horizontal indirect path, which is studying the relationship between the leadership A1, A2, A3 and Process B1, B2 and B3. The third group is the overall validation model which confirms and validates further the vertical direct path. In the first attempt when the questionnaires were tested with a scale of either yes or no, it was found that the reliability scale was so poor due to

uncertainty in obtaining the predicted calculation in the model so it was recommended to use a scale of 1 to 5 to get accurate results and obtain a model fitness test. The study defines the DGEP as three parts.
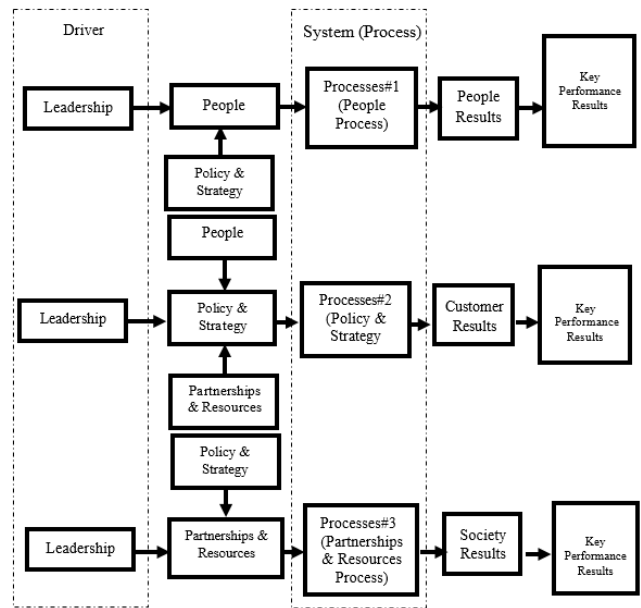

Fig. 7 DGEP (Driver, System and Results)

The first one is the driver, the second one is the system which consists in the combination of the three processers of the middle enablers. The third part is the results of the three enablers and the key performance results Analysis that can be carried out backwards; results of each processer, what process we need to obtain the results from, what enabler we need to process and then link it with the driver source. For instance, selecting the people enabler sub criteria plan and manage HR, how the organisation processes it, then look into the process enabler and study the most appropriate sub criteria indicating this purpose, then, looking at the strategy and finding which part of the strategy sub criteria supports this purpose "plan & Manage HR" , then, looking at the leadership and finding which criteria can drive the purpose of People enabler, and finally, look at the people results and study how strong the results are measured from the purpose of the plan. This lengthy exercise was carried out in full and was weighed by very strong, strong, moderate, weak and very week. From this analysis we can see that there are some weak relations that need to be enhanced. Therefore, for validation purposes, the numbers of repeated questionnaires were chosen carefully based on researchers' opinions which calls for a pre-check before validating the complete framework so it fulfills two purposes, to validate DGEP model and to test the response and the questionnaires for further improvement in future questionnaires.
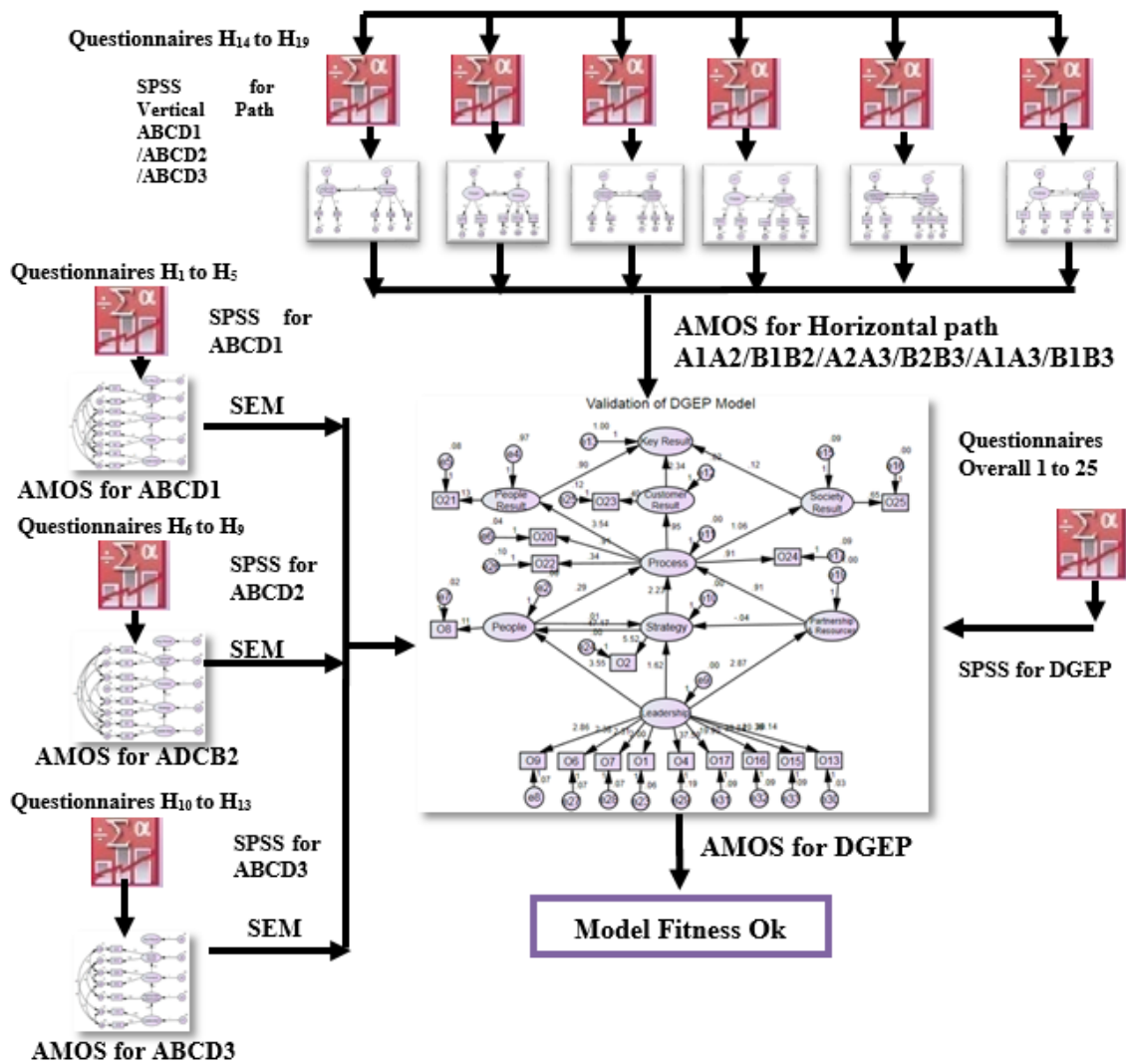
Fig. 8 Flow chart of DGEP Process Validation

