A Structural Equation Modelling on Risk Management and Business Continuity in Tawam Hospital UAE

Ahmed Saif Almansoori[1], Maimunah Ali[2]

[1] Researcher, Faculty of Technology Management and Business, University Tun Hussein Onn Malaysia, Batu Pahat, MALAYSIA

[2] Lecturer, Faculty of Technology Management and Business, University Tun Hussein Onn Malaysia, Batu Pahat, MALAYSIA

ABSTRACT

An effective risk management (ERM) is a demanding practice in the public sector organizations, however it requires large amount of resources from the government to provide quality services. The program in ERM should be a risk-focused management that enable to break down organizational silos and avoid selfish in decision-making processes. Therefore, the main challenges faced by UAE as regard to risk management and business continuity is the outdated method of risk management employed by many public sectors, this tremendously affects the business continuity of many public sector in UAE including Tawam Hospital. Therefore, the main objective of this paper is to explore the effect of risk management and business continuity in Tawam Hospital UAE. In this paper, quantitative methodology was employed to achieve the research objective, SPSS and AMOS software was used for the analysis. The findings of this research clearly show how risk management affects business continuity in UAE Tawam Hospital.

Keywords

Risk Management, Business continuity, Tawam hospitals, UAE.

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Introduction

The demand for relevant risk management capabilities continues to grow in the public sector [1]. In public entities, the directions of money related management and control systems were produced over the span of a numerous progression procedure. There are incalculable occasions and conditions that may block or undermine the accomplishment of any organization's objectives paying little heed to whether it works in the private or the public sector and additionally the ideal structure and execution of its exercises [2-3]. Most such levels can be anticipated, their conditions and effect can be assessed, and organizations can get ready for their event or moderation. Government executives recognize the need for proactive risk management of the best practices and supporting tools [1]. They further maintained that risk management contributes to improved decision-making and supports the achievement of an organization's mission, goals, and objectives.

Risk management is a natural piece of organizational management; as far as deciding its objectives, characterizing risk, and distinguishing risks, be that as it may, public sector establishments have one of the kind characteristics that vary from those of organizations in the corporate domain [4-5]. [1] see risk management as a discipline that addresses the full spectrum of an organization's risks, including challenges and opportunities, and integrates them into an enterprise-wide, strategically aligned portfolio view.

Risk can be in several forms which need continuously evaluation for effective risk management and also needs to integrate into the business processes. A survey was conducted on public sector organizations and found that only 26% of the respondents perceived in terms of accepting effective management of a risk as a value-add to their organization. Obviously, there is an opportunity to explore or investigate risk management in public sector. The risk management structure is important since it's one of the determinants of efficient implementation. The survey further revealed that the top five alleged future risks to their organizations are *strategic risk; operational risk; data security and privacy; reputational risk; financial / reporting risk.* Hence by establishing proper risk management structure, it will enhance the risk perception. Because it will become more aware about the benefits and able to incorporate the risk practices in enhancing the performance [1].

For organizations in the corporate domain, risk management is an advanced organizational administration apparatus that tries to upgrade the aftereffect of business choices [6]. In the public sector, be that as it may, organizations with a

hierarchical structure subject to bureaucratic control are not at times presented to self-evident "stuns", nor does the market flag their relative slacks. Execution estimation is, for the most part, benchmark based, and presently there are a couple of pointers to quantify operational proficiency. For public sector establishments, risk management, including a cognizant and the dynamic control of risks, is to the greatest advantage of organizations, as well as their statutory commitment [7-8]. It is most prominent esteem lies in its fuse into a procedure and its standard and rehashed execution, since it is difficult to gauge each risk even with the best level of readiness when different particular choices are made, however regardless of the possibility that this was conceivable, the likelihood and potential impact of risks change constantly.

The United Arab Emirates (UAE) public sector has been set up numerous decades prior as a built up and ensured sector by the nation. Nonetheless, UAE public sector should be all around prepared in term of most recent risk management abilities and operational systems to withstand the difficulties postures by the current financial system condition. Recognizing how these organizations deal with the characteristic risk of UAE government administrations could go far in guaranteeing a manageable development and survival of the whole sector. To have a better way of handling the situation, there is a need to have the academic research which is currently not much available.

