STRUCTURAL FRAMEWORK OF EMERGENCY MANAGEMENT TOWARDS SUSTAINABILITY: UAE CASE STUDY

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ABSTRACT

Though the UAE has not been faced with major disasters in the past years, the process of disaster management became more complicated as the government agencies has had difficulties in ensuring the process for disaster management, preparation, and recovery. Moreover, a weakness of disaster management affects the quality of recovery, having a negative economic impact and increasing the number of fatalities in the occurrence of a disaster. The objective of this study intended to develop a new framework to integrate the resources management and disaster management approach for national emergency. This study's target population consisted of staffs that use their expertise and expertise in UAE crisis management organizations. Out of 152 respondents only 139 were useable/valid for analysis by Structural Equation Modelling (PLS-SEM). The results show that all the five hypotheses are significant. The contribution of this study increases investment and policy making. The results also show that rate of preparedness during a disaster has been low, affecting the economic growth of the UAE with the resources available not enough for disaster management. The importance of the structural framework is to provide immediate and accurate information on everything that falls and what is considered a resource that can be used during emergencies, crises, and disasters for the concerned authorities to support the taking of appropriate and immediate decisions that will reduce the damages resulting from these situations. Furthermore, the integration framework of resources management is to limit as well as lack of enough resources has made it even challenging for agencies to reduce the impact of a disaster. Also, quite challenging with limited resources and budget costs. It also affects the community growth with the process of returning way of life to normalcy, taking more time at a higher cost.

Keywords: Structural equation modelling; Emergency management; Sustainability; UAE.

INTRODUCTION

A considerable number of various catastrophes have resulted in environmental change, globalization, human-action, and quick urbanization (Kruk et al., 2015). Therefore, nations and universal organizations have been looking for methods and viable structures aimed at overseeing catastrophes and crises. Furthermore, it is imperative for nations and universal organizations to be better arranged for catastrophes or crises of any scale that have risen fundamentally over the most recent couple of decades (Muths & Fisher, 2017). This is because they have led to, for example, the Taiwan Earthquake in 2016, the Papua New Guinea Earthquake in 2018, the New

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England Bomb Cyclone in 2018, dust storms in India in 2018 and many others. Every one of these occasions has shown that catastrophes can happen with small cautioning and negligible time to get ready. Thus, nations and different organizations should be ready in advance to deal with any sort of danger, crisis or catastrophe which they are inclined to (Banach et al., 2017). Most recently it was COVID 19 outbreak that maps most of the world. Therefore, the process of preparedness in disaster management is one of the vital issues since history indicates a simple disaster when not prepared can cause immense damage to the society.

This article aim is to come up with a new framework of resource management for national emergency during natural disasters. The current approach used by the UAE makes the process of disaster management difficult, as well as quite challenging with limited resources and budget costs. Therefore, it is imperative to examine different techniques, historical examples, and past scholar models in order to create a new framework that would allow quality use of available resources. The efficient allocation of resources would allow disaster management to be quite effective, thus enhancing the process of disaster management and recovery. Proper resource allocation has proved to be an effective mechanism that allows establishing a framework that would enable the constructive use of the available resources. Each resource in an institution is equally crucial in promoting disaster management. The framework used in decision making and resource allocation in the strategic level depends on the quality of disaster management and the outcome. Furthermore, it is worth noting that an increase in the number of the population has strained disaster management agencies in the past years. Despite the above-mentioned increase, resources still become a limiting factor causing a significant decline in preparedness and recovery. The lack of enough resources has made it even challenging for agencies to reduce the impact of a disaster.

Therefore, the following study aims to build a research framework that would enhance the quality allocation of resources, thus avoiding wastage, as well as ensure efficiency in disaster management. The process of building a new framework would allow minimization of wastage through the optimization of the available resources, hence reducing the sustainability impacts such as social and economic of a crisis or a disaster. It would also allow the quality preparation of the NCEMA (UAE National Emergency Crisis & Disasters Management Authority) for different disasters, thus enhancing the agency to achieve its objectives in the future. The optimization of resource allocation allows minimizing risk, as well as mitigating cost. Thus, examining resource allocation optimization would allow the process of recovery duration and cost to be controlled, hence enhancing proper crisis management. The organisation of this paper is as follows. Section 2 reviews about the UAE emergency management, Section 3 explains the research methods, Section 4 discusses the results and finally a conclusion and suggestion for future research in Section 5.