The flow chart of the validation shown in fig. 8, contains the steps of building the instrument for questionnaire processed in SPSS then build it in AMOS to conduct all necessary checks to verify the model fitness. Fig. 8 shows two levels of validations, one with the details questionnaires distributed in horizontal path and vertical path namely ABCD1, ABCD2, ABCD3 in vertical path processed with13 question in SPSS, and horizontal path indicated as A1A2/ B1B2/ A2A3/ B2B3/ A1A3/ B1B3 processed with 6 questions. The ABCD Critical Path is conducted in both directions as shown in table 1.

Table 1 ABCD path analysis matrix

ABCD PATH ANALYSIS MATRIX (Direct and Indirect Cause-Effect Relation)												
	A1	B1	C1	D1	A2	B2	C2	D2	A3	B3	C3	D3
A1		Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No
B1	Yes		Yes	Yes	Yes	No	No	No	No	No	No	No
C1	Yes	Yes		Yes	Yes	No	No	No	No	No	No	No
D1	Yes	Yes	Yes		Yes	No	No	No	No	No	No	Yes
A2	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
B2	Yes	No	No	No	Yes		Yes	Yes	Yes	No	No	No
C2	No	No	No	No	Yes	Yes		Yes	Yes	No	No	No
D2	No	No	No	Yes	Yes	Yes	Yes		Yes	No	No	Yes
A3	No	No	No	No	Yes	Yes	Yes	Yes		Yes	Yes	Yes
B3	No	No	No	No	Yes	No	No	No	Yes		Yes	Yes
C3	No	No	No	No	Yes	No	No	No	Yes	Yes		Yes
D3	No	No	No	Yes	Yes	No	No	Yes	Yes	Yes	Yes	
Direct and Indirect												

VII. QUESTIONNAIRE DISTRIBUTION AND FEEDBACK

The Questionnaire was distributed through internet survey and more than 500 invitations were called for answering through email. The answering was limited to maximum 500 and capped at 500 respondents. The structure of the questionnaire was designed in two parts; the first part is the background verification whereas the second part was the main part of model validation. The background verification is to ensure the answers are given within the consideration of minimum knowledge of Business Excellence Model.

99% of the interviewees are having a good education background (see table 2) and approximately 80% having more than 5 years working experiences (see table 3). 98% of them know business excellence model and 83% were involved in the implementation of EFQM or DGEP (see table 4). It can be

concluded that the information received was reliable.

The feedback from interviewees in the second part was not perfectly covered. Missing values occurred as the answers were not adequately filled by the interviewees. The majority of the participants (470) of total 500 properly replied. In AMOS modeling, missing values in the data input will lead the data analysis with the explicitly intercepts and mean estimation. It will lead to the risk of unable to compute by the AMOS program. To resolve the problem of missing value, SPSS feature provides a solution- Replace missing value with estimates computed with one of several methods and it is applied to this situation. Method of "Linear Trend at point" in replacing missing value is used. Results Questionnaire Collection for Model ABCD1, ABCD2 and ABCD3 can be found in table 5, table 6, table 7 and table 8.

