

Risk Management Culture as Mediator to the Relationship of Risk Management Tool with Public Sector Performance in UAE Public Sector

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ABSTRACT

Risk management plays a vital role on the performance of many organizations including UAE organization. The main issue that affects the performance of public sector in UAE is the used of outdated risk management tools, this tremendously affects the performance of public sector in UAE. This paper presents a study on developing a structural relationship of causal effect of five risk management tools which are Document Review; SWOT Analysis; Root-Cause Analysis; Interview; Delphi Technique with Public Service Performance and Risk Management Culture as a mediator. The modelling process was conducted using AMOS-SEM software. The results from the modelling found that all the measurement models and structural model have achieved the model fitness criteria. While for hypothesis testing for direct relationship, it was found that the five risk management tools together with Risk Management Culture constructs has explained 63% variation in Public Sector Performance construct. The other direct relationship found that the five risk management tools constructs has explained 48% variation in RMC. For indirect relationship, it was found that Risk Management Culture has no mediation effect on the relationship between the five risk management tools of exogenous constructs and Public Sector Performance of endogenous construct.

Keywords

Risk Management, Public Sector, Performance

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Introduction

Challenges of businesses faced by corporations are usually evolved around uncertainties linked to the activities of the corporations. These uncertainties affect decision making and most times shapes performance outcome for industries or government corporations. Organisation are increasingly applying risk management to the undertakings as it creates room for efficient deployment of limited resources, productive decision making and reduced exposure to negative incidents [1]. This development has made public sector no different from the private sector as regards risk management strategies adoption in relation to outlined strategic organisational objectives. According to [2], understanding strategic risk management in the public sector leads to effective strategic planning, and the development of communities, societies, and provinces. Public enterprises in UAE have affected ways in which people and government do business with each other. Today public enterprises in UAE is considered as a fundamental building block of modern business society and digital economies [3-4].

Nevertheless, the radical steps in countries of the world is much dependent on the preparedness of

several factors of social and political environments [5]. New technologies have revealed the potentials of public enterprises. Various applications of innovations and ICT over the past years have shown usage and transformative potentials to be an important tool for organising and conducting public enterprise in UAE.

Previously, study evidences reveal that risks are not well managed [6-7]. The complexity of arrangements and incomplete contracting nature of public sector projects have led to the increment of risk exposure among parties involved [8]. Meanwhile, a perception of transferring risks to the private sector is still prevalent in developing countries [9]. Therefore, the government has a critical understanding on decision either retain or transfer inappropriate risks [10] due to the risk transfer will may cost higher prices to the stakeholders [10-11].

In the public sector, risk management involves identification, measurement, monitoring and controlling risks [12]. Thus, the risk management team shall comprehend on risk measurement and deliver the task effectively. Moreover, risk management is seen as a check and balance decision for aligning business strategy and

objectives. Furthermore, financial management and control systems were developed under the influence of the United Arab Emirates new regulation setting. This new regulation appears as an internal control system for budgetary institutions that integrates the organisational governance and management.

Besides, optimal risk allocation seeks to minimise the project risks by controlling them in the best position. This is based on the principle that the best capability of management is likely having the opportunity to risk reduction[11]. The capability based principle of risk allocation has its own shortcomings. Therefore, the optimal risk allocation could be achieved if all stakeholders has shown their willingness and commitment [7]. This study identified the tools and methods used in managing credit risk, market risk, liquidity risk and operational risk by UAE public sector. This study has made significant contribution to the risk management practice by integrating the liquidity risk management method into the UAE public sector [13].

Methodology

Risk management plays a vital role on the performance of many organizations including UAE organization. The main issue that affects the performance of public sector in UAE is the used of outdated risk management tools, this tremendously affects the performance of public sector in UAE. This study adopted a methodological framework based on positivist paradigm which is quantitative research approach. Respondents of this study were stakeholders of public service in UAE. Data collected from the questionnaire survey was used for the model development. The data was collected through questionnaire survey and analysed statistically to deduce the research hypotheses. The model was developed and assessed based on the causal effect of five risk management tools which are Document Review; SWOT Analysis; Root-Cause Analysis; Interview; Delphi Technique with Public Service Performance and Risk Management Culture as a mediator. The modelling process was conducted using AMOS-SEM software

Measurement Model Assessment

Confirmatory Factor Analysis (CFA) is to evaluate measurement model where items that do not fit the measurement model due to low factor loading were removed. Fitness of a measurement

model is considered invalid [failed confirmatory] where the deleted items exceed 20% of total items.

After all the individual models had achieved goodness of fit then it requires to assess the validity of whole measurement model at once before developing and assessing the structural model. The purpose of assessing the whole measurement model at once is to establish harmony or validity amongst the constructs. The assessment of the entire measurement model is based on three elements which are the convergent and discriminant validity, and multicollinearity of the models constructs [15].

