

IMPACT OF AWARENESS, READINESS, CONTROL, RESPONSE, AND TECHNOLOGY USAGE ON CRISIS MANAGEMENT OF DRONES THREATS IN DUBAI INTERNATIONAL AIRPORT

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ABSTRACT

The aim of study is to examine the impact of the crisis readiness, crisis awareness, crisis control, crisis response on the effective crisis management. Besides to technology usage as a moderation relationships to effective crisis management in Dubai Airport. The study assumed that the crisis management, the practices, and technology use can be measured in numbers and prediction can be acquired from analysis. Therefore, the study is belongs to positivism philosophy, deduction approach, quantitative methodology, empirical survey passed study, used cross sectional data, and data is original. The target or study population chosen for this research is the totals number of employees both senior and junior staffs working at the Dubai international airport. The reason for this is that if crises stuck, all will be affected, and they have a big role to play in managing crisis. The actual sample size is 364 employees and the distributed survey is 440, which distributed by using face-to-face data collection methods in a convenience technique of samples selection. Overall, direct relationships for the four predictors of crisis management is significant; The precedence for the relations based on the path coefficient value is crisis awareness (0.319), crisis control (0.107), crisis readiness (0.368), and crisis response (0.283). For the moderating relationships of technology use, three interactions have a positive significant interaction; crisis control (0.048), crisis response (0.078), crisis readiness (146); but the Crisis Awareness (CA) has no significant change based on technology use.

Keywords: Crisis Awareness, Crisis Readiness, Crisis Control, Crisis Response, Technology Usage, Crisis Management, Drones Threats, Dubai International Airport

INTRODUCTION

Technology advancement has brought to mankind numerous benefits examples of which include the email system, cutting short the time needed to post letters to the person at the other end, especially, when sending it internationally (Davenport, 2018). In the health industry, the advancement in technology had enhanced precision and the discovery of undiscovered symptoms that have claimed several thousands of lives in the past (Mustafa & Azghadi, 2021). Furthermore, the advancement in the education industry has led to the development of virtual

reality computers that immerse the students into the subject being taught as if they were to practice it.

On the other hand, technology had been causing unspeakable early exist of life in multitudes. Examples of which is not limited to the weapons used by the military in wars, source of recent accidents to Boeing aircrafts among others (Kaplan, 2018). As such, organization embracing technological advancement should at least be prepared any of the four strategies listed above, that is, confrontation, escaping, confrontation, and in case crises arises from the use of these technologies (Ghazi, 2017).

Concerning the issues of drones in the airline industry particularly, at the airports, although drones have been manned with weapons during military operations, however, there have not been any incident where by commercial aircraft has been hit with drones by the bad guys living underground (Janssen & Voort, 2020), nor have the drones cause any serious fatalities to the airport facilities. However, there are clear evidences that the presences of drones have disrupt airport service as such many inbound flights were diverted to other airports, out bound flights were cancelled and thousands of passengers remain stranded at these airports in the UK and Dubai (Wendt, Voltes-Dorta & Suau-Sanchez, 2020). Therefore, there is high probability drone fatalities might happen in the future having knowledge of the recent Saudi oil rig strike with drone. Yet, since crises are unplanned events, how positively such issues are handled enhance the brand image of the firm and otherwise. With this, the strategies employed to minimize the effect of crises (pro activeness) is the area of concern in this research.

According to earlier studies crises management is not a blueprint which can be used in solving rising crises, however, presumption of having crises team which have pre-allocated tasks and assignment helps firms in reducing the time needed in managing their crises (Betta & Owczarzak-Skomra, 2019; Magnusson et al., 2019). Scholars argue that the best response to crises *via* internet by designing a website in the pre-crisis period, test run such website to have the idea on how it works. However, the question is how aware and prepared employees in case of crises are. Relating the scholars' findings to the incident of drone at the airport, this study finds it paramount to reexamine the awareness and the readiness to manage crises at the airport in the era of advance technology such as drone that has the capacity of disrupting the entire airport operations and perhaps may cripple the economy if not properly handled. In the airport, the security has been beefed up since the incident of airplane hijacking the in the year 2001 (Szyliowicz, 2018).

The aim of study is to examine the impact of the crisis readiness, crisis awareness, crisis control, crisis response on the effective crisis management. Besides to technology usage as a moderation relationship to effective crisis management in Dubai Airport.

LITERATURE REVIEW

Crisis Readiness and Crisis Management

A crisis is any kind of occasion that is going to cause a unpredictable and harmful scenario impacting an individual, team, neighborhood, or entire culture (Jordana & Salazar, 2020; Kim & Park, 2017; Malyshev et al., 2018). While the crisis readiness is the treatments, plans and operations that is made to be constantly prepared to deal with any situations in the company or company (Bowen et al., 2018; Thapa et al., 2017). While Crisis management is the process through which a company takes care of an unanticipated and turbulent occasion that threatens to hurt the company or its stakeholders (Bryan et al., 2018; Walle, Brughemans & Comes, 2016).