Table 2 Education background of interviewees

What is the highest level of education you have completed?		
Answer Options	Response Percent	Response Count
High school or equivalent	0.0%	0
Some college	0.5%	3
Bachelor's degree	61.3%	305
Master's degree	37.7%	187
Doctoral degree	0.5%	3
Professional degree (MD, JD, etc.)	0.0%	0
	answered question	498
	skipped question	2

Table 3 Work experience of interviewees

Please indicate your work experience with below categories.		
Answer Options	Response Percent	Response Count
Less than 2 years	3.0%	15
Between 2 to 5 years	17.1%	85
Between 5 to 10 years	26.6%	133
More than 10 years	53.3%	265
	answered question	498
	skipped question	2

Table 4 Involvement of interviewees in EFQM or DGEP

Have you been involved in EFQM or DGEP?		
Answer Options	Response Percent	Response Count
No. Never heard and never involved in any business excellence models	1.0%	5
No. Never heard but involved in other business excellence models.	1.0%	5
No. But I have learnt the knowledge before.	15.1%	75
Yes. I am involving in certain parts.	35.7%	178
Yes. I am involving in overall models.	47.2%	235
	answered question	498
	skipped question	2

Table 5 Pre questionnaire result.

Pre-Questionnaire - Your understanding							
	Answer Options	**Strongly Agree**	**Agree**	**I Don't Know**	**Dis-agree**	**Strong Disagree**	**Response Count**
1	RADAR logic is a self assessment tool for sustaining excellence	390	70	40	0	0	500
2	Organizations shall indentify important processes in each enabler with clear approach that provides the guidelines for deployment	400	60	40	0	0	500
3	The approach shall have specific target and an action plan and defined resources (sound) and linked with the strategy of the organization(integrated)	413	45	38	2	0	498
4	The approach shall be breaking down into mechanisms which take place in the deployment	403	50	45	0	0	498
5	The deployment consists of (implementation) phase of the action plan and shall be (systematic) and (measurable)	408	52	37	3	0	500
6	Refinement and assessment shall be linked with each approach and mechanisms	402	55	40	3	0	500
7	Refinement and assessment reflects in to learning growth, change management, continuous improvement, creativity and innovation	400	62	35	3	0	500
						answered question	**500**
						skipped question	**0**

Table 6   Result of questionnaires for ABCD1, ABCD2 and ABCD3

Vertical ABCD: (Are the proposed relationship between the categories in the DGEP model is valid?)											
	Answer Options	**Strongly Agree**		**Agree**		**I Don't Know**		**Disagree**		**Strong Disagree**		**Response Count**
		Quantity	**%**	**Quantity**	**%**	**Quantity**	**%**	**Quantity**	**%**	**Quantity**	**%**	
H1	Leadership for people has strong influence on people (A1)	420	90.00%	50	10.00%	0	0.00%	0	0.00%	0	0.00%	470
H2	People has strong influence on people process (B1)	294	58.80%	134	32.80%	0	0.00%	42	8.40%	0	0.00%	470
H3	People process has strong influence on People results (C1)	418	89.60%	52	10.40%	0	0.00%	0	0.00%	0	0.00%	470
H5	People results has strong influence on key results (D1)	396	59.20%	132	32.40%	0	0.00%	42	8.40%	0	0.00%	470
H6	Leadership for strategy has strong influence on strategy (A2)	420	90.00%	50	10.00%	0	0.00%	0	0.00%	0	0.00%	470
H7	Strategy has strong influence on strategy process (B2)	248	49.60%	222	50.40%	0	0.00%	0	0.00%	0	0.00%	470
H8	Strategy process has strong influence on customer results (C2)	235	47.00%	193	44.60%	0	0.00%	42	8.40%	0	0.00%	470
H9	Customer results has strong influence on key results (D2)	287	57.40%	139	33.80%	2	0.40%	42	8.40%	0	0.00%	470
H10	Leadership for partnership & resources has strong influence on Partnership & Resources (A3)	374	80.80%	96	19.20%	0	0.00%	0	0.00%	0	0.00%	470
H11	Partnership & recourses has strong influence on Partnership & Resources Process (B3)	236	47.20%	192	44.40%	0	0.00%	42	8.40%	0	0.00%	470
H12	Partnership & Resources process has strong influence on Society results (C3)	194	38.80%	232	52.40%	2	0.40%	42	8.40%	0	0.00%	470
H13	Society results has strong influence on key results (D3)	292	58.40%	134	32.80%	2	0.40%	42	8.40%	0	0.00%	470
									answered question			470
									skipped question			30

