Crisis management in public administration: The three phases model for safety incidents

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ABSTRACT

This study aims to investigate the factors that affect crisis management in public administration for safety incidents, during pre-crisis, crisis and post crisis phase. The sample is comprised by 177 experienced in crisis management participants representing government, public organizations and security/armed forces in Greece. Data were collected by means of structured questionnaires in a series of personal interviews. Results indicate that the ability of crisis management team leader and members to make right decisions, the internal and external communication and crises type are predictors of the three phases of crisis management (pre-crisis, crisis and post crisis) in public administration. Implications for management include the need to implement cultural and structural changes, develop crisis management team leader's ability to make decisions in conditions of urgency conditions, to transform internal formal communication channels and procedures and to redesign external communication strategy in order to manage effectively today's safety incidents in a dynamic and unpredictable environment.

1. Introduction

A public organization is in crisis when its institutional structure is seriously challenged (Boin 'tHart, 2000) and the more lives are governed by the value(s) under threat, the deeper the crisis goes (Boin et al., 2005). Although the main distinction is between man-made and natural disasters (Rosenthal and Kouzmin, 1993; Boin et al., 2005) there is an extended bibliography on the typology of crisis (i.e. Marcus and Goodman, 1991; Egelhoff and Sen, 1992; Pearson and Mitroff, 1993; Lerbinger, 1997). Crises can be distinguished as conventional, unexpected, intractable and fundamental according to predictability and the possibility to influence a crisis (Gundel, 2005). Overall, crises have substantive implications for organizations and stakeholders. However, fragmentation persists in the literature, and researchers continue to focus on disparate perspectives with limited attempts to build more integrated and generalizable scholarship (Bundy et al., 2016).

Effective crisis management in a global context is consistent with growing demands from organizational stakeholders for responsible actions by crisis leaders (Maldonado and Dusya, 2014). Research on crisis leadership is often criticized for its lack of specificity (Bundy et al., 2016). Leadership in crises includes five basic processes: sense making pertaining to the evaluation of the situation in order to make decisions, decision making, meaning making, terminating and learning, which is the acquisition of experience by the leader (Boin et al. 2005).

Leadership is associated with greater levels of positive affect, which leads to higher resilience among team members in a crisis situation (Sommer et al., 2016). It is therefore understood that the personality of the leader together with her/his behavior are of greater importance, than for example assessing information and making decisions in conditions of extraordinary stress (Tokakis et al., 2018). The leaders that comprehend the importance of emotional intelligence are in a position to identify the needs of their subordinates, to actually express their interest, reflect the changes in their emotional state and work collectively to achieve the targets set (Rahim et al., 2002; Polychroniou, 2009) handling conflicts (Tokakis et al., 2018). Even in a crisis where lives were at stake, positive emotions can emerge and have important outcomes for individuals and teams (Sommer et al., 2016).

In particular, transformational leaders can motivate their members to carry out commands more effectively and efficiently during a crisis situation by means of self-sacrificial behavior and sense making approach (Zhe Zhang et al., 2012). Effective transformational emergency leadership is crucial in all horizontal and vertical facets of emergency management systems (Eyre and Brady, 2013; Launder and Perry, 2014).

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To the extent that leaders can display transformational behaviors during difficult circumstances, their subordinates should benefit. Transformational leadership behaviors are more likely to trigger positive emotional states among team members than transactional ones, and that such positive affect is fundamental to building resilience in a crisis (Sommer et al., 2016).

During times of crisis, two-way communication is essential. The importance of leaders listening and being aware, while also effectively disseminating information was emphasized (Haddon et al., 2015).

Such leadership will be crucial in the future evolution of effective emergency management systems. In effect, emergency system leadership seeks the engagement, actualization and harmonization of positive policies, strategies and systems for the common good across regional, national and global communities for both present and future generations (Caro, 2016).

Crisis management team leaders' beliefs, values and emotional intelligence competences are of critical importance to the overall style of leadership that they adopt (Tokakis et al., 2018). A leader, therefore, should combine the ability to assess the information and make the right decisions taking into consideration the time limitations and difficult conditions (Quarantelli, 1988; Halverson et al., 2004).

2. Hypotheses

2.1. Pre-crisis phase

The systematic effort of the members of a system with the co-operation of stakeholders to prevent or manage a crisis (Pearson and Clair, 1998) is called crisis management, a cyclical process (Mitroff et al., 1987; Mitroff et al., 1996; Coombs, 2007) that includes pre-crisis, crisis and post crisis phase. The demands of public opinion are high and there is no room for failure (Drennan and McConnell, 2007). The pre-crisis phase includes the signal detection of a forthcoming crisis, crisis preparation and crisis prevention. Numerous studies suggest that high-reliability organizations are more capable of preventing crises. Other factors may influence the likelihood of crisis occurring, including organizational culture and structure. It can be assumed that the cultural and structural factors increasing the likelihood of a crisis also make it more difficult to organize for reliability (Bundy et al., 2016). Both Barton (2001) and Coombs (2006) document that organizations are better able to handle crises when they (1) have a crisis management plan that is updated at least annually, (2) have a designated crisis management team, (3) conduct exercises to test the plans and teams at least annually, and (4) pre-draft some crisis messages.