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UAE EMERGENCY MANAGEMENT: A REVIEW

Like in the developed nations, the UAE faces similar crises, disasters, and emergencies, such as sandstorms, floods, earthquakes, airplane crashes, tsunamis, tropical storms, cyclones, traffic accidents, fires, and many more. These are inscribed by the property claims affected by these disasters. According to the available literature on the United Arab Emirates, it is evident that it is vulnerable to different disasters, and that there is little or no evidence of emergency management systems. Even though the NCEMA restricted the data and review documentation, the data was explored in combination with the United Kingdom, as the UAE create its own emergency management program. The lack of literature on the UAE emergency system is due to the reality that the nation is still in its early phase of creating emergency programs. It should be noted that by 2007, the Ministry of Interior had been tasked with dealing with all types of emergencies in the United Arab Emirates, since in the 1900s; it lacked any form of emergency plan or program. However, after the tropical storm Ganu in 2007, an institution was set up to deal with emergencies in the country. The UAE sent staff to the developed nations, including the United Kingdom and the United States, to be educated on emergency management systems that the UAE could implement in order to prevent and manage crises.

The evolving needs of the developing nations, such as the UAE, and the awareness of natural disasters have led to the creation of the NCEMA. The agency managed by the High National Security Council (HNSC) has several roles which include emergency management and control of crises: provision of rapid recovery response through proper coordination and communication at both national and regional levels of government, and establishment of business continuity requirements for sustainable growth. In addition to the NCEMA program, the National Response Framework (NRF) was created. It was aimed at working out and implementing training mechanisms and auditing the structures related to emergency management at the national, local and regional levels. The program increased the UAE preparedness for emergency eventualities through periodic training and drills to guarantee the reaction of UAE emergency response. The programs indicate the existence of mechanisms on emergency management standards and countermeasures, but there is no comparison on the preparation levels shown in the developed nations, like the US, UK, and Australia.

'Phase' is a common term in emergency management. It is used to explain and comprehend disasters and emergencies and organize management norms. For instance, in the US, the emergency management process is composed of four defined phases - mitigation, preparation, response, and recovery (Plotnick et al., 2015). Policymakers use such terms on several occasions to create emphasis, while researchers describe the terms as a continuous process or cycle of events. On the other hand, Australia has been using the US system, while the UK has been implementing a holistic approach by using the Integrated Emergency Management (IEM). According to the Cabinet Office (2015), the UK focuses on forecasting, assessment, prevention, preparation, response, and recovery. All the options address the medium and after scenarios of the disasters.

Similarly, the UAE has also adopted the EM phases used by other developed nations. These phases are understood in the NCEMA and the UAE that coordinates with the civil defence

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and police. However, the issue has never been the four phases of EM, but the enactment and application of each phase in leading to the next one. Thus, it is critical to reduce the impact of disasters and emergency links between preparation and response phases. According to the UK, the US, and Australia EM standard assessment, it is evident that the UAE has been failing to link the preparation and responses phase accordingly to strengthen their application.

The emergency management of all the four nations shows they follow the policy of the US government system and the UK at the national, state, and local levels, while Australia deviates from the system lightly. However, there are still three levels of the government system, but the difference is that the local bodies draw their authority from the state government (Berger et al., 2017). In Australia, the process of emergency management is controlled by both the state and municipality governments. The national government and the municipalities have different agreements that allow the coordination when dealing with available resources and thus combining resources. Australia's approach to the emergency is bottom-up, unlike in the United States, where a general approach is applied (Schoch-Spana et al., 2016). Australia's approach leaves the local levels with most of the decisions to deal with emergencies of which sounds suitable for the UAE. The UAE has tried to incorporate the standards while creating the NCEMA when it signed a memorandum of understanding (MOU) with Australia in June 2013. It is essential to mention that Australia is the only country the UAE has a MOU with; thus, UAE emergency management through the NCEMA learns from Australian EM standards. However, for the learning to be active, it is equally essential to acknowledge that there are certain areas that need improvement, thus making the research necessary.