For organizations in the public domain, risk management is a current organizational administration device that tries to upgrade the consequence of business choices. However, there is no scholarly and pragmatic research has been led in UAE, which is a genuine gap regarding public organizations in the United Arab Emirates (UAE). These elements may likewise assume a part in how the risk observation and risk management state of mind of a bureaucratic organization's pioneer creates. Reprehensibly, not a significant number of researches have been directed on this as far as United Arab Emirates (UAE) point of view.

In addition, the analysis and appraisal of risks at public sector organizations assume a key part basically in the determination of the fitting control exercises. Any control system can just react appropriately to the risks for which it was made. In this way, as risks change should control systems are custom-made to the conditions experiencing changes. The risk management handling is likewise portrayed by the benchmarks and rules of public organizations and government establishments [9-10]. Unfortunately, these issues are not being tended to appropriately in UAE public sector. In this way, the gap of learning identifying with risk management in the UAE is an extraordinary issue confronted by the business administrators to plan the work to win the difficulties ahead. Since the arrangement has not been made, along these lines this is another professionals' gap in UAE.

All things being considered, risk analysis is coordinated at mapping the ranges and procedures that bear the most serious risk, and at recognizing and evaluating risks show in organizations that can be inspected. Where analysis includes a populace with an incredible number of components, the key objective of risk analysis is to sort the components as per the predefined risk criteria, such as setting up a sort of risk "positioning" in light of a legitimate concern for choosing the riskiest components; [9-11]). Public sectors in UAE need to have that understanding, which will solve the existing problem. But the question arises on how they would solve the problem without realizing the heat of the problem. So, there is a need for an academic research that can help to determine the effect of risk management structure, process and governance on business continuity n in UAE public sector especially hospital.

Encapsulation, it is found out that risk management plays a very vital role on business continuity in not only public sector but private sector as well. Using obsolescence risk management methods in most cases would endangered the business continuity of public organization.

Methodology

This study adopted quantitative approach which falls in the positivism paradigm where the data was collected through questionnaire survey [12-13]. The respondents were employees from public sectors of UAE community. Structured questionnaire was designed to gauge the opinions of the factors affecting the relationship between risk management and business continuity in

United Arab Emirates using Likert scale. The sampling technique adopted in this study is a simple random non probability technique with sample size determined using Krejcie & Morgan (1970). After the questionnaire was validated through pilot study, it was used in the questionnaire survey for data collection. The collected data was analyzed descriptively such as missing data, reliability test, normality and others using SPSS software. Then the data was used to develop the structural model of the relationship between risk management and business continuity. The model was developed and assessed for its validation using AMOS software [14-15]

Measurement Model Assessment

After all individual models had achieved the validity criteria, then it is required to assess the validity and multicollinearity of the entire measurement model before evaluating the structural model. It is important to validate the entire measurement constructs together at once to ensure variants are well taken care. To assess the model validity, it requires to examine the model convergent and discriminant validity as follow;

3.1 Convergent Validity

Convergent validity is the measure of the extent to which the measurement items or indicators are correlated with other constructs. According to [16] statistically significant factor loadings is an indication for the achievement of convergent validity while indicator with factor loading of .50 and above is regarded as sufficient enough to establish convergent validity. In CFA SEM analysis, convergent validity of construct is assessed by Bentler-Bonett coefficient (NFI). Recommended threshold for convergent validity using the NFI index is .90 [16]; [17]; [18]. Using the factor loading and the NFI Index criteria, the convergent validity of the individual final measurement models indicated that they all satisfy the acceptable threshold. Table 1 presents the summary statistics extracted from the final measurement model

Table1 - Convergent validity measures of final measurement models

Construct	Name of Construct		Residual items number	Factor loading		NFI Index
				Lowest FL	Highest FL	
Independent construct	Risk Management Governance	**Risk management dimensions**	10	0.606	0.883	0.972
	Risk Management Process		7	0.714	0.806	0.977
	Risk Management Culture		7	0.584	0.828	0.972
Mediator construct	Management Commitment		7	0.591	0.818	0.962
Dependent construct	Business Continuity		10	0.560	0.920	0.969

3.2 Discriminant Validity

Discriminant validity measures the degree to which a construct is distinct from other constructs in the model0. [19] Suggested that discriminant validity measures the degree of uniqueness of a construct in relation to other constructs0. Discriminant validity is achieved when the squared inter-construct correlations associated with a particular construct is greater than the corresponding inter-construct correlation estimates with other constructs [16]0. The decision rule for establishing discriminant validity is to ensure that the sum of squared correlations of indicators of a particular construct known as Average Variance Extracted (AVE), is greater than the correlation of the construct with any other

construct in the model0. The recommended threshold for AVE is 0.50 and above [19]0. The result of the discriminant validity of the measurement constructs is as table 20.