3.1 Convergent validity of entire measurement model

Convergent validity is to measure the extent to which the items or indicators of a construct are correlated with the construct. Factor loading of an item is an indication for the achievement of convergent validity. Convergent validity is established when factor loading value equal or greater than 0.50. Recommended threshold for convergent validity using the NFI index is 0.90 [15]. Hence the results of the convergent validity are as in table 1.

Table 1 – results of convergent validity

N o.	Construct	Residual Items number	Factor loading		NFI Index
			Lowest FL	Highest FL	
1	Administration Practice	5	0.626	0.810	0.980
2	Service Delivery	5	0.601	0.704	0.983
3	Budget and Finance	7	0.644	0.759	0.958
4	Delphi Technique	7	0.583	0.754	0.974
5	SWOT Analysis	5	0.573	0.833	0.989
6	Document Review	5	0.677	0.770	0.979
7	Root-Cause Analysis	5	0.584	0.797	0.982
8	Interviews	5	0.582	0.718	0.972
9	Risk Management Culture	5	0.648	0.757	0.979

Table 1 shows the results of the convergent validity of the measurement model. It indicates that all the generated values are satisfied with the acceptable threshold.

3.2 Discriminant Validity of entire measurement model

It is to evaluate the degree of dissimilarity of a construct from other constructs in a model. When the correlation value of inter-construct associated with a particular construct is greater than the corresponding inter-construct correlation values with other constructs, then discriminant validity is considered achieved [15]. It is also to confirm that an average variance extracted (AVE) is greater than the correlation of the construct with others construct in the model. The recommended threshold for AVE is equal or greater than 0.50 [15]. Table 2 the results of discriminant validity of the constructs.

Table 2 - Discriminant validity of the model

	A D P	S D	B F	D T	S A	D R	R C A	I N T	R M C
A D P	0.612								
S D	0.042	0.587							
B F	0.083	0.069	0.591						
D T	0.097	0.052	0.062	0.503					
S A	0.041	0.049	0.063	0.087	0.597				
D R	0.035	0.038	0.046	0.059	0.064	0.599			
R C A	0.025	0.031	0.038	0.059	0.054	0.067	0.564		
I N T	0.101	0.046	0.047	0.060	0.058	0.051	0.060	0.570	
R M C	0.085	0.037	0.045	0.057	0.056	0.049	0.061	0.087	0.517

Table 2 shows that the AVE of each construct at the diagonal while the off-diagonal values represent the correlation coefficients between the constructs. It shows that all the AVEs are greater than 0.50 and each AVE value is higher than any correlation with other construct. Therefore, discriminant validity is achieved.

3.3 Multicollinearity Assessment

Multicollinearity assessment needs to be conducted before developing and evaluating a structural model. The multicollinearity in a dataset is reflected as a risk to multiple regression analysis validity which will cause an error in hypothesis testing. It is suggested that the correlation between two constructs should not more than 0.90 [15, 16]. Results of multicollinearity presence are shown with constructs' correlation matrix as presented in Table 3.

Table 3 - Correlation coefficients of constructs

	A D P	S D	B F	D T	S A	D R	R C A	I N T	R M C
A D P									
S D	0.042								
B F	0.083	0.069							
D T	0.097	0.052	0.062						
S A	0.041	0.049	0.063	0.087					
D R	0.035	0.038	0.046	0.059	0.064				
R C A	0.025	0.031	0.038	0.059	0.054	0.067			
I N T	0.101	0.046	0.047	0.060	0.058	0.051	0.060		
R M C	0.085	0.037	0.045	0.057	0.056	0.049	0.061	0.087	

Table 3 shows the correlation coefficient values between the constructs. The results show that all the values are within the acceptable limit of 0.9. This indicates no excessive multicollinearity between constructs which avoid the risk to multiple regression analysis validity in hypothesis testing. Hence all the constructs are included in the structural model development and evaluation. Validity of the entire measurement model is presented in Table 4.

Table 4 - Validity of the model's constructs

Construct	Items	Estimate	AVE
Administrative Process	ADP1	.632	.612
	ADP2	. Item deleted	
	ADP3	.810	
	ADP4	.747	
	ADP5	.626	
	ADP6	.696	
	ADP7	deleted	
	ADP8	deleted	
	ADP9	deleted	
Service Delivery	SD1	deleted	.587
	SD2	deleted	
	SD3	deleted	
	SD4	deleted	
	SD5	.601	
	SD6	.669	
	SD7	.704	
	SD8	.685	
	SD9	.695	
	SD10	Item deleted	
Budget and Finance	BF1	.644	.591
	BF2	.692	
	BF3	.652	
	BF4	.676	
	BF5	.650	
	BF6	.759	
	BF7	.731	
	BF8	Item deleted	
	BF9	Item deleted	
	BF10	Item deleted	
Delphi Technique	DT1	.583	.503
	DT2	.667	
	DT3	.728	