The US, the UK, and Australia have been using a bottom-up form of the decentralized system, while UAE has been applying a top-down approach of the centralized system. However, the UAE local level has the autonomy to deal with emergencies, but the emergency response is instructed from above. These bottom-up and top-down approaches are only relevant to incident and phase response. As noted above in Australian, US, and UK frameworks and standards, the readiness to combat disasters is identified and evaluated at all levels with the risk factors considered. Since the US, the UK, and Australia have experienced disasters, hazards and emergencies of different scales, they have changed their EM standards and policy, as well as in the frameworks and standards in the preparation phase. On the other hand, the UAE is yet to encounter such threats and emergencies. It has faced disasters, like cyclones, terrorist activities, floods, motorway collisions, among many. Since the establishment of the NCEMA, the UAE has shown the norms and approaches have been produced to counter present dangers and threats within its territories.

The studies in the US, UK, and Australian emergency management established gaps, similarities, and differences. However, the different geographical, cultural, and political factors affected the emergency management of these nations, which also applied to the UAE systems. Emergency management policies have changed over the years due to evolving hazards that address future and current lessons and challenges learned through their success and failures. The next chapter will look into the preparation stage, which is the main subject of the study, all to note the UAE area of improvement on emergency management. The study will also consider the standards and especially the phases that determine emergency and disaster responses.

METHODOLOGY

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Figure 1 shows the conceptual framework. Primarily, the framework construct to examine the process of Resource Management or RM (that consist of finance resources; inventories; human resources; production resources; information & technology, and risk management) and thus determining whether the organization resource allocation technique is decentralized or centralized as independent variable. The framework is associated to establish the average impact of disasters the agency was able to manage in the past years: Economic: monetary losses; and Social: the number of fatalities. Both impacts are recognized as sustainability measure by many researchers. Besides, sustainability is recently gaining popular research motivation variables among researchers towards balancing global human needs and ecosystem. The second independent variable is added as suggested by expert panel in the framework development. UEA current disaster management approach or DMA were considered as additional variable that consist of four main elements which included Prevention, Preparedness, Response, and Recovery.