Table 7   Result of questionnaires for A1A2, A1A3, A2A3, B1B2, B1B3, B2B3

Horizontal ABCD: (Are the proposed relationship between the categories in the DGEP model is valid?)		Strongly Agree		Agree		I Don't Know		Disagree		Strong Disagree		Response Count
	Answer Options	Quantity	%	Quantity	%	Quantity	%	Quantity	%	Quantity	%	
H14	Leadership for people has exactly same sub criteria as leadership for strategy (A1 - A2)	2	0.40%	86	17.20%	0	0.00%	278	61.60%	104	20.80%	470
H15	Leadership for people has exactly same sub criteria as leadership for Partnership & Resources (A1 - A3)	0	0.00%	88	17.60%	0	0.00%	278	61.60%	104	20.80%	470
H16	Leadership for strategy has exactly same sub criteria as leadership for Partnership & Resources (A2 - A3)	0	0.00%	88	17.60%	0	0.00%	278	61.60%	104	20.80%	470
H17	Process for People can be used for process for strategy (B1 - B2)	0	0.00%	88	17.60%	0	0.00%	278	61.60%	104	20.80%	470
H18	Process for People can be used for process for partnership& Resources (B1 - B3)	0	0.00%	44	8.80%	2	0.40%	316	69.20%	108	21.60%	470
H19	Process for strategy can be used for process for partnership& Resources (B2 - B3)	0	0.00%	46	9.20%	2	0.40%	316	69.20%	106	21.20%	470
									answered question			**470**
									skipped question			**30**

Table 8   Result of questionnaires for overall model

	Answer Options	Strongly Agree		Agree		I Don't Know		Disagree		Strong Disagree		Response Count
		Quantity	%	Quantity	%	Quantity	%	Quantity	%	Quantity	%	
1	Leadership require strategy to lead. (A2)	436	92.77%	34	7.23%	0	0.00%	0	0.00%	0	0.00%	470
2	We need strategy to design process. (B2)	348	74.04%	122	25.96%	0	0.00%	0	0.00%	0	0.00%	470
3	We need strategy to make a strategy. (ABCD)	192	40.85%	131	27.87%	99	21.06%	6	1.28%	42	8.94%	470
4	We need process to implement strategy.(ABCD2)	305	64.89%	123	26.17%	0	0.00%	42	8.94%	0	0.00%	470
5	Leadership involve in making the process. (ABCD)	256	54.47%	214	45.53%	0	0.00%	0	0.00%	0	0.00%	470
6	We need leadership to focus on people.(ABCD1)	430	91.49%	40	8.51%	0	0.00%	0	0.00%	0	0.00%	470
7	People need leadership to make a strategy (ABCD1)	428	91.06%	42	8.94%	0	0.00%	0	0.00%	0	0.00%	470
8	We need people to design process.(B1)	344	73.19%	126	26.81%	0	0.00%	0	0.00%	0	0.00%	470
9	We need leadership to focus on people.(A1)	428	91.06%	42	8.94%	0	0.00%	0	0.00%	0	0.00%	470
10	Leadership need strategy to focus on people.(A1A2)	390	82.98%	80	17.02%	0	0.00%	0	0.00%	0	0.00%	470
11	Leadership needs people to make strategy (A2A1)	204	43.40%	226	48.09%	0	0.00%	40	8.51%	0	0.00%	470
12	We need leadership to focus on partnership & resources.(A3)	204	43.40%	222	47.23%	2	0.43%	42	8.94%	0	0.00%	470
13	Partnership & Resources needs leadership to make process.(ABCD3)	202	42.98%	224	47.66%	44	9.36%	0	0.00%	0	0.00%	470
14	Leadership need people to focus on partnership & resources.(A3A1)	160	34.04%	266	56.60%	2	0.43%	42	8.94%	0	0.00%	470
15	Partnership & resources need process to achieve society result.(ABCD3)	214	45.53%	254	54.04%	2	0.43%	0	0.00%	0	0.00%	470
16	Process of partnership & recourse need leadership and strategy to obtain society results.(ABCD3)	246	52.34%	182	38.72%	0	0.00%	42	8.94%	0	0.00%	470
17	Partnership & resources leads directly to society results.(ABCD3)	214	45.53%	256	54.47%	0	0.00%	0	0.00%	0	0.00%	470
18	Leadership need strategy to focus on partnership & Resources.(A2A3)	202	42.98%	224	47.66%	2	0.43%	42	8.94%	0	0.00%	470
19	Leadership need partnership & resources to focus on strategy.(A3A2)	160	34.04%	209	44.47%	59	12.55%	42	8.94%	0	0.00%	470
20	People need process of people to achieve people result. (C1)	204	43.40%	224	47.66%	0	0.00%	42	8.94%	0	0.00%	470
21	We need people results to obtain key results. (D1)	216	45.96%	250	53.19%	4	0.85%	0	0.00%	0	0.00%	470
22	Strategy need dedicated process to achieve customer results. (C2)	342	72.77%	128	27.23%	0	0.00%	0	0.00%	0	0.00%	470
23	We need customer results to obtain key results.(D2)	164	34.89%	300	63.83%	6	1.28%	0	0.00%	0	0.00%	470
24	Partnership & resources need dedicated process to achieve society results.(C3)	248	52.77%	178	37.87%	2	0.43%	42	8.94%	0	0.00%	470
25	We need society results to obtain key results. (D3)	206	43.83%	214	45.53%	50	10.64%	0	0.00%	0	0.00%	470
									answered question			**470**
									skipped question			**30**

VIII. ANALYSIS METHODS

Questionnaires for the main project were formed based on the critical analysis that was carried out and will be addressed by experts in the field. First, a questionnaire study was launched with data population of 500 selected scientifically to test the model. The collected answers will be processed into the SPSS, in which it will statistically verify the accurate values and the confidence level and the variance and fed to the built-in software AMOS in the validation stage. In the final part of the research, methodology, there are two main terms latent variables and manifest variables, the latent variables describe the hidden or unobserved variables.