	DT4	.700	
	DT5	.754	
	DT6	.655	
	DT7	.626	
SWOT Analysis	SA1	.771	.597
	SA2	.833	
	SA3	.707	
	SA4	.573	
	SA5	.599	
Document Review	DR1	.677	.599
	DR2	.717	
	DR3	.770	
	DR4	.695	
	DR5	.689	
Root-Cause Analysis	RCA1	.584	.564
	RCA2	.695	
	RCA3	.797	
	RCA4	.782	
	RCA5	.660	
Interview	INT2	.676	.570
	INT3	.718	
	INT4	.695	
	INT5	.697	
	INT6	.597	
	INT1	.582	
Risk Management Culture	RMC1	.726	.517
	RMC2	.757	
	RMC3	.669	
	RMC4	.648	
	RMC5	.715	
	RMC6	Item deleted	
	RMC7	Item deleted	
	RMC8	Item deleted	
	RMC9	Item deleted	
	RMC10	Item deleted	
	RMC11	Item deleted	
	RMC12	Item deleted	

Structural Model Assessment

The structural component of the model is assessed after the entire measurement model has satisfied the validity criteria. In the structural component, the causal relationship between the exogenous constructs and the endogenous constructs is

determined according to the conceptual model hypotheses.

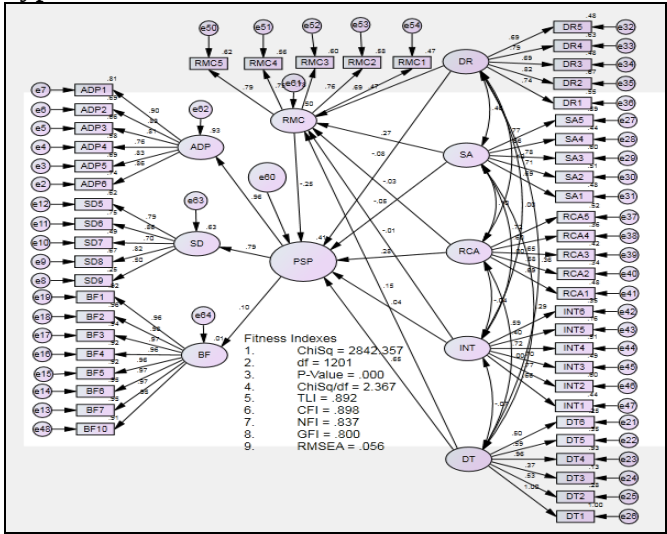


Fig.1 - Initial structural model

The fig. 1 shows that not all the indexes values meet the criteria values for example the RMSEAot value satisfied the criteria for acceptance while the CFI, GFI and other generated values are below the acceptable limit. Hence the model required re-specification process and Fig.2 depicts the final structural model.

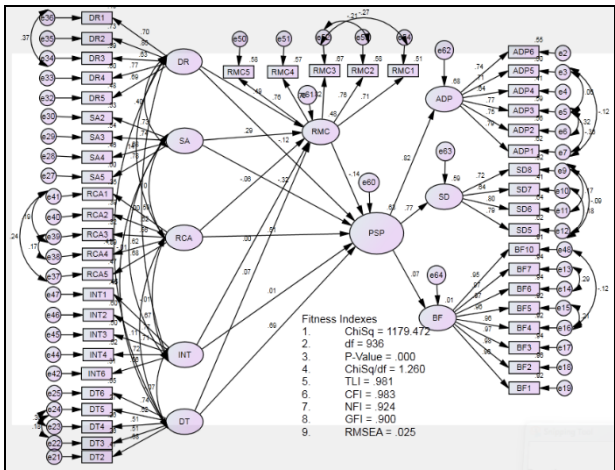


Fig.2 - Final structural model

Fig.2 shows all the requirements for model acceptance. The standardized regression weights, squared multiple regression, and all the goodness-of-fit indexes meet the recommended thresholds. The final structural model was attained after several iterative process of re-specification. The final model shows the causal effect of *Document Review (DR)*, *SWOT Analysis (SA)*, *Root-Cause Analysis (RCA)*, *Interview (INT)*, *Delphi Technique (DT)* on the endogenous construct

Public Service Performance (PSP) on one hand, and their effect on *Risk Management Culture (RMC)* which served as a mediator in the research model. The endogenous construct *PSP* is a second order construct that is measured by three (3) sub-constructs (*Administrative Process, Service Delivery and Budget and Finance*). Table 5 shows the results of the generated indexes values for both the initial and final stage of the structural models.