So that, and according to many researchers such as (Jahng & Hong, 2017; Kriyantono & McKenna, 2019) they found out that crisis readiness will help to face the problems that comes from any crises and it will also help to be ready for any scenario that might occur, and this will lead to a better crisis management of drones threats in Dubai international airport (Claeys & Coombs, 2020; Jahng & Hong, 2017; Kriyantono & McKenna, 2019; Qadir et al., 2016). Therefore, the researcher is expecting significant positive direct effect of crisis readiness on the crisis management of drones' threats in Dubai international airport. And this hypothesis is consistent and compatible with other hypothesis in others studies such as (Bryan et al., 2017; Desai et al., 2020; Janssen & Voort, 2020).

Hypothesis 1 There is a positive significant influence from crisis readiness on crisis management of Drones threats in Dubai international airport.

Crisis Awareness and Crisis Management

Crisis Awareness provides the most up to date understandings right into what drives dilemma communications preparedness, and exactly how firms can manage an effective action (Hymeniuk & Melnychuk, 2017; Janssen & Voort, 2020). The training is crucial for employees that sustain the company's efforts throughout an organization dilemma or interruption (Basiry & Ghasem-Aghae, 2016; Hymeniuk & Melnychuk, 2017). On the other hand, Crisis management is the recognition of threats to a company and its stakeholders, and the techniques made use of by the organization to manage these risks (Czerniak et al., 2016; Kostyuchenko et al., 2018). In order to decrease unpredictability in the event of a situation, organizations frequently produce a crisis management strategy (Mason et al., 2018; Rothkrantz & Fitrianie, 2018).

So that, and according to many researchers such as (Rothkrantz & Fitrianie, 2018; Ruquan, 2017 & Xinquan, 2016) they found out that crisis awareness will help to make a better understanding of any problem or crises might the company face, as well as crisis awareness will help to deal with it, and this will lead to a better crisis management of drones threats in Dubai international airport (Humanson & Nordeman, 2017; Mason et al., 2018; Ruquan, 2017). Hence, the researcher is expecting significant positive direct effect of crisis awareness on the crisis management of drone's threats in Dubai international airport. And this hypothesis is consistent and compatible with other hypothesis in others studies such as (Bacon et al., 2017; Heide & Simonsson, 2019; Hengartner, 2018).

Hypothesis 2 There is a positive significant influence from crisis awareness on crisis management of Drones threats in Dubai international airport.

Crisis Control and Crisis Management

As has actually been defined dilemma is any event that is going to result in a unsteady and hazardous circumstance impacting an individual, team, community, or entire society (Nizamidou & Vouzas, 2020; Zade et al., 2018). As crisis control is the techniques that will certainly be utilized in the time of any kind of crisis on under to maintain it under the evaluations and well held which will not enable it to grow bigger and bigger (Cutri et al., 2020; Schrader & Laaser, 2019). While crisis management is the procedure of creating and applying methods to help an organization minimize the damage of an unanticipated emergency on service (Schrader & Laaser, 2019; Stevens, 2017). So that, and according to many researchers such as (Ang et al., 2020; Sezgin et al., 2020; Stevens, 2017) they found out that crisis control will help to determine

all dimensions of the crisis and from where to start fixing the problems that the firms face, as crises control will keep a the firm driving the crises to solution and overcoming it, and this will lead to a better crisis management of drones threats in Dubai international airport (Al-Zaqeba, 2019; Schrader & Laaser, 2019; Sezgin et al., 2020). Hence, the researcher is expecting significant positive direct effect of crisis control on the crisis management of drone's threats in Dubai international airport. And this hypothesis is consistent and compatible with other hypothesis in others studies such as; (Ang et al., 2020; Cutri et al., 2020; Sezgin et al., 2020; Stevens, 2017).

Hypothesis 3 There is a positive significant influence from crisis control on crisis management of Drones threats in Dubai international airport.

Crisis Response and Crisis Management

Crisis Response describes all the breakthrough planning and activities required to deal with all-natural and manufactured calamities, situations, essential occurrences, and unfortunate events (Amade et al., 2018; Chiauzzi & Newell, 2019). The faster the reaction is the much less the damage will certainly be (Jordana & Triviño-Salazar, 2020). Or as defined by (Bowen et al., 2018; Thapa et al., 2017) crisis response is what monitoring says and does after the crisis hits. And crisis management is the process of preparing for and managing any type of unforeseen or turbulent emergency circumstances that affect the business or firm (Bowen et al., 2018; Bryan et al., 2018; Jahng & Hong, 2017; Kim & Park, 2017; Walle et al., 2016). So that, and according to many researchers such as (Bryan et al., 2018; Jordana & Triviño-Salazar; 2020, Kriyantono & McKenna, 2019; Savonen et al., 2018; Wang & Kuo, 2017) they found out that crisis response will help to solve the problems that occur because of the crises and will not allow the crises to grow bigger and bigger, and this will lead to a better crisis management of drones threats in Dubai international airport (Brancaccio et al., 2019; Desai et al., 2020; Hymeniuk & Melnychuk, 2017). Therefore, the researcher is expecting significant positive direct effect of crisis response on the crisis management of drones' threats in Dubai international airport. And this hypothesis is consistent and compatible with other hypothesis in others studies such as; (Basiry & Ghasem-Aghaee, 2016; Hymeniuk & Melnychuk, 2017; Janssen & Voort, 2020; Kostyuchenko et al., 2018; Mason et al., 2018).