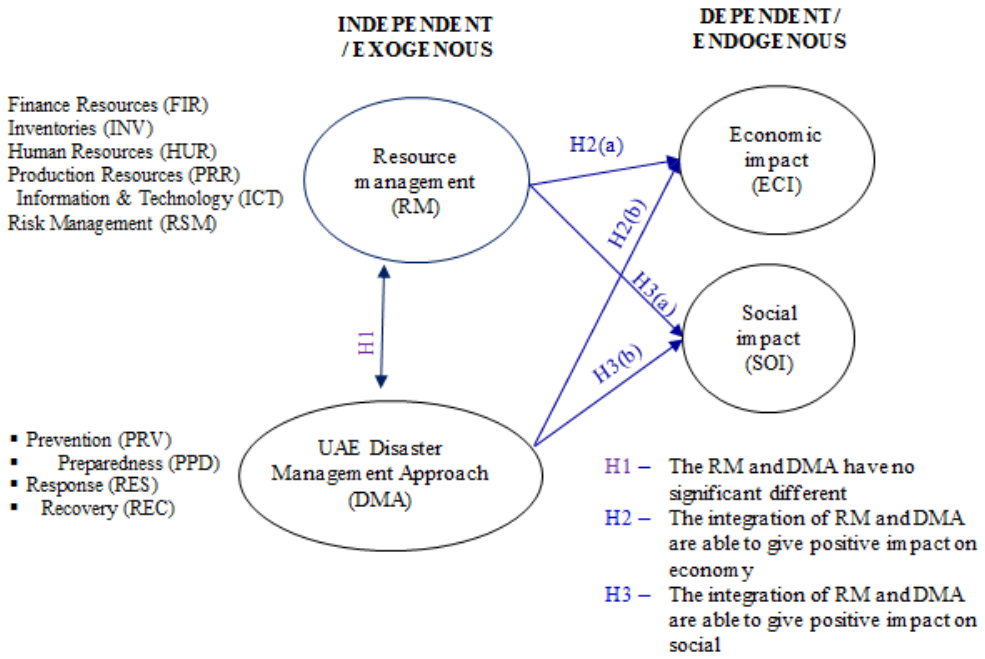

FIGURE 1
CONCEPTUAL FRAMEWORK

The fundamental objective of this research is to determine the integration framework of resource management for emergencies management. Equally, it is of great importance to establish the mediating effect of intensity between the variables of the study. Based on these grounds, the relationship between the variables of the research is predicted to be positive. This framework construct on independent/exogenous (resource management RM and UAE disaster management approach DMA) linkage to both RM & DMA elements as preventions–preparedness – response –recovery for DMA and finance resource -inventories -human resources –production resource–information & technology–risk management), the second part of

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framework dependent/Endogenous construct on hypothesis include two variables the economic impact and social impact with three hypothesis

H_1: *The RM and DMA have no significant different.*

H_2: *The integration of RM and DMA are able to give positive impact on economy.*

H_3: *The integration of RM and DMA are able to give positive impact on social.*

The conceptual framework developed for this study was generated through theories and literature review, introducing the variables and elements that have not been exploited in other studies conducted by other researchers. For verification purpose, the several of experts who have at least ten years of professional experiences in disaster management were selected. A piece of instrument that consists of a few questions used in the experts review verification. The instrument contains the rank of both independent variables (RM and DMA practices), and dependent variables (economic and social impact). The experts were advised to indicate the extent to which they agree with the proposed framework. Additionally, a blank space is provided in the questionnaire for the experts to annotate helpful comments that would improve the proposed framework.

All response collected have been analysed in two steps, descriptive and quantitative analysis. The descriptive statistics covers the bio-data, position, years of experience of the respondent and information on the sample companies and the mean (in %). The quantitative data on the other hand were analyzed after confirmatory factor analysis and sample accuracy test. The main statistical approach to this study stands to be structural equation modelling (SEM) with AMOS and factors loading with statistical package for the social sciences. The data collected were analyzed using the Statistical Package for the Social Sciences (SPSS) and SmartPLS versions. This study was implemented a series of confirmatory analysis to assess the reliability and validity of the measurement model before testing the structural model as Figure 1. The SEM with SmartPLS was applied to test the structural development of the construct, SEM with SmartPLS provide an assessment of a series of different regression equations concurrently (Kline, 2011).

One of the limitations of this study is that it focuses on the survey as the main technique of gathering the data from the field. The accuracy of the data in answering the research questions and meeting the research objectives heavily depends on the accuracy of the respondents. Thus, any inaccuracy of the data collected from the respondents would affect the reliability and accuracy of the research findings in answering the research questions and meeting research objectives. Though, the study depends on triangulation as inaccuracy of the data in answering the survey questions would lead to the lack of reliability. Moreover, the process of sampling shows that the survey represents a larger population. In some instances, the opinion of few individuals does not necessarily represent the opinion of the whole population limiting its accuracy in answering the research questions and meeting research objectives.

RESULTS & DISCUSSION

Accordingly, 152 stakeholders of the disaster management in UAE were randomly selected and administered the questionnaires to them. The returned questionnaires accounts for 94 percent of the total questionnaires distributed. Of the returned questionnaires, 3 were

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discarded in the process of data cleaning due to severe issues of outliers and missing data, leaving 139 questionnaires considered valid and usable for the research analysis. This makes the response rate for the study to be 86.7%.