IX. RELIABILITY TEST

Reliability refers to the consistency and stability in the results of a test or scale. A test is said to be reliable if it yields similar results in repeated administrations when the attribute being measured is believed not to have changed in the interval between measurements, even though the test may be administered by different people and alternative forms of the test are used [26].

A reliable instrument or test must meet two conditions: it must have a small random error; and it must measure a single dimension [26]. Cronbach's Alpha- Internal consistency reliability is more complicated, because in this measure of reliability we are establishing how well each item in a scale measures the same construct. Internal consistency reliability often is measured with a statistical test called a Cronbach's alpha coefficient.[6]

Split-Half Method- Split-half reliability compares one half of a test to the other half based on the assumption that all items should be comparable in measuring one construct and the results should be similar. If there were 20 items on a measure, the first 10 items would be compared to the second 10 items. The Spearman Brown correlation formula is used to determine split-half reliability. [28]

Even/Odd Method is similar to split-half method, with the exception that the estimation of reliability for the entire test/scale is no longer based on correlating the first half of the test/scale with the second half, but instead it is based on correlating even items with odd items [26]. The Alpha Cronbach Reliability Test normally conducted to evaluate the reliability of a set of measurement data such as questionnaire, survey. Nunnally [15] indicated that in the reliability result there should be more at least 0.7 to accept it for the further estimation and calculation. The results in table 9 indicates reliability of the data where marginal reliability values for model A1A2 and model A2A3 is noticed.

Table 9 Reliability results of measurement data

Model	Item	Reliability- Cronbach's Alpha
Vertical Path		
ABCD1	8	0.890
ABCD2	8	0.866
ABCD3	7	0.966
Horizontal Path		
A1A2	5	0.619
A1A3	5	0.732
A2A3	5	0.656
B1B2	5	0.727
B1B3	5	0.797
Model B2B3	5	0.817

X. MODEL IDENTIFICATION

Before test, the relationship among model components/ variables, the model must be over-identified i.e. the degree of freedom are positive or the numbers of known parameter is more than unknown. As shown in table 10, that is only over-identified model able to be evaluated in the modelling. If the model is found just identified or under-identified, necessary fixing action should be done such as adding the variables to the model. The degree of freedom may be changed during model modification to improve the fitness. Therefore maintaining it with "over-identified" status is required.

Table 10 Models are over-identified

| Model | Unmodified | | After Modification | |
	Degree of Freedom	Status	Degree of Freedom	Status
ABCD1	2	Over identified	1	Over identified
ABCD2	3	Over identified	2	Over identified
ABCD3	2	Over identified	1	Over identified
A1A2	6	Over identified	4	Over identified
A1A3	6	Over identified	5	Over identified
A2A3	6	Over identified	4	Over identified
B1B2	6	Over identified	4	Over identified
B1B3	6	Over identified	4	Over identified
B2B3	6	Over identified	4	Over identified

XI. REGRESSION ANALYSIS AND MODIFICATION

The regression results determine and calculate the correlation between the variables considered in the model, the modification of the model is only required if the model needs to be improved to obtain a better fitting model (fig. 9). It was clearly seen that the regression weight was improved in vertical models: ABCD1, ABCD2 and ABCD3 modified versions in table 11. Modifications in horizontal models (table 12) were not significant because the allowance of changes between parameters were not enough.

Table 11 Regression Estimation of vertical models

	Factors	Unmodified		Modified	
		Regression		Regression	
		Unstandardized Estimates	Standardize Estimates	Unstandardized Estimates	Standardize Estimates
	Model ABCD1				
A1	Leadership for People People	3.476	1	3.547	1
B1	People Process for People	0.296	1	0.290	1
C1	Process for People People Result	3.419	1	3.536	1
D1	People Result Key Result	0.116	0.098	0.104	1
	Model ABCD2				
A2	Leadership for Strategy Strategy	1.616	1	1.616	1
B2	Strategy Process for Strategy	2.232	1	2.232	1
C2	Process for Strategy Customer Result	0.952	1	0.952	1
D2	Customer Result Key Result	11.718	0.980	0.255	1
	Model ABCD3				
A3	Leadership for Partnership & Resources Partnership & Resources	2.896	1	2.871	1
B3	Partnership & Resources Process for Partnership & Resources	0.938	1	0.913	1
C3	Process for Partnership & Resources Society Result	1.078	1	1.062	1
D3	Society Result Key Result	0.113	1	0.157	1