Hypothesis 4 There is a positive significant influence from crisis response on crisis management of Drones threats in Dubai international airport.

Technology Use as a Moderator in the Relations from Crisis Management Factors

Technology can be most extensively defined as the entities, both material and immaterial, produced by the application of physical and psychological initiative in order to accomplish some value (Chiauzzi & Newell, 2019; Heek & Ziefle, 2019). In this use, technology refers to devices and machines that might be used to address real-world problems (Khairuddin et al., 2016; Mustafaoğlu et al., 2018). On the other hand, Crisis management is the recognition of dangers to an organization and its stakeholders, and the methods utilized by the company to take care of these hazards (Amade et al., 2018; Upadhyay et al., 2018). In order to lower unpredictability in the event of a crisis, organizations usually develop a crisis management strategy (Kim & Park, 2017; Malyshev et al., 2018). On the other hand, and as has been describes in the previous hypotheses, all independent variables expected to have a direct positive impact on crisis

management, furthermore, many researchers such as (Bowen et al., 2018; Khairuddin et al., 2016; Savonen et al., 2018; Upadhyay et al., 2018) have studied the moderating role of technology usage between some of this study variables and crisis management and the studies found out that technology usage has a positive moderating impact in such relationships (Bruwer, 2016; Bruwer et al., 2018; Hashemy et al., 2016; Mwakaje, 2018; Seko et al., 2017). And based on that the researcher is expecting significant positive direct moderating effect of technology usage on the relationship between this study independent variables and crisis management. And this hypothesis is consistent with other hypothesis in others studies such as; (Allen et al., 2016; Fariz et al., 2016; Hersona & Sidharta, 2017; Hitt & Tambe, 2016; Kheng & Muthuveloo, 2019; Wijermans et al., 2016; Yun & Yoo, 2017).

Hypothesis 5 Technology usage has a moderating impact in the relationship between crisis readiness and crisis management of Drones threats in Dubai international airport.

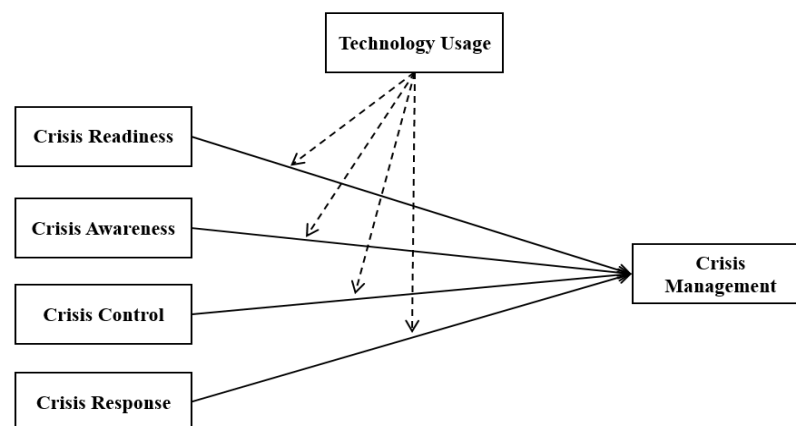
Hypothesis 6 Technology usage has a moderating impact in the relationship between crisis awareness and crisis management of Drones threats in Dubai international airport.

Hypothesis 7 Technology usage has a moderating impact in the relationship between crisis control and crisis management of Drones threats in Dubai international airport.

Hypothesis 8 Technology usage has a moderating impact in the relationship between crisis response and crisis management of Drones threats in Dubai international airport.

Conceptual Framework

This particular study proposed a model of managing drone crises in the UAE Airport based on the crisis readiness, crisis awareness, crisis control, crisis response. Besides to technology usage as a moderation relationship to effective crisis management in the UAE Airport. See Figure 1 for infographic of the proposed concepts and relationships. Research Framework



**FIGURE 1
RESEARCH FRAMEWORK**

METHODOLOGY

The study assumed that the crisis management, the practices, and technology use can be measured in numbers and prediction can be acquired from analysis. Therefore, the study is

belonging to positivism philosophy, deduction approach, quantitative methodology, empirical survey passed study, used cross sectional data, and data is original.

The target or study population chosen for this research is the total numbers of employees both senior and junior staffs working at the Dubai international airport. The reason for this is that if crises stuck, all will be affected, and they have a big role to play in managing crisis. The actual sample size is 364 employees and the distributed survey is 440, which distributed by using face-to-face data collection methods in a convenience technique of samples selection.