According to Gundel (2005) the easier crises to predict and handle are the conventional ones. The planning and preparation allow crisis teams to react faster and to make more effective decisions. Moreover, the ability to rapidly scan the environment and take action quickly seems to instill confidence in employees during times of crisis (Haddon et al., 2015). Though different decisions are taken at operational or strategic levels (Boin et al., 2006), throughout the process decisions are made under pressure and in conditions of uncertainty (Janis and Mann, 1977; Janis, 1989). Based on these contributions, we hypothesize:

H1. Conventional crises are positively related to the pre-crisis phase which includes the signal detection of a forthcoming crisis, crisis preparation and crisis prevention.

H2. The ability of the CMT leader to assess information and make decisions in conditions of urgency is positively related to the pre-crisis phase which includes the signal detection of a forthcoming crisis, crisis preparation and crisis prevention.

H3. Internal formal communication among the CMT members is positively related to the pre-crisis phase which includes the signal detection of a forthcoming crisis, crisis preparation and crisis prevention.

H4. Internal informal communication among the CMT members is negatively related to the pre-crisis phase which includes the signal detection of a forthcoming crisis, crisis preparation and crisis prevention.

2.2. Crisis phase

The crisis phase that begins with a trigger event and includes crisis recognition and crisis containment. An organization may not know that is involved in a crisis. (Kamer, 1996). It identifies the real situation when those who make decisions assess it's a crisis (Pauchant and Mitroff, 1992). Crisis management team (CMT) is a crucial intersection of vast and complex inter-governmental and inter-organizational networks that are called to response to a crisis (Boin et al., 2005; Wester, 2011).

The effectiveness depends on the abilities of CMT members such as situation assessment, communication and team working. (Flin, 1996). Coombs (1999) also supports that the members of a CMT must be capable of making decisions. Since crisis management is a collective decision making process (Fink, 1986; O'Connor, 1985; Olaniran and Williams, 2001), human factors and team processes play a key role in improving the response speed, accuracy and efficiency of group members (Jehn and Techakesari, 2014).

CMT takes control in order to handle the crisis and limit the duration (Mitroff, 1994). During the crisis there is a lot of initial information and data which must be transformed to useful information (Boin et al., 2006) and to flow into external or internal communication channels (Coombs, 2007). Analyzing these data CMT can make the appropriate decisions (Coombs, 2007). External communication is crucial in crisis management as well. According to researchers there are general communication strategies to protect an organization's reputation (Dean, 2004; Coombs and Holladay, 2004, 2005).

It's a common assumption that either verbal or non-verbal communication affects how stakeholders perceive the organization in a crisis (Allen and Caillouet, 1994; Benoit, 1995, 1997; Hearit, 1994, 1996, 2001). Immediate response, honest and clear statements, as well as open communication with media are required during a crisis (Mitroff et al., 1996), following a set of processes which facilitate the implementation of communication strategy (Coombs, 2007). Taking lead from these contributions, we hypothesize the following:

H5. Pre-crisis phase which includes the signal detection of a forthcoming crisis, crisis preparation and crisis prevention is related positively to the crisis phase which includes crisis recognition and containment.

H6. Internal formal communication among the CMT members is positively related to the crisis phase which includes crisis recognition and containment.

H7. The ability of CMT members to make decisions in crucial conditions is positively related to the crisis phase which includes crisis recognition and containment.

H8. Communication including diminishment crisis response strategy followed by bolstering actions is positively related to the crisis phase which includes crisis recognition and containment.

2.3. Post-crisis phase

The post crisis phase includes recovery and learning. This process has two aspects: First the emergency state is terminated and the organization starts to operate in normal condition. Second, reporting takes place as a strategic option. Both are distinguishable and interrelated (Boin et al., 2005). Coombs (2006) recommends every crisis management exercise be carefully dissected as a learning experience.

The organization should seek ways to improve prevention,

preparation, and/or the response. Post crisis research from the internal perspective shows that learning from a crisis is possible, subject to conditions that may influence the types of lessons learned and the degree to which lessons are internalized (Bundy et al., 2016). When the governors face a serious threat to fundamental structures, values and norms of a system and when they, under the pressure of time and in uncertain conditions need to take vital decisions (Mann and Janis 1983; Tjosvold, 1984; Perrow, 1984). The management of a crisis is vital as it affects directly the long-term future of the social system (Rosenthal et al., 2001). Also, governors play a strategic role during and in the immediate aftermath of crises and disasters (Jong et al., 2016). Based on the previous research the following hypothesis has been developed:

H9. Pre-crisis phase which includes the signal detection of a forthcoming crisis, crisis preparation and crisis prevention is related positively to the post crisis phase which includes recovery and learning.