Table 12 Regression Estimation of the horizontal models

| Factors	Regression (Unmodified)		Regression (Modified)	
	Unstandardized Estimates	Standardize Estimates	Unstandardized Estimates	Standardize Estimates
Model A1A2				
Leadership for People→Leadership for Strategy	0.398	0.397	0.397	0.397
Leadership for Strategy→Leadership for People	0.396	0.397	0.397	0.397
Model A1A3				
Leadership for People→Leadership for Partnership & Resources	0.430	0.430	0.429	0.430
Leadership for Partnership & Resources→Leadership for People	0.429	0.429	0.429	0.430
Model A2A3				
Leadership for Strategy→Leadership for Partnership & Resources	0.363	0.363	0.363	0.363
Leadership for Partnership & Resources→Leadership for Strategy	0.363	0.363	0.363	0.363
Model B1B2				
People →Strategy	0.742	0.739	0.753	0.741
Strategy→People	0.734	0.737	0.723	0.735
Model B1B3				
People →Partnership & Resources	0.495	0.490	0.490	0.489
Partnership & Resources→	0.483	0.488	0.489	0.489
Model B2B3				
Strategy → Partnership & Resources	0.741	0.739	0.740	0.736
Partnership & Resources→ Strategy	0.735	0.737	0.738	0.738
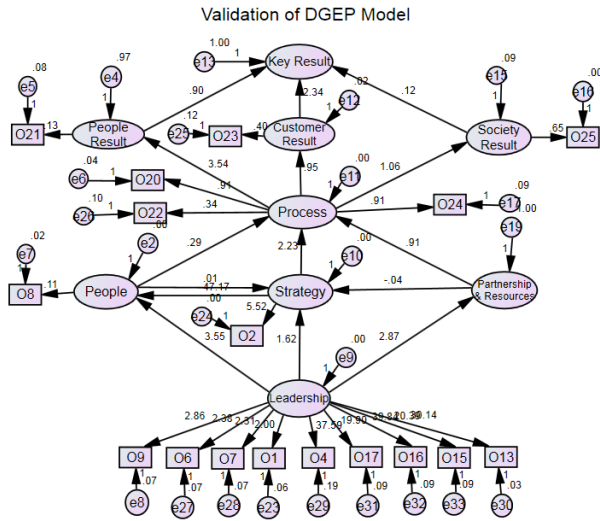
Fig. 9 Flow chart of DGEP Process

XII. THE DGEP CRITERIA EXCELLENCE MODEL FIT

Various empirical researches [16], [17], [18] applied a set of goodness of fit indices in their studies which are popular such as are Ratio between X2 and degree of freedom, Adjunct fit indices (AFI), Goodness-Of-Fit (GFI), Root Mean Square Error of Approximation (RMSEA), Root Mean Square Residual (RMR), Adjusted Goodness-Of-Fit (AGFI), Bentler-Bonett Non-Normed Fit Index (NNFI), Comparative Fit Index (CFI) and etc. However Daire H., Joseph C., and Michael R. M.,[19] states fit indices are a useful guide, a structural model should also be examined with respect to substantive theory.

At least 5 fitness criteria out of 7 listed in to be met in the test or else the model should be modified with theory justification as in table 13. Decide model interpretation is the last step in the modeling stage.

In AMOS, the chi-square value is called CMIN which is the goodness of fit and it is sometimes called discrepancy function, the second criterion is the Chi Square/df it also should be < 5, which is the minimum discrepancy and it is divided by the degree of freedom df, the third criterion is the Root Mean Square (RMR) should be < 0.05. The fourth criterion is, Root Mean Square Error of Approximation (RMSEA) also < 0.05, the fifth criterion is the Goodness-of-Fit Index (GFI) should be < 0.9, the sixth criterion is Normed Fit Index (NFI) should be also <0.9and the seventh criterion is CFI should be also <0. The results from AMOS revealed a large variation of model fit indices and out of range of the model fit criteria which confirms with many published papers such as Hu, L.T. and Bentler, P.M. [20]; Ahmed, P. and Rafiq, M.[21]; Badri, M., Selim, H. Alshare, K, Grandon, E, Younis, H., Abdulla,M.[22],Bassioni,H. A T.M. Hassan, T.M and. Price, A.D.F [23], Bollen, K. [24].