Table 2 - constructs discriminant validity

	BC	MC	RMG	RMP	RMC
BC	**0.802**				
MC	0.047	**0.871**			
RMG	0.611	-0.022	**0.783**		
RMP	0.250	-0.034	0.176	**0.765**	
RMC	0.078	0.864	-0.008	-0.033	**0.873**

Table 2 indicate the diagonal AVE value of each construct and also the off-diagonal values between the constructs0. Based on the suggested criteria, all the diagonal AVEs are greater than 00.50 and higher than the off-diagonal AVE value of any correlation of other construct0. This indicates that discriminant validity of the measurement model is accepted0.

3.3 Multicollinearity Assessment

Multicollinearity assessment is essential process before evaluating the structural model0. Multicollinearity presence shows there is a strong correlation between predictor variables [20]0. With the presence, it indicates that there a warning on validity for multiple regression analysis which will cause error in hypothesis testing [16]0. It is suggested that the correlation value between any two constructs should not more than 00.90 [16]0. The result of multicollinearity assessment on the model which is the correlation matrix among the constructs is presented in Table 30.

Table 3 - constructs correlation matrix

	BC	MC	RMG	RMP	RMC
BC					
MC	0.047				
RMG	0.611	-0.022			
RMP	0.250	-0.034	0.176		
RMC	0.078	0.864	-0.008	-0.033	

Table 3 shows the Pearson's correlation coefficients between the constructs0. It indicates that all the correlated values are below 09 which is within acceptable limits0. The highest correlation is between MC and RMG constructs and the lowest correlation is between RMG and RMC constructs0. This implies that there is no multicollinearity presence between constructs which could affect the validity of the structural analysis results0. Hence, all the constructs are suitable to be included in the structural model assessment0.

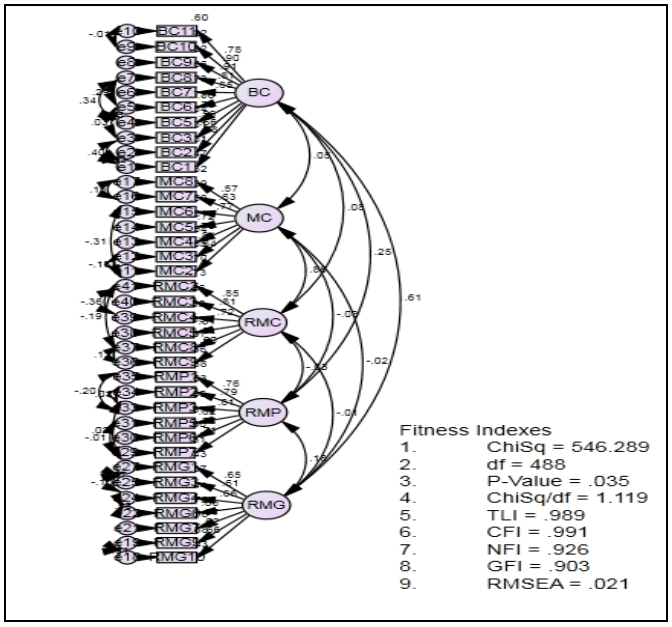

Fig0.I - Overall measurement model

Table 4 presents validity of the final measurement model is presented0. The table present information about the factor loading of the individual indicators on their respective constructs, deleted items, and the composite reliability of the construct as well as the respective AVE of each construct0.

Table 4 - model's constructs validity

Construct	Indicator/item	Estimate	AVE
Business Continuity	BC1	0.684	0.802
	BC2	0.557	
	BC3	0.557	
	BC4	Item deleted	
	BC5	0.734	
	BC6	0.879	
	BC7	0.853	
	BC8	0.809	
	BC9	0.906	
	BC10	0.904	
	BC11	0.775	
Management Commitment	MC1	Item deleted	0.871
	MC2	0.837	
	MC3	0.807	
	MC4	0.734	