H10. Crisis phase which includes crisis recognition and containment is related positively to the post crisis phase which includes recovery and learning.

H11. Unexpected Crises are positively related to the post crisis phase which includes recovery and learning.

H12. Intractable Crises are positively related to the post crisis phase which includes recovery and learning.

H13. Internal formal communication among the CMT members is negatively related to the post crisis phase which includes recovery and learning.

H14. The ability of the CMT leader to assess information and make decisions in conditions of urgency is positively related to the post crisis phase which includes recovery and learning.

3. Methodology

3.1. Research objectives

This research aims to investigate the factors that affect crisis management in public administration during pre-crisis phase (signal detection of a forthcoming crisis, crisis preparation and crisis prevention), crisis phase (crisis recognition and containment) and post crisis (recovery and learning) including former crisis phase, crisis type, internal communication (formal, informal) and diminishment communication strategy followed by bolstering actions. In sequence, we examine CMT leader's ability to assess information and make decisions in conditions of urgency as well as CMT members' ability to make decision in crucial conditions.

3.2. Sample & procedure

Data were collected by means of questionnaires in a series of face-to-face anonymous structured interviews increasing reliability of data. The quantitative research was based on a sample of 177 participants that were involved in crisis management within the framework of Greek public administration at least once. Of the participants 79.7 percent of the sample has been involved in a crisis management process more than once. This highlights that the sample is comprised by experienced participants (top and middle managers) reflecting validation of survey. Moreover, 82 individuals (46.3%) were working in ministries, 52 (29.4%) in public organizations and 15 (15.9%) in security/armed forces.

In terms of gender, sample is comprised by 126 male (71.2 percent) and 51 female (28.8 percent). In terms of age 55 (33.1%) of the participants were 25 to –34 years old, 78 (44.1%) were 35 to –44 years old and 34 (19.2%) were 45 to –54 years old. The sample was well educated as 78 (44.1%) of the participants have completed postgraduate studies

and 27 (15.3%) holds a PhD degree.

3.3. Measurement

Crises type: Crises typology is presented as conventional, unexpected, intractable and fundamental according to predictability and the possibility to influence a crisis (Gundel, 2005).

Crisis phase: Crisis phase is analyzed using seven items following pre-crisis, crisis and post crisis (Mitroff et al., 1987, 1996; Coombs, 2007).

Internal Communication. Internal communication is measured by eight items under the prism of the formal and informal communication (Polychroniou, 2005) among the members of the CMT within the organization.

Decision making. CMT leader's ability to assess information and make decisions in conditions of urgency is measured by four items based on c-lead scale (Hadley et al., 2007). Also, the ability of CMT members to make decisions in crucial conditions is measured by seven items based on Incident Management Team (Crichton et al., 2005).

C*ommunication strategy*: communication strategy including diminishment strategy followed by and bolstering actions is measured by five items based on external communication strategies to protect an organization's reputation of Situational Crisis Communication Theory (Coombs, 2007).

4. Results

Crisis phase: Principal Component Analysis resulted in three factors (KMO index: 0.862, Bartlett's Test of Sphericity: 0.000) Three produced factors relate to the pre-crisis phase, crisis phase and post crisis phase. Factors explain 82.8% of the entire variation. Reliability test using the Cronbach-a coefficient confirms the reliability of the scale, as for every factor is > 0.65.

Internal Communication:Analysis resulted in two factors and the variables (KMO index: 0.760, Bartlett's Test of Sphericity: 0.000) were reduced from eight to seven since the loading of one variable is < 0.40. Two produced factors relate to the formal and informal internal communication. Factors explain 62.1% of the entire variation. Reliability test using the Cronbach-a coefficient confirms the reliability of the scale, as the price is > 0.70.

Decision Making: Factor Analysis for the seven variables (KMO index: 0.869, Bartlett's Test of Sphericity: 0.000) that relate to the ability of the team members to make decisions explains 60% of the entire variation. The reliability test that was applied using the Cronbach-a coefficient confirms the reliability of the scale, as for the sole factor produced the price is 0.88. Principal Component Analysis (KMO index: 0.714, Bartlett's Test of Sphericity: 0.000) for the variables relate to team leader's ability to make decisions explains 60,.4% of the entire variation. Variables relate to team leader's ability to assess information and make decisions in conditions of urgency were reduced from four to three since the loading of one variable is < 0.40. Reliability test using the Cronbach-a coefficient confirms the reliability of the scale, as for the factor produced the price is 0.75.