Table 13 Model Fit Index

Model	Chi Square	CMIN/df	RMR	RMSEA	GFI	NFI	CFI
Before Modification							
ABCD1	740.880	370.440	0.060	0.860	0.681	0.736	0.736
ABCD2	323.918	107.973	0.015	0.463	0.789	0.853	0.854
ABCD3	54.403	27.201	0.008	0.229	0.948	0.975	0.976
A1A2	997.412	166.235	0.168	0.575	0.583	0.705	0.706
A1A3	1541.142	256.857	0.220	0.716	0.542	0.593	0.594
A2A3	357.489	59.582	0.123	0.343	0.842	0.782	0.784
B1B2	884.034	147.339	0.071	0.542	0.755	0.810	0.811
B1B3	317.499	52.916	0.128	0.323	0.811	0.750	0.752
B2B3	428.648	71.441	0.070	0.376	0.811	0.888	0.889
After Modification							
ABCD1	0.008	0.008	0.000	0.000	1	1	1
ABCD2	59.501	29.750	0.008	0.240	0.947	0.973	0.974
ABCD3	0.175	0.175	0.000	0.000	1	1	1
A1A2	581.167	145.292	0.153	0.538	0.779	0.828	0.829
A1A3	834.374	166.875	0.193	0.577	0.741	0.780	0.780
A2A3	315.697	78.924	0.136	0.395	0.828	0.808	0.809
B1B2	154.888	38.722	0.075	0.275	0.899	0.967	0.967
B1B3	197.123	49.281	0.105	0.311	0.895	0.845	0.846
B2B3	46.903	11.726	0.024	0.147	0.965	0.988	0.989

XIII. DISCUSSION

Despite the fact that the DGEP is not a model but a framework consists of many models and categories one of these models is organisation excellence which is studied in this paper. The DGEP model "Organisational Excellence" can be considered in terms of structure only, similar to EFQM with several adoptions captured from the UAE culture and environment settings.

The model can be divided into three phases or parts; driver, system and results. As the DGEP is result oriented, it is also leadership focused; the success of the model can be found with the amount of criteria attached to the leadership. The leadership has 45 sub criteria in addition to the 7 main sub criteria.

The difference between the leadership in the West and in the East is that the leadership prepare, submit, explain, present and finalize whereas in the West, the leadership only support and create the environment for people to do the work. The study conducted in vertical and horizontal paths analysis as mentioned before; there were some difficulties in arranging models in the software. Many errors and unknown results were foreseen during the design testing. Many or almost all published cases were presenting a 2 latent variables model which had difficulty to find out a similar 9 main latent variables if not more. However, this was overcome by

dividing the model into vertical and horizontal path analysis. The vertical was tested by regression factor whereas the horizontal was analyzed by covariance factor.

XIV. MODEL FIT INDICES DISCUSSION

Reliability tests were carried out for the vertical models (ABCD1, ABCD2 and ABCD3) and horizontal models (A1A2, A1A3, A2A3, B1B2, B1B3, B2,B3) .The reliability of the data input to vertical models was positive i.e more than 0.8 [25]. Horizontal models had acceptable reliability data input i.e. more than 0.7 [15]. Two sets data in the model A1A2 and A2A3 were showing less than 0.7. Chi Square, Chi Square/df, RMR, RMSEA, GFI, NFI, CFI for the evaluated model were chosen to identify the model fitness. It was found that the studied models revealed a large variation of model fit indices and out of range of the model fit criteria which confirms with many published papers Hu, L.T. and Bentler, P.M. [20]; Ahmed, P. and Rafiq, M.[21], Badri, M., Selim, H. Alshare, K, Grandon, E, Younis, H., Abdulla,M [22], Bassioni,H. A T.M. Hassan, T.M and. Price, A.D.F [23], Bollen, K. [24].

Vertical Models ABCD1, ABCD2 and ABCD3 found to be meeting most of the model fitness indices after the model has been modified. The poor fitness indicated the model stability should be improved. Thus modifications are completed by inserting the covariance between the latent variables. This mean the relation between the variables must be closed enough to achieve the expected results. The horizontal models were showing poor fitness even after modification, which in this case trimming theory may need to be applied to achieve good fitness of the model.

XV. CONCLUSION

In this paper a new techniques called ABCD Model Analysis was developed for validation purposes. The validation process was tested on the Dubai Government Excellence Program (DGEP). The validation is carried out in three vertical and horizontal paths analysis. The three vertical models ABCD1/2/3 were considered to be fit model after necessary modification. However, the horizontal models could not be validated successfully due to poor fitness. The objective of the design of a fit model is to standardize the model to evaluate future data with highly consistent and does not require further re-specification. The final model used in the existing study focus only on the explanation of casual effect and the correlation between the studied factors. The overall conclusion indicates that the ABCD Model analysis used for validation process on DGEP model was successful and can be used as a reference for further improvements. The importance of the validation process determines the sensibility, feasibility and acceptability of the validated model.

REFERENCES

[1] EFQM Model, (2010) 'Excellence Organizations achieve and sustain superior levels of performance that meet or exceed the expectations of all their stakeholders' Publication, Brussels, Belgium, 2009.

[2] Nuseirat, A. (2012), 'Achieving sustainable results', Coordinator General – Dubai Government Excellence Program (DGEP), The executive Council, Government of Dubai, Power Point Presentation.

[3] Kahlout, Z. (2005) 'An Investigation into the effectiveness of Excellence Awards in the Government Sector', Quality & Excellence Advisor, Dubai Government Excellence Program, The General Secretariat of the Executive Council of Dubai.