	MC5 MC6 MC7 MC8 MC9 MC10	0.717 0.766 0.627 0.570 Item deleted Item deleted	
Risk Management Governance	RMG1 RMG2 RMG3 RMG4 RMG5 RMG6 RMG7 RMG8 RMG9 RMG10 RMG11 RMG12	0.655 Item deleted 0.611 0.662 Item deleted 0.849 0.867 Item deleted 0.619 0.657 Item deleted Item deleted	0.783
Risk Management Process	RMP1 RMP2 RMP3 RMP4 RMP5 RMP6 RMP7 RMP8 RMP9 RMP10	0.761 0.793 0.811 Item deleted 0.816 0.774 0.711 Item deleted Item deleted Item deleted	0.765
Risk Management Culture	RMC1 RMC2 RMC3 RMC4 RMC5 RMC6 RMC7 RMC8	Item deleted 0.855 0.813 0.723 0.807 Item deleted Item deleted 0.606	0.873
	RMC9 RMC10	0.602 Item deleted	

Structural model assessment

After the entire measurement model has achieved it fitness criteria for validation, the following process is to evaluate the structural component of the model0. This process is to conclude the underlying connection between the exogenous and the endogenous constructs as according to the conceptual model as figure 2. The graphical of the relationship of the structural model drawn in AMOS software is as Fig. 3.

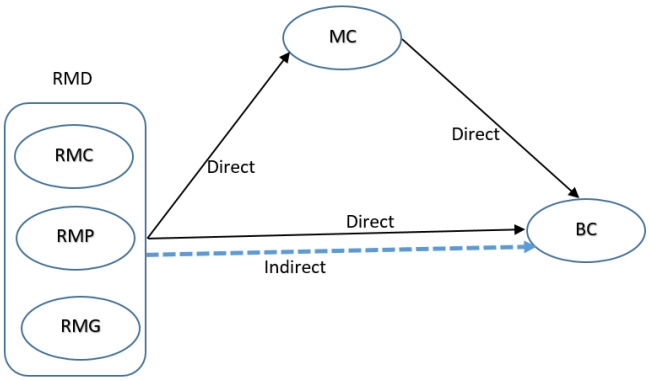

Fig 2 conceptual model

Fig 2 shows the conceptual model for the structural model. The independent variables is RMD which is the risk management dimension that comprises of three components which are risk management culture (RMC); risk management process (RMP) and risk management governance (RMG) while the mediator is Management Commitment (MC) and the dependent variable is Business Continuity (BC).

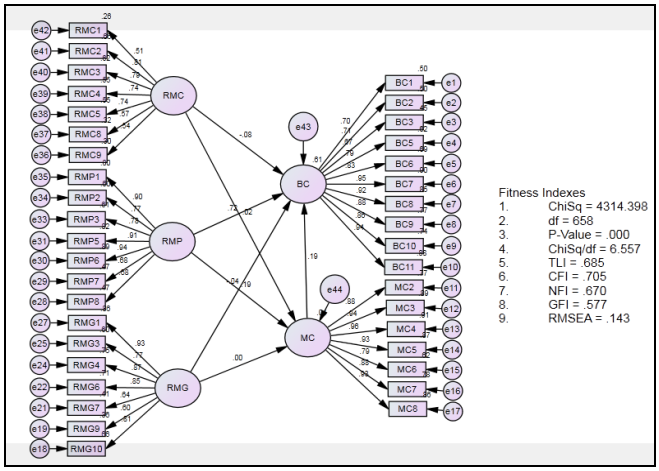

Fig 3 - Initial structural model

Fig 3 shows the graphical initial structural model with the generated fitness values0. From the figure it indicates the few of fitness indexes values had achieved while others are not yet achieved to the acceptable level0. In this case the fitness indexes of the RMSEA and p-value satisfied the criteria for acceptance but for the CFI, GFI and other measures reported values are below the acceptable thresholds0. Thus it requires the model to conduct re-specification procedure0.

After an iterative process of model re-specification, the final structural model was achieved as Fig 4.