The tools used for data collection is a well-structured survey that adapted from previous studies such as (Appelbaum et al., 2012; Backman & Rhinard, 2018; Festag, 2017; Freitas, 2016; Rogova, 2009; Rousaki & Alcott, 2006; Wang & Pitsis, 2019; Watkins & Bazerman, 2003). The survey were organized to ask question in likert-5 format. Likert 5 questionnaire style has been used in social science studies for long time and proved to be a suitable style for measuring human perceptions. Structural Equation Modelling (SEM) techniques are used for statistical data analysis *via* the SmartPLS software package, which is used in management and social science studies such as (Salem & Alanadoly, 2020; Salem & Salem, 2018).

FINDINGS

In PLS-SEM, two part of data analysis is essential in regression based models, the reliability and validity tests (measurement model) and the relationships tests (structural Model)

Validity and Reliability of Constructs

Several measures have been conducted such as composite reliability, outer loading, convergent validity, and discriminant validity to ensure reliability and validity of the measurement model (Hair, Hult, Ringle & Sarstedt, 2016; Sekaran & Bougie, 2016). As shown in Table 1, composite reliability is measured by Cronbach's Alpha and all values are above the cut-off value of 0.70. Therefore, the reliability of measurement model is achieved. In addition, outer loading for all the items are above 0.708 with no cross loading from foreign item, therefore indicator reliability is achieved. The Average Variance Extracted (AVE) values are above 0.5, therefore convergent validity is achieved. Finally, Table 2 shows the matrix of Fornell-Larcker criterion, which indicates that no discriminate validity issues are. Some items were eliminated based on the rule of thumb for outer loading and cross loading; therefore 3 items were deleted.

Construct	Item	Loading	AVE	Cronbach's alpha
Crisis Awareness (CA)	CA1	0.739	0.581	0.896
	CA2	0.794		
	CA3	0.87		
	CA4	0.842		
	CA5	0.701		
	CA6	0.706		
	CA7	0.709		
	CA8	0.715		
Crisis Control (CC)	CC1	0.826	0.622	0.88

	CC2	0.73		
	CC3	0.775		
	CC4	0.778		
	CC5	0.846		
	CC6	0.772		
Crisis Management (CM)	CM1	0.783	0.665	0.899
	CM2	0.779		
	CM3	0.76		
	CM4	0.787		
	CM6	0.876		
	CM7	0.879		
Crisis Readiness (CRE)	CRE1	0.792	0.596	0.864
	CRE2	0.712		
	CRE3	0.787		
	CRE4	0.857		
	CRE5	0.729		
	CRE6	0.746		
Crisis Response (CRS)	CRS1	0.762	0.637	0.905
	CRS2	0.73		
	CRS3	0.824		
	CRS4	0.769		
	CRS5	0.779		
	CRS7	0.832		
	CRS8	0.856		
Technology Use (TU)	TU1	0.876	0.69	0.886
	TU2	0.934		
	TU3	0.858		
	TU4	0.726		
	TU5	0.741		

Table 2
DISCRIMINANT VALIDITY – FORNELL-LARCKER CRITERION

	CA	CC	CM	CRE	CRS	TU
CA	0.762					
CC	0.08	0.789				
CM	0.543	0.222	0.816			
CRE	0.436	0.131	0.588	0.772		
CRS	0.197	0.145	0.449	0.237	0.798	
TU	0.257	0.068	0.567	0.407	0.197	0.831

Relationships Examinations and Discussions

For the purpose of assessing the power of the model construct in predicting the outcome variables, predictive power R² and predictive relevance were used (Hair et al., 2016). Results of the main dependent variable, Crisis Management (CM), illustrate a satisfactory predictive power and a large predictive relevance. As seen in the table the related R square value is 0.631 (a power of 63.1%) and the related Q square is 0.354 (a relevance of 35.4%).

	Predictive Power		Predictive Relevance	
	R Square	Status	Q Square	Status
(CM)	0.631	satisfactory	0.354	Large

The research study relationships are in one instruction along with the ideal degree of evaluation is one-tailed. Figure 2 shows the T statistics estimates of the study made design as well as Table 4 shows the path coefficient assessment with the values of T Statistics and also Beta values for the end result variable Crisis Management (CM). The all variables antecedents has significant relation, in which the p value scores are above 0.05 and the t statistics scores are above 1.65. The precedence for the relations based on the path coefficient value is CA (0.319), CC (0.107), CRE (0.368), and CRS (0.283).

	Path Coefficient	Standard Deviation	T Statistics	P Value (one tailed)	Status
CA -> CM	0.319	0.05	6.432	0	Significant
CC -> CM	0.107	0.033	3.197	0.001	Significant
CRE -> CM	0.368	0.049	7.57	0	Significant
CRS -> CM	0.283	0.041	6.902	0	Significant

Table 5 shows the path coefficient assessment with the values of T Statistics values for the outcome variable Technology Usage (TU) as a moderator. Respectively, the Path Coefficient for this Crisis Awareness (CA) variable is 0.017, the T statistics is 0.358, and also the P-value is 0.360 as non-significant, the Path Coefficient for this Crisis Control (CC) variable is 0.048, T-statistics is 1.674, and the P-value is 0.047 is significant, the path coefficient for this interaction Crisis Response (CRE) variable is 0.078, T statistics is 1.717, and also the P-value is 0.043 as significant, the Path Coefficient for this Crisis Readiness (CRS) variable is 0.146, T- statistics score is 4.288, and also the P-value is 0.000 is significant.