Table 5: Indexes generated results of the initial and final structural model stages

Category	Parsimonious fit	Absolute fit	Incremental fit	Incremental fit	Absolute fit	Fitness level
Acceptance Threshold	Chisq/df ≤ 5.0	GFI ≥ .90	CFI ≥ .90	NFI ≥ .90	RMSEA ≤ .08	
Initial Structural Model	2.367	.800	.898	.837	.056	not achieved
Final Structural Model	1.260	.900	.983	.924	.025	achieved

Results in table 5 shows that at initial stage of the structural model assessment, the parsimonious fit and one of the absolute fit indexes, RMSEA, the remaining fit statistics failed to meet the desired thresholds. However, the final stage of the model has achieved all the fitness indexes and are within the acceptable limits. Therefore, the model has attained its goodness of fit which is considered validated.

4.1 Evaluation of Direct Relationships

Table 6 shows the standardized regression weight of the path relationships of DR, SA, RCA, INT and DT with the PSP endogenous construct. While RMC construct act as mediator. The results from the modelling are tabulated in table 6.

Table 6 - Standardized regression weight of the path relationship

Path relationship	Estimate	S.E	C.R.	P-value	R ²
PSP←DR	-0.122	0.058	-1.466	0.143	0.63
PSP←SA	-0.322	0.081	-4.012	***	
PSP←RCA	0.509	0.102	5.776	***	
PSP←INT	0.014	0.136	0.227	0.821	
PSP←DT	0.689	0.062	-0.690	0.490	
PSP←RMC	-0.145	0.086	-1.658	0.097	0.48
RMC←DR	0.488	0.043	7.936	***	
RMC←SA	0.287	0.060	4.885	***	
RMC←RCA	-0.059	0.056	-1.236	0.216	
RMC←INT	0.001	0.099	0.023	0.982	
RMC←DT	0.068	0.087	1.153	0.249	

***indicates significance at $p < 0.05$

Table 6, it is shown that collectively, the five risk management tools construct (DR, SA, RCA, INT, DT) and RMC construct has explained 63% variation in PSP. On the other hand the five risk management tools construct (DR, SA, RCA, INT, DT) has explained 48% variation in RMC. The highest positive path coefficient is PSP←DT ($\beta = .689$; CR= -0.690; $p = 0.490$) while the lowest is RMC←INT ($\beta = 0.001$; CR= 0.023; $p = 0.982$).

4.2 Evaluation of Indirect Relationship

In the indirect relationship, the hypothesis is to determine whether that the Risk Management Culture construct has the mediation effect on the relationship between the five exogenous constructs of risk management tools and Public Sector Performance. This hypothesis testing was conducted using the bootstrapping method. The

bootstrapping method is the most effective method of testing mediation as compared to others method such as the Sobel Test method. Bootstrapping process involved re-sampling of the data set between 500 and 1000 times. The process generates estimated sampling distribution for total effect, direct effect and indirect effect estimates and their corresponding 95% confidence level. Bootstrapping algorithm estimates the lower and upper limits as well as the two-tailed significant values for the effects [15]. Table 7 shows the results of the bootstrapping for the mediation effect of RMC on the relationship between the six exogenous constructs and Public Sector Performance.

Table 7 - Two-tailed significance of bootstrap confidence interval for indirect effect

Path relationship	Estimate	Lower Bounds	Upper Bounds	P-value
PSP←RMC←DR	-0.071	-0.196	0.063	0.281
PSP←RMC←SA	-0.042	-0.111	0.042	0.259
PSP←RMC←RCA	0.009	-0.005	0.001	0.172
PSP←RMC←INT	0.000	-0.018	0.018	0.913
PSP←RMC←DT	0.010	-0.077	0.003	0.231

Table 7 indicate that RMC has no mediation effect on the relationship between the five risk management tools of exogenous constructs and Public Sector Performance of endogenous construct. Thus this result seems doesn't concurred with the hypothesis on indirect relationship. This is because due to the collected data from the respondents are not strong enough to provide the effect. It gives the implication that the respondents didn't believed that culture has no effect to the relationship between the five risk management tools of exogenous constructs and the Public Sector Performance of endogenous construct.

Conclusion

This paper was on the effects of risk management tools on the performance of public sector in UAE.

Structural model was developed to measure the extent in which risk management tools effects public sector performance in UAE. The results from the modelling found that all the measurement models and structural model have achieved the model fitness criteria. While for hypothesis testing for direct relationship, it was found that the five risk management tools together with Risk Management Culture constructs has explained 63% variation in Public Sector Performance construct. The other direct relationship found that the five risk management tools constructs has explained 48% variation in RMC. For indirect relationship, it was found that Risk Management Culture has no mediation effect on the relationship between the five risk management tools of exogenous constructs and Public Sector Performance of endogenous construct.

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