Data Normality

The term normality is derived from the concept of normal distribution that describes the shape of population as being in that of a bell curve, a shape like symmetrical mountain. A data that does not comply with such a distribution makes statistical distribution analysis much more difficult (Hair et al., 2012). Data normality is checked using statistical or graphical techniques. These involve normality probability plots (Normal Q-Q plot), histogram and skewness and kurtosis. While skewness shows the symmetries of the data distribution, kurtosis revealed the peakedness of a variable's distribution as either too peaked (with short, thick tails) or too flat (with long, thin tails) (Tabachnick & Fidell, 2007).

This research checked the normality of the data distribution using skewness and kurtosis. George and Mallery (2010) recommended that skewness and kurtosis values of -2 to +2 are considered a symmetry distribution which are suitable for parametric tests and presume a normal distribution. In this regard, the values of skewness and kurtosis for the entire constructs in this research were presented in Table 1**.**

Table 1
NORMALITY TEST RESULT

Constructs		Skewness		Kurtosis	
		Statistic	**Std. Error**	**Statistic**	**Std. Error**
FIR	Financial Resources	-0.223	0.206	-0.658	0.408
INV	Inventory	-0.237	0.206	-0.049	0.408
HUR	Human Resources	-0.211	0.206	-0.526	0.408
PRR	Production Resources	-0.079	0.206	-0.394	0.408
ICT	Information Technology	-0.003	0.206	-1.077	0.408
RSM	Resource Management	-0.428	0.206	-0.821	0.408
PPD	Preparedness	-0.214	0.206	-0.685	0.408
PRV	Prevention	-0.388	0.206	-0.509	0.408
RES	Response	-0.200	0.206	-0.254	0.408
REC	Recovery	-0.460	0.206	-0.735	0.408
ECI	Economic Impact	-0.153	0.206	-0.709	0.408
SOI	Social Impact	-0.155	0.206	-0.579	0.408

Table 1 above shows the normality test conducted on the research variables using skewness and kurtosis criterion as recommended by Pallant (2020) and George and Mallery (2010). The result shows that all the variables are within the range of ± 1 below the recommended maximum range of -2 and +2 (George & Mallery, 2010).

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Collinearity Test

In multivariate analysis, independent variables are required to be distinct and measure different concept from what other variables are measuring in order to have accurate and robust result (Pallant, 2020; Hair et al., 2021). When this assumption is violated, multicollinearity problem distorts the result. Multicollinearity happens when independent variables are highly correlated such that one variable is predicting the same thing as the other. Correlation value is considered very high when the value is above 0.9 (Tabachnick & Fidell, 2007). Hair et al. (2021) suggests that when an exogenous variable can be explained by other exogenous variables in a regression model then multicollinearity problem is inherent among the variables.

Multicollinearity in independent variables is determined by assessing the tolerance level and Variance Inflation Factor (Pallant, 2020). Hair et al. (2012) recommended a rule of thumb for assessing collinearity issues. Multicollinearities exist when the tolerance level is less than 0.1 or when the VIF is greater than 10. Hence, a tolerance level above 0.1 and VIF of less than 10 signify absence of multicollinearity. This criterion is used to assess the collinearity of the research variables as presented in Table 2 below.

Table 2
COLLINEARITY DIAGNOSTICS

Constructs	Tolerance		VIF	
	ECI	SOI	ECI	SOI
FIR	0.401	0.401	2.494	2.494
INV	0.730	0.730	1.370	1.370
HUR	0.295	0.295	3.394	3.394
PRR	0.593	0.593	1.686	1.686
ICT	0.364	0.364	2.751	2.751
RSM	0.349	0.349	2.867	2.867
PPD	0.406	0.406	2.461	2.461
PRV	0.755	0.755	1.324	1.324
RES	0.510	0.510	1.962	1.962
REC	0.344	0.344	2.910	2.910

Table 2 above shows the tolerance level and VIF of the research variables for ECI and SOI as the dependent variables. The tolerance levels range from 0.295 to 0.730 all above the recommended 0.1 minimum. Similarly, the VIFs range from 1.37 to 3.394 all below the recommended minimum of 10. Therefore, the study variables pass the collinearity test and are suitable for multivariate analysis.