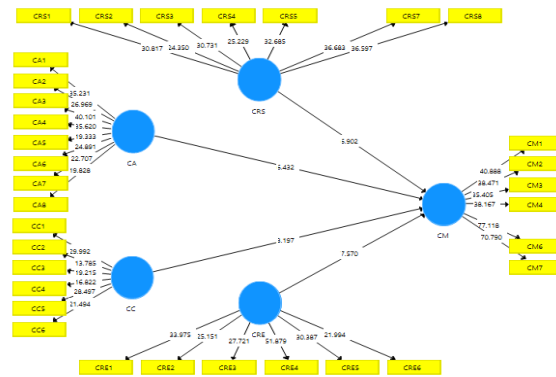


FIGURE 2
T STATISTICS ESTIMATES OF THE PROPOSED MODEL

	Path Coefficient	Standard Deviation	T Statistics	P Value (one tailed)	Status
CA * TU -> CM	0.017	0.047	0.358	0.36	Non-Significant
CC * TU -> CM	0.048	0.029	1.674	0.047	Significant
CRE * TU -> CM	0.078	0.046	1.717	0.043	Significant
CRS * TU -> CM	0.146	0.034	4.288	0	Significant

Overall, direct relationships for the four predictors of crisis management is significant; The precedence for the relations based on the path coefficient value is crisis awareness (0.319), crisis control (0.107), crisis readiness (0.368), and crisis response (0.283). For the moderating relationships of technology use, three interactions have a positive significant interaction; crisis control (0.048), crisis response (0.078), crisis readiness (146); but the Crisis Awareness (CA) has no significant change based on technology use.

CONTRIBUTIONS AND RECOMMENDATIONS

The study contributes to the knowledge of crisis management, technology use, and crisis management practices in the airports. The proposed combination of variables and inclusion of technology use as a moderator is another theoretical contribution especially when it is applied in the threats of drones in the airports. The study also add knowledge about the effective practices that applied in Dubai international airports, which assure the fact that this airport is one of the most secured airports in the world.

Managers and decision makers in securing airports in the UAE and airports should emphasize on the crisis readiness and crisis awareness as both are the most contributors to the effective crisis management. In addition, the use of modern technology, will for sure contribute to the effectiveness of crisis management. Policy makers should create new policies to assure the effective readiness and awareness among the employees in charge all the time.

This study is limited to the empirical examination of UAE airports; however, replicating the same design with same research design, but in different countries, will provide extra knowledge to generalize the proposed relations. The interception of technology use in the relationship from crisis awareness are found to be no significant, additional work is needed to reveal the reason and explain this non logical relation. In addition, the model can explain up to 63% of the crisis management variance, scholars are welcome to investigate more crisis management practices increasing the model power.