[4] Calvo-Mora Schmidt, Arturo, Picón Berjoyo, A., Ruiz Moreno, C., & Cauzo Bottala, L. (2013). Soft-Hard TQM factors and key business results. WSEAS Transactions on Business and Economics, 1(10), 14-23.

[5] HH Sheikh Mohammed bin Rashid Al Maktoum, 'My Vision', 2012, English version, Motivate Publishing.

[6] DGEP Power point, (2012), 'Dubai Government Excellence Program', The Executive Council, Govermnment of Dubai, www.dubaiexcellence.com last download on September 2012.

[7] Sokovic, M., Pavletic, D., & Pipan, K. K. (2010). 'Quality improvement methodologies–PDCA cycle, RADAR matrix, DMAIC and DFSS'. Journal of Achievements in Materials and Manufacturing Engineering, 43(1), 476-483.

[8] Boris Mutafelija, Harvey Stromberg (2003) 'Systematic Process Improvement Using ISO 9001:2000 and CMMI' Artech House, ISBN1580536395, 9781580536394

[9] John C. Goodpasture (2010) 'Project Management the Agile Way: Making it Work in the Enterprise' J. Ross Publishing, ISBN1604270276, 9781604270273

[10] Michel Jaccard, (2013), 'The Objective is Quality: An Introduction to Performance and Sustainability Management Systems', CRC Press, ISBN146657299X, 9781466572997

[11] Meyer, S. and Collier, D. (2001) 'An empirical test of the causal relationships in the Baldrige Health Care Pilot Criteria', Journal of Operations Management, Vol. 19 No. 4, pp. 403-25.

[12] Winn, B. and Cameron, K. (1998) 'Organizational quality: an examination of the Malcolm Baldrige quality framework', Research in Higher Education, Vol. 39 No. 5, pp. 491-512.

[13] Pannirselvam, G. and Ferguson, L. (2001) 'A study of the relationships between the Baldrige categories', International Journal of Quality & Reliability Management, Vol. 18 No. 1, pp. 14-34

[14] Flynn, B. and Saladin, B. (2001) 'Further evidence on the validity of the theoretical models underlying the Baldrige criteria', Journal of Operations Management, Vol. 19 No. 6, pp. 617-52.

[15] Nunnally, J. C. (1978) 'Psychometric theory' (2nd ed.). New York: McGraw-Hill.

[16] Chen, C. H., & Lee, H. Y. (2008). 'Empirical analysis of the customer loyalty problem in the international logistics market'. WSEAS Transactions on business and economics, 5(4), 107-117.

[17] Shih, M. L., Lin, S. H., Hsiao, S. H., Huang, L. M., Chiu, C. C., & Chen, K. Y. (2009). 'The study of the correlation among personality traits, leadership competence and organizational performance'. WSEAS Transactions on Business and Economics, 1(6), 11-20.

[18] Hsien-Lun Wong, Mei-Chi Tsai, (2010) 'The Effects of Service Encounter and Experiential Value on Consumer Purchasing Behavior'. Wseas Transactions on Business and Economic, 2(7), 59-68

[19] Daire Hooper, Joseph Coughlan, and Michael R. Mullen, (2008) 'Structural Equation Modelling: Guidelines for Determining Model Fit', Electronic Journal of Business Research Methods Volume 6 Issue 1 2008 (53-60)

[20] Hu, L.T. and Bentler, P.M. (1999) 'Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria Versus New Alternatives, Structural Equation Modeling,' 6 (1), 1-55.

[21] Ahmed, P. and Rafiq, M., (1998), 'Integrated benchmarking: a holistic examination of select techniques for benchmarking analysis', Benchmarking: An International Journal, Vol. 5 Iss: 3 pp. 225 – 242.

[22] Badri, M., Selim, H. Alshare, K, Grandon, E, Younis, H., Abdulla,M.(2006), 'The Baldrige Education Criteria for Performance Excellence Framework: Empirical test and validation', International

Journal of Quality & Reliability Management, Vol. 23 Iss: 9 pp. 1118 – 1157

[23] Bassioni,H. A T.M. Hassan, T.M and. Price, A.D.F, (2008) 'Evaluation and analysis of criteria and sub-criteria of a construction excellence model', Engineering, Construction and Architectural Management, ISSN 0969-9988, 2008, Volume 15, Issue 1, pp. 21 - 41

[24] Bollen, K. (1989) 'Structural Equations with Latent Variables', Wiley, New York, NY.

[25] Kline, R.B. (2005) 'Principles and Practice of Structural Equation Modeling' (2nd Edition ed.). New York: The Guilford Press

[26] Robert Gebotys (2003), 'HANDOUT ON RELIABILITY', Retrieved: April 2015, from http://legacy.wlu.ca/documents/45758/reliability

[27] Munro, B. (2005). Statistical methods for health care research (5th ed.). Philadelphia: Lippincott Williams and Wilkins

[28] Janice (2008), 'Why Are Reliability and Validity Important to Neuroscience Nurses.' , Journal of Neuroscience Nursing, V40,6, page 369-372