Reliability Assessment

Multiple items constructs are required to be internally consistent to have reliability. Reliability is the degree to which research measurement are free from random error and the extent to which a scale used produces consistent results if repeated measurements were made on

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the variable concern (Pallant, 2020). The most common measure of reliability is the Cronbach's alpha. Cronbach's alpha measures the reliability of the measurement scale. For internal consistency to be achieved, Cronbach's alpha is required to be above 0.7 (Sarstedt et al., 2011; Memon & Rahman, 2014; Pallant, 2020). Accordingly, the reliability of the research constructs was evaluated using Cronbach's alpha as presented in Table 3.

Table 3 shows the internal consistency of the research's constructs using Cronbach's alpha. The result shows that all the constructs have Cronbach's alpha value above the recommended 0.7 minimum. Hence all the research constructs are internally consistent and reliable. The framework of resources management and disaster during the national emergency occur refers to a changing process that begins long before the critical event happens and goes on beyond its end. The process entails reflective, proactive, and reactive components. Every stage in a crisis or an emergency has specific difficulties and thus needs a unique approach, depending on the stage in the phase being considered. Thus, the framework will integrate the majority of incident on national level with resources need it to mitigate the impact of crisis to apply swift recovery in UAE.

Table 3
RELIABILITY TEST

Constructs		Reliability	
		Scale	Items
FIR	Financial Resources	0.918	9
INV	Inventory	0.911	12
HUR	Human Resources	0.912	11
PRR	Production Resources	0.950	7
ICT	Information Technology	0.947	6
RSM	Resource Management	0.955	8
PPD	Preparedness	0.929	5
PRV	Prevention	0.821	5
RES	Response	0.707	4
REC	Recovery	0.890	4
ECI	Economic Impact	0.954	5
SOI	Social Impact	0.865	5

Structural Equation Modelling

Recent advances in multivariate statistical analysis techniques saw the increased utilization of Structural Equation Modelling (SEM), which has two variants – the covariance-based and the variance-based. The PLS-SEM falls within the variance-based SEM. PLS-SEM is a second-generation variance-based multivariate analysis technique used in exploring causal relationships between research's exogenous latent constructs and the endogenous latent constructs. In this research, the use of PLS-SEM is to develop a new framework to integrate the

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resources management and disaster management approach for national emergencies in UAE. PLS-SEM has two evaluation stages. The initial stage is evaluating the measurement (outer) model, while the second stage is the evaluation of the structural (inner) model. The measurement model is assessed by evaluating the measurement model reliability using composite reliability; the convergent validity of the measurement model assessed through items' factor loadings and Average Variance extracted (AVE); and the discriminant validity evaluated through Fornell & Larcker (1981) criterion, cross-loadings criterion, and Hetro-Trait-Mono-Trait (HTMT) criterion. This level evaluation ensures that the indicator variables measure what they are supposed to measure in the construct. The structural model evaluation involves assessing interrelationships and interdependence among the research constructs (Ramayah et al., 2011). The structural model evaluation involves assessing the path weights of the research constructs, the R^2 level, the predictive relevance of the model measured through cross-validated redundancy (Q^2), the effect size of each exogenous measurement model measured using Cohen F^2, and global Goodness-of-Fit (GoF) of the structural model (Hair, 2014; Lowry & Gaskin, 2014).

Evaluation of Measurement Models

PLS-SEM requires the measurement models to achieve specific quality criteria before assessing the structural model. These quality criteria involve the assessment of the reliability of the measurement models through composite reliability, convergent validity, and discriminant validity. The reliability assessment is carried out using composite reliability. The composite reliability measures the homogeneousness of a block using Dillon-Goldstein's (or Joreskog's) rho. The second step in the measurement model's evaluation is assessing the validity of the model. Two measures of validity are assessed - convergent validity and discriminant validity (Hair et al., 2014). Assessment of indicators' factor loadings and Average Variance Extracted (AVE) are used to establish convergent validity. The measures show the measurement models capability of indicators' variance. Heterotrait-Monotrait (HTMT) criterion, Fornell and Larcker criterion and the outer models' cross-loading are measures used in assessing the discriminant validity of the measurement models. The subsection discusses these evaluations.