REFERENCES

- Al-Zaqeba, M.A.A. (2019). *Tax compliance behavior among high income individual taxpayers in Jordan: The moderating effect of trust and religiosity*. Universiti Sains Islam Malaysia.
- Allen, C., Vassilev, I., Kennedy, A., & Rogers, A. (2016). Long-term condition self-management support in online communities: A meta-synthesis of qualitative papers. *Journal of Medical Internet Research*, 18(3), e61.
- Amade, N., Painho, M., & Oliveira, T. (2018). Geographic information technology usage in developing countries—A case study in Mozambique. *Geo-Spatial Information Science*, 21(4), 331–345.
- Ang, D., Chua, S., & Khader, M. (2020). Gearing up for crises: Developing a crisis readiness questionnaire. In prepared for evolving threats: The role of behavioural sciences in law enforcement and public safety-selected essays from the Asian conference of criminal and operations psychology 2019 (p. 171). World Scientific.
- Bacon, L., MacKinnon, L.M., Flippoupolitis, A., & Kananda, D. (2017). Developing a public online learning environment for crisis awareness, preparation, and response. *International Journal of Information Systems for Crisis Response and Management*, 9(2), 18–36.
- Basiry, I., & Ghasem-Aghaee, N. (2016). Crisis control mechanism in holarchy architecture. *Journal of Knowledge-Based Engineering and Innovation*, 2(4), 239–249.
- Betta, J., & Owczarzak-Skomra, A. (2019). Agile crisis management. *Scientific Journal of the Military University of Land Forces*, 51.
- Bodó, B., Helberger, N., Irion, K., Zuiderveen Borgesius, F., Moller, J., Van-de-Velde, B., ... & De-Vreese, C. (2017). Tackling the algorithmic control crisis—the technical, legal, and ethical challenges of research into algorithmic agents. *Yale JL & Tech*, 19, 133.
- Bowen, M., Freidank, J., Wannow, S., & Cavallone, M. (2018). Effect of perceived crisis response on consumers' behavioral intentions during a company scandal—An intercultural perspective. *Journal of International Management*, 24(3), 222–237.
- Brancaccio, E., Giammetti, R., Lopreite, M., & Puliga, M. (2019). Monetary policy, crisis and capital centralization in corporate ownership and control networks: A-B Var analysis. *Structural Change and Economic Dynamics*, 51, 55–66.
- Bruwer, J.P. (2016). *The relationship (s) between the managerial conduct and the internal control activities of South African fast moving consumer goods SMMEs*. Cape Peninsula University of Technology.
- Bruwer, J.P., Coetzee, P., & Meiring, J. (2018). Can internal control activities and managerial conduct influence business sustainability? A South African SMME perspective. *Journal of Small Business and Enterprise Development*.
- Bryan, C.J., Mintz, J., Clemans, T.A., Burch, T.S., Leeson, B., Williams, S., & Rudd, M.D. (2018). Effect of crisis response planning on patient mood and clinician decision making: A clinical trial with suicidal US soldiers. *Psychiatric Services*, 69(1), 108–111.
- Bryan, C.J., Mintz, J., Clemans, T.A., Leeson, B., Burch, T.S., Williams, S. R., ... & Rudd, M.D. (2017). Effect of crisis response planning vs. contracts for safety on suicide risk in US Army soldiers: A randomized clinical trial. *Journal of Affective Disorders*, 212, 64–72.
- Chiauszi, E., & Newell, A. (2019). Mental health apps in psychiatric treatment: A patient perspective on real world technology usage. *JMIR Mental Health*, 6(4), e12292.
- Claeys, A.S., & Coombs, W.T. (2020). Organizational crisis communication: Suboptimal crisis response selection decisions and behavioral economics. *Communication Theory*, 30(3), 290–309.
- Cutri, R.M., Mena, J., & Whiting, E.F. (2020). Faculty readiness for online crisis teaching: Transitioning to online teaching during the COVID-19 pandemic. *European Journal of Teacher Education*, 1–19.
- Czerniak, J.M., Dobrosielski, W.T., Apiecionek, Ł., Ewald, D., & Paprzycki, M. (2016). Practical application of OFN arithmetics in a crisis control center monitoring. In *Recent Advances in Computational Optimization* (pp. 51–64). Springer.

- Davenport, T.H. (2018). *The AI advantage: How to put the artificial intelligence revolution to work*. MIT Press.
- Desai, A., Warner, J., Kuderer, N., Thompson, M., Painter, C., Lyman, G., & Lopes, G. (2020). Crowdsourcing a crisis response for COVID-19 in oncology. *Nature Cancer*, 1(5), 473–476.
- Fariz, F., Margono, S., Wirawan, I.D., & Sumiati, S. (2016). Analysis the effect of human resources competence and organization of learning toward performance: Studies in Economics-based college in Indonesia. *Russian Journal of Agricultural and Socio-Economic Sciences*, 60(12).
- Ghazi, K.M. (2017). The impact of strategic planning on crisis management styles in the 5-star hotels. *Journal of the Faculty of Tourism and Hotels; Alexandria University*, 14(1), 19.
- Hair, J.F., Hult, G.T.M., Ringle, C., & Sarstedt, M. (2016). *A primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Sage Publications.
- Hashemy, S.H., Yousefi, M., Soodi, S., & Omid, B. (2016). Explaining human resource empowerment pattern and organizational excellence among employees of emergency of Guilan's University hospitals. *Procedia-Social and Behavioral Sciences*, 230, 6–13.
- Heide, M., & Simonsson, C. (2019). *Internal crisis communication: Crisis awareness, leadership and coworkership*. Routledge.
- Hengartner, M.P. (2018). Raising awareness for the replication crisis in clinical psychology by focusing on inconsistencies in psychotherapy research: How much can we rely on published findings from efficacy trials? *Frontiers in Psychology*, 9, 256.
- Hersona, S., & Sidharta, I. (2017). Influence of leadership function, motivation and work discipline on employees' performance. *Jurnal Aplikasi Manajemen*, 15(3), 528–537.
- Hitt, L.M., & Tambe, P. (2016). Health care information technology, work organization, and nursing home performance. *Ilr Review*, 69(4), 834–859.
- Humanson, R., & Nordeman, P. (2017). Proactive Crisis Management (PCM): Perceptions of crisis-awareness and crisis-readiness in organizations in relation with their actual strategic initiatives against industrial crises caused by human errors.
- Hymeniuk, M.M., & Melnychuk, O.V. (2017). Features of implementation of anti-crisis control as an instrument for prevention of the bankruptcy of the enterprise. *Sustainable Development of Economy*, 40.
- Jahng, M.R., & Hong, S. (2017). How should you tweet? The effect of crisis response voices, strategy, and prior brand attitude in social media crisis communication. *Corporate Reputation Review*, 20(2), 147–157.
- Janssen, M., & Van-Der-Voort, H. (2020). Agile and adaptive governance in crisis response: Lessons from the COVID-19 pandemic. *International Journal of Information Management*, 102180.
- Jordana, J., & Triviño-Salazar, J.C. (2020). EU agencies' involvement in trans boundary crisis response: Supporting efforts or leading coordination? *Public Administration*.
- Kaplan, P. (2018). *Skytrain: A transport revolution*. Simon and Schuster.
- Kayaoglu, A., & Williams, C.C. (2020). Explaining tax non-compliance from a neo-institutionalist perspective: some lessons from a public opinion survey in Turkey. *Sosyoekonomi*, 28(43), 89–105.
- Khairuddin, I.E., Sas, C., Clinch, S., & Davies, N. (2016). Exploring motivations for bitcoin technology usage. In *Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems* (pp. 2872–2878).
- Kheng, L.L., & Muthuveloo, R. (2019). The influence of Information Technology (IT) knowledge on organization performance with adaptability to change as a moderator among Small Medium Enterprises (SMEs) in Malaysia: A Conceptual Paper.
- Kiatsuranon, K., & Suwunnamek, O. (2017). Determinants of Thai information and communication technology organization performance: A structural equation model analysis. *Kasetsart Journal of Social Sciences*.
- Kim, Y., & Park, H. (2017). Is there still a PR problem online? Exploring the effects of different sources and crisis response strategies in online crisis communication via social media. *Corporate Reputation Review*, 20(1), 76–104.
- Kostyuchenko, Y.V., Yuschenko, M., & Kopachevsky, I. (2018). Stochastic approaches to analysis and modeling of multi-sources and big data in tasks of homeland security: Socio-economic and socio-ecological crisis control tools. *Advanced Mathematical Techniques in Science and Engineering*, 57–99.
- Kriyantono, R., & McKenna, B. (2019). Crisis response vs crisis cluster: A test of situational crisis communication theory on crisis with two crisis clusters in Indonesian Public Relations. *Jurnal Komunikasi: Malaysian Journal of Communication*, 35(1).
- Laury, B.M. (2019). *The impact of employees motivation towards organization performance in Tanzania a case of CRDB bank, Mlimani city branch–Dar es salaam*. Mzumbe University.