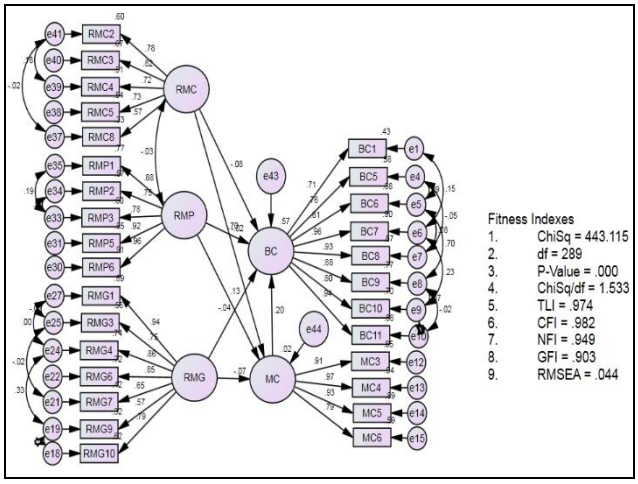

Fig 4 - Final structural model

Fig 4 depicts that the final structural model satisfied all the requirements for model acceptance0. It indicates that all the goodness-of-fit indexes meet the suggested thresholds0. It displays the causal effect of Risk Management Culture, Risk Management Governance as the exogenous constructs on the endogenous construct Business Continuity and the mediator construct Management Commitment. The summary of the goodness-of-fit indexes for both the initial and final structural models is as in Table 50. The table indicates that the parsimonious fit and one of the absolute fit indexes, RMSEA, the remaining fit statistics failed to meet the desired thresholds at the initial model0. Then the model undergone re-specification until all the fitness indexes achieved the acceptable limits0. The final structural model reported values indicate that all the fitness indexes sufficiently achieved the threshold values0.

Table 5: Goodness-of-fit Indexes

Category	**Parsimonious fit**	**Absolute fit**	**Incremental fit**	**Incremental fit**	**Absolute fit**	**Fitness level**
Fitness Indexes	Chisq/df	GFI	CFI	NFI	RMSEA	
Acceptance Threshold	Chisq/df ≤ 50.0	GFI ≥ 00.90	CFI ≥ 0.90	NFI ≥00.90	RMSEA ≤ 00.08	
Initial Structural Model	60.557	00.577	00.705	00.670	00.143	Not achieved
Final Structural Model	10.533	0.903	0.982	0.949	0.044	Achieved

4.1 Evaluation of direct relationships

Table 6 presented the extract from Fig0.3 showing the standardized regression coefficients of the direct relationships of RMC, RMP, and RMG with BC and MC0. From Table 6, it is shown that RMP, and MC had positive effect on BC while RMC and RMG show negative effect0. Collectively, the three exogenous constructs together with the mediating construct (RMC, RMO, RMG and MC) explained 57 percent variation of the endogenous construct, BC0. Similarly, the table also presents the path relationship between the mediator construct, MC and the three exogenous constructs (RMC, RMP and RMG)0. From the result, it is shown that collectively the three exogenous constructs explained less than 1 percent of Management Culture0.

Table 6 - path relationship result

Path relationship	Estimate	S0.E	C0.R0.	P-value	R^2
BC ←RMC	-0.079	0.066	-10.966	00.049	00.57
BC ← RMP	0.695	0.053	110.148	***	
BC ← RMG	-0.045	0.076	-10.143	00.253	
BC ←MC	0.200	0.047	40.346	***	
MC ←RMC	-0.016	0.087	-0.294	00.769	00.02
MC ←RMP	0.129	0.050	20.153	00.031	
MC ←RMG	-0.074	0.098	-10.412	00.158	

***indicates significance at p<00.05

4.2 Mediation Effect

Indirect path relationship is to check the mediation effect of the construct0. In this case the mediation construct is the management commitment (MC). It is to check whether the management commitment has an effect on the relationship between three Risk Management dimensions and business continuity (BC). To check the mediation effect, bootstrapping method was used as this method is considered the most effective method mediation test as compared to Sobel Test method [21]. The procedure involved re-sampling of the working data set between 500 and 1000 times which a sampling distribution from which the total effect, the direct, effect and indirect effect estimates, and their corresponding 95 percent confidence interval values are produced0. The algorithm also estimates the lower and upper limits as well as the two-tailed significant values for the effects0. Table 7 shows the bootstrapping result for testing the mediation effect of MC in the research model0. As shown in the table MC does not show any mediation effect on the relationship between RMD and BC.

Table 7 – results of the mediation effect of MC

Path relationship	Estimate	P-value	Significant relationship
BC ←MC←RMC	-0.003	0.545	Not significant
BC ← MC←RMP	0.026	0.024	Not significant
BC ← MC←RMG	-0.015	0.142	Not significant

***indicates significance at p<00.05

Conclusion

An effective risk management is a necessity and is widely recognized as a growing best practice in the public sector organizations0. Many organizations employed outdated risk management methods to solve their issues, this affects their business performance0. This paper investigates the effects of risk management on business continuity in UAE Tawam Hospital0. The paper presents the structural models that clearly shows how risk management affects the business continuity of UAE Tawam Hospital0. Continues investigation on risk management would undoubtedly affects the performance and business continuity of many organizations0.

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