Evaluation of Structural Model

The second stage in PLS-SEM evaluation criteria is the evaluation of the structural (inner) model (Hair et al., 2014). The structural model establishes the causal relationships between the measurement models in the model. The specified interrelationships are intended to answer the research questions and to test the research hypotheses. The major objective of structural model evaluation is to assess the model quality based on its ability to predict the endogenous constructs. The structural model is evaluated by assessing the path coefficients and their significance through bootstrapping procedure; the coefficients of determination (R^2) of the endogenous construct; the effect sizes of the exogenous measurement model through Cohen's f^2; the model's predictive relevant using cross-validated redundancy (Q^2); and the global goodness of fit of the model (*GoF*) (Hair et al., 2014). Figure 2 presents the structural model.

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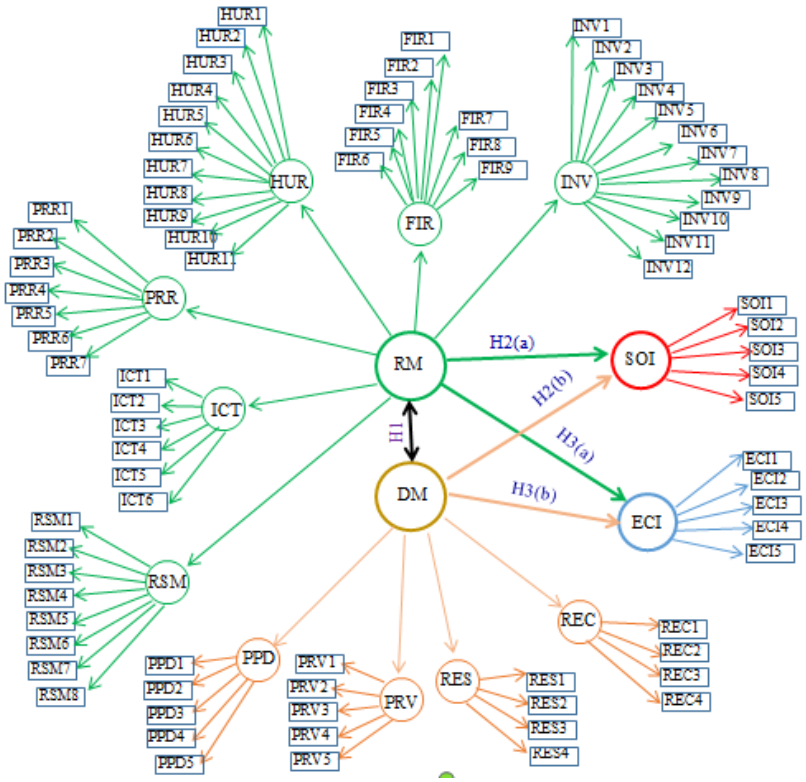

FIGURE 2
STRUCTURAL MODEL

Testing of Research Hypotheses

The overall, model indicated that all the paths leading to the lower order constructs from their respective higher order constructs are significant at 0.001 significance level. The model's path coefficients and their significance provide the required information for testing the stated research hypothesis. The hypotheses are tested as presented in Table 4.

Table 4
HYPOTHESIS TESTING

Paths	Hypothesis	Path Coefficient	T Statistics	P Values	Remark
RM↔DM	H_1	0.725		0.000	Significant
RM→ECI	$H_{2(a)}$	0.328	4.083	0.000	Significant
RM→ SOI	$H_{2(b)}$	0.471	6.304	0.000	Significant
DM→ ECI	$H_{3(a)}$	0.573	7.272	0.000	Significant
DM→SOI	$H_{3(b)}$	0.494	6.699	0.000	Significant
RM→FIR	**	0.802	22.409	0.000	Significant
RM→HUR	**	0.895	64.030	0.000	Significant
RM→ICT	**	0.852	37.804	0.000	Significant
RM→INV	**	0.628	10.119	0.000	Significant
RM→PRR	**	0.697	13.569	0.000	Significant