- Lee, J.C., Shiue, Y.C., & Chen, C.Y. (2016). Examining the impacts of organizational culture and top management support of knowledge sharing on the success of software process improvement. *Computers in Human Behavior, 54*, 462–474.
- Li, J.J., Kim, W.G., & Zhao, X.R. (2017). Multilevel model of management support and casino employee turnover intention. *Tourism Management, 59*, 193–204.
- Li, X. (2020). The effectiveness of internal control and innovation performance: An intermediary effect based on corporate social responsibility. *Plos One, 15*(6), e0234506.
- Magnusson, M., Venemyr, G.O., Bellström, P., & Bakken, B.T. (2019). Digitalizing crisis management training. In international conference on electronic participation (pp. 102–113). Springer.
- Malyshev, S., Krötzsch, M., González, L., Gonsior, J., & Bielefeldt, A. (2018). Getting the most out of Wikidata: semantic technology usage in Wikipedia's knowledge graph. In International Semantic Web Conference (pp. 376–394). Springer.
- Mason, J., Colwell, C.B., & Grock, A. (2018). Agitation Crisis Control. *Annals of Emergency Medicine, 72*(4), 371–373.
- Muhammedrisaevna, T.M., Mubinovna, R.F., & Kizi, M.N.U. (2020). The role of information technology in organization and management in tourism. *Academy, 4*(55).
- Mustafa, A., & Rahimi Azghadi, M. (2021). Automated machine learning for healthcare and clinical notes analysis. *Computers, 10*(2), 24.
- Mustafaoğlu, R., Zirek, E., Yasacı, Z., & Özdiñçler, A.R. (2018). The negative effects of digital technology usage on children's development and health. *Addicta: The Turkish Journal on Addictions, 5*(2), 13–21.
- Mwakaje, A.G. (2018). Information and communication technology for rural farmer's market access in Tanzania.
- Ngoma, P.S. (2018). Effect of strategic human resource management practices on organization performance of International Non-Governmental Organizations (INGO's): A case study of save the children international. *MUA*.
- Nguyen, D.T., Joty, S., Imran, M., Sajjad, H., & Mitra, P. (2016). Applications of online deep learning for crisis response using social media information. ArXiv Preprint ArXiv:1610.01030.
- Nizamidou, C., & Vouzas, F. (2020). HR professionals cultivating resilience and crisis awareness toward a business excellence environment. *EuroMed Journal of Business*.
- Offermann-van Heek, J., & Ziefle, M. (2019). Nothing else matters! Trade-offs between perceived benefits and barriers of AAL technology usage. *Frontiers in Public Health, 7*, 134.
- Qadir, J., Ali, A., Ur-Rasool, R., Zwitter, A., Sathiaseelan, A., & Crowcroft, J. (2016). Crisis analytics: Big data-driven crisis response. *Journal of International Humanitarian Action, 1*(1), 1–21.
- Rothkrantz, L.J.M., & Fitrianie, S. (2018). Public awareness and education for flooding disasters. In crisis management-theory and practice. *IntechOpen*.
- Ruquan, L. (2017). "Falling oil prices" and "crisis awareness": Oil's continued reign as the world's biggest energy source. *China Oil & Gas, 4*(4), 3.
- Salem, S.F., & Alanadoly, A.B. (2020). Personality traits and social media as drivers of word-of-mouth towards sustainable fashion. *Journal of Fashion Marketing and Management*.
- Salem, S.F., & Salem, S.O. (2018). Self-identity and social identity as drivers of consumers' purchase intention towards luxury fashion goods and willingness to pay premium price. *Asian Academy of Management Journal, 23*(2).
- Savonen, B.L., Mahan, T.J., Curtis, M.W., Schreier, J.W., Gershenson, J.K., & Pearce, J.M. (2018). Development of a resilient 3-D printer for humanitarian crisis response. *Technologies, 6*(1), 30.
- Schrader, K., & Laaser, C.F. (2019). EU enlargement in times of crisis? Readiness for accession of the Western Balkan candidate countries. *Estonian Discussions on Economic Policy, 27*(3–4), 189–194.
- Sekaran, U., & Bougie, R. (2016). Research methods for business: A skill building approach. John Wiley & Sons.
- Seko, T., Tachi, T., Kawashima, N., Maeda, T., Yasuda, M., Noguchi, Y., & Teramachi, H. (2017). Economic evaluation of infection control activities. *Journal of Hospital Infection, 96*(4), 371–376.
- Sezgin, E., Huang, Y., Ramtekkar, U., & Lin, S. (2020). Readiness for voice assistants to support healthcare delivery during a health crisis and pandemic. *NPJ Digital Medicine, 3*(1), 1–4.
- Shi, Y., & Li, H. (2020). How a crisis mindset activates implicit knowledge and brings it into awareness: The role of attentional switch cost. *Consciousness and Cognition, 82*, 102934.
- Stevens, R. (2017). Calcifying Crisis Readiness.
- Syamsir, S. (2020). Competence, Job satisfaction, work motivation, and job performance of the village ("Nagari") Masters in managing e-village finance. *International Journal of Advanced Science and Technology, 29*(8), 1337–1350.

- Szyliowicz, J.S. (2018). *Aviation security in the USA. In air transport security*. Edward Elgar Publishing.
- Tapia, E.V., & Ayarza, C. (n.d.). Pertinence of a neuroscience construction industry class in order to raise global crisis awareness.
- Thapa, D., Budhathoki, N.R., & Munkvold, B.E. (2017). Analyzing crisis response through actor-network theory: The case of Kathmandu living labs. *Communications of the Association for Information Systems, 41*(1), 19.
- Upadhyay, A.K., Khandelwal, K., Nandan, T., & Mishra, P. (2018). Sales technology usage. *Asia Pacific Journal of Marketing and Logistics*.
- Van-de-Walle, B., Bruggemans, B., & Comes, T. (2016). Improving situation awareness in crisis response teams: An experimental analysis of enriched information and centralized coordination. *International Journal of Human-Computer Studies, 95*, 66–79.
- Wahab, S.R.A., Shin, T.H., & Hyun, K.S. (2020). How organization performance differ from Korean and Malaysian Information Technology (IT) companies? *Journal of Human Capital Development, 13*(1).
- Wang, C., & Kuo, M. (2017). Strategic styles and organizational capability in crisis response in local government. *Administration & Society, 49*(6), 798–826.
- Wardani, M.K. (2019). The effectiveness of internal control system and role of internal audit on local government performance. *In Journal of International Conference Proceedings, 2*, 112–122.
- Wendt, P., Voltes-Dorta, A., & Suau-Sanchez, P. (2020). Estimating the costs for the airport operator and airlines of a drone-related shutdown: an application to Frankfurt international airport. *Journal of Transportation Security, 13*(1), 93–116.
- Wijermans, N., Conrado, C., van Steen, M., Martella, C., & Li, J. (2016). A landscape of crowd-management support: An integrative approach. *Safety Science, 86*, 142–164.
- Xinquan, S. (2016). The construction of class committee in college for crisis awareness abased on the Lanberg Theorem. *Science, 4*(1), 14–18.
- Yun, Y.M., & Yoo, M.S. (2017). Effects of emotional competence, learning organization, and nursing organization culture among nursing performance of clinical nurses. *The Korean Journal of Health Service Management, 11*(4), 29–40.
- Zade, H., Shah, K., Rangarajan, V., Kshirsagar, P., Imran, M., & Starbird, K. (2018). From situational awareness to action ability: Towards improving the utility of social media data for crisis response. *Proceedings of the ACM on Human-Computer Interaction, 2*(CSCW), 1–18.