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RM→RSM	**	0.862	43.340	0.000	Significant
DM→PPD	**	0.911	63.005	0.000	Significant
DM→PRV	**	0.495	6.454	0.000	Significant
DM→REC	**	0.807	21.825	0.000	Significant
DM→RES	**	0.802	22.041	0.000	Significant

** Higher order constructs to their lower order constructs.

DISCUSSION

In the structural model, there are 4 paths leading to the endogenous constructs which were all significant. 10 other paths lead to the lower order constructs from their respective higher order constructs. From table 3, it shows that all the 5 hypotheses are significant. Cumulatively, the model shows that the Resource Management (RM) and Disaster Management (DM) explained about 70.8 % and 80.3% of the variance in positive Economic Impact (ECI) and Social Impact (SOC) in UAE respectively as indicated by coefficient of determination (R^2) value of 0.708 and 0.803 respectively. The quality of the structural model is further evaluation in the following subsections.

H_1: *The resource management (RM) and disaster management (DM) have significant relationship.*

The result indicted that there is significant relationship between resource management and disaster management as indicated by correlation coefficient of 0.725 with *p-value* of 0.000. Thus, supporting the hypothesis H_1.

$H_{2(a)}$: *Resource Management (RM) have significant positive influence on Economic Impact (ECI).*

Similarly, resource management (RM) has significant causal influence on economic impact (ECI) as indicated by path coefficient of 0.328 with t-statistics of 4.083 and *p-value* of 0.000 therefore supporting the hypothesis H2(a).

$H_{2(b)}$: *Resource Management (RM) have significant positive influence on Social Impact (SOI).*

The result also shows that Resource Management (RM) has significant causal influence on Social Impact (SOI) as indicated by path coefficient of 0.471 with t-statistics of 6.304 and *p-value* of 0.000 therefore supporting hypothesis $H_{2(b)}$.

$H_{3(a)}$: *Disaster Management (DM) have significant positive influence on Economic Impact (ECI).*

The hypothesized significant causal influence of disaster management on economic impact (ECI). The research found significant causal relationship between disaster management and Economic Impact (ECI) as indicated by path coefficient of 0.573 with t-statistics of 7.272 and *p-value* of 0.000. Accordingly, hypothesis '$H_{3(a)}$' is significant.

$H_{3(b)}$: *Disaster Management (DM) have significant positive influence on Social Impact (SOI).*

The analysis also supported hypothesis '$H_{3(b)}$'. It found that DM is significant positive effect of Social Impact (SOI) as shown by a path coefficient of 0.494 with 6.699 and 0.000 t-statistics and *p-value* respectively.

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CONCLUSION

This paper set out to develop with empirical test a model that leads to a better understanding to enhance the quality allocation of resources, thus avoiding wastage and ensuring efficiency in disaster management. The process of building a new framework would allow minimization of wastage through the optimization of the available resources, hence reducing the social and economic impacts of a crisis or a disaster. It would also allow the quality preparation of the NCEMA for different disasters, thus enhancing the agency to achieve its objectives in the future. The optimization of resource allocation allows minimizing risk, as well as mitigating cost. Thus, examining resource allocation optimization would allow the process of recovery duration and cost to be controlled, hence enhancing proper crisis management. Based on these grounds, the relationship between the variables of the research is predicted to be positive.

The model developed for this paper was generated through theories and literature review, introducing the variables and elements that have not been exploited in other studies conducted by other researchers. It is unfortunate that the study did not include specific disaster types such COVID 19 pandemic. This research has thrown up many questions in need of further investigation. A greater focus on new types of disaster could produce interesting findings that account more for well-organized disaster management system. Future research might explore the impact of disaster on technology development, and it influences on the current disaster management system. On the other hand, the quantitative research design and methodology, specifically the use of SPSS and PLS as the statistical tool for data analysis, might have limited the findings. A combination of other tools for analysis might have provided deeper insights into the relationships among the study variables.

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