Diminishment communication strategy: Principal Component Analysis (KMO index: 0.689, Bartlett's Test of Sphericity: 0.000) for the variables relate to external communication strategies explains 61,.1% of the entire variation. The reliability test that was applied using the Cronbach-a coefficient confirms the reliability of the diminishment communication strategy, as for the factor produced the price is 0.86.

Requirements for the application of multiple regressions linear model were tested. Firstly, Durbin-Watson test was applied produced a value from 1.711 to 2.033 proving there is no problem with the auto-correlation of residuals. There is also no constraint with multicollinearity since the Tolerance and VIF values are > 0.20 and < 10 respectively for all variables. For testing linearity and homoscedasticity we used the Scatterplot where the residuals are random and normally

Table 1
Model summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	0.376[a]	0.141	0.136	0.98531	0.141	28.817	1	175	0	
2	0.450[b]	0.202	0.193	0.95239	0.061	13.309	1	174	0	
3	0.479[c]	0.229	0.216	0.93887	0.027	6.047	1	173	0.015	
4	0.501[d]	0.251	0.234	0.92826	0.022	4.976	1	172	0.027	1.711

[e] Dependent Variable: pre-crisis management.
 [a] Predictors: (Constant), conventional crises.
 [b] Predictors: (Constant), conventional crises, leadership urgency.
 [c] Predictors: (Constant), conventional crises, leadership urgency, internal formal communication.
 [d] Predictors: (Constant), conventional crises, leadership urgency, internal formal communication, internal informal communication.

scattered that led to the conclusion that the requirements for linearity and homoscedasticity are met.

Multiple regression analysis was computed with pre-crisis phase (signal detection of a forthcoming crisis, crisis preparation and crisis prevention) as the dependent variable and conventional crises, CMT leader's ability to assess information and make decisions in conditions of urgency, internal communication http://www.gazzetta.gr/node/1274028communication (formal, informal) as the independent variables. Tables 1 and 2 shows results for regression analysis.

It appears that conventional crises type is a good predictor of crisis management during pre-crisis phase that provided support to Hypothesis 1 ($\Delta R^2 = 0.141$, $p < 0.001$). The ability of the CMT leader to assess information and make decisions in conditions of urgency is also positively related to the signal detection of a forthcoming crisis, crisis preparation and crisis prevention that provided support to Hypothesis 2 ($\Delta R^2 = 0.061$, $p < 0.001$). To a lesser degree, internal formal communication is positively related ($\Delta R^2 = 0.027$, $p = 0.015$) and internal informal communication is negatively related ($\Delta R^2 = 0.022$, $p = 0.027$) to pre-crisis phase management that provided support to Hypotheses 3 and 4 respectively.

Multiple regression analysis was also computed with crisis phase (crisis recognition and containment) as the dependent variable and pre-crisis phase, internal formal communication, CMT members' ability to make decisions in crucial conditions and diminishment external communication strategy as the independent variables. Tables 3 and 4 shows results for regression analysis.

The signal detection of a forthcoming crisis, crisis preparation and crisis prevention (pre-crisis) is a good predictor of crisis management during crisis phase that provided support to Hypothesis 5 ($\Delta R^2 = 0.508$, $p < 0.001$). To a lesser degree, internal formal communication

($\Delta R^2 = 0.037$, $p < 0.001$), team members' ability to make decisions in crucial conditions ($\Delta R^2 = 0.014$, $p = 0.02$) and diminishment communication strategy ($\Delta R^2 = 0.022$, $p = 0.004$) are also positively related to crisis recognition and containment (crisis phase) that provided support to Hypotheses 6, 7 and 8 respectively.

Finally, multiple regression analysis was computed with post crisis phase (recovery and learning) as the dependent variable and pre-crisis phase, crisis phase, unexpected and intractable crisis, internal formal communication, CMT leader's ability to assess information and make decisions in conditions of urgency as the independent variables. Tables 5 and 6 shows results for regression analysis.

Pre-crisis phase (the signal detection of a forthcoming crisis, crisis preparation and crisis prevention) ($\Delta R^2 = 0.428$, $p < 0.001$) and to a lesser degree crisis phase (crisis recognition and containment) ($\Delta R^2 = 0.012$, $p = 0.023$) are predictors of post crisis management (recovery and learning) that provided support to Hypotheses 9 and 10. Unexpected ($\Delta R^2 = 0.107$, $p < 0.001$) and intractable crises ($\Delta R^2 = 0.027$, $p = 0.001$) are positively related to recovery and learning (post crisis) that provided support to Hypotheses 11 and 12 respectively. Also, the ability of CMT leader to assess information and make decisions in conditions of urgency is positively related to post crisis phase ($\Delta R^2 = 0.037$, $p < 0.001$) that provided support to Hypothesis 14. Internal formal communication is negatively related to recovery and learning phase ($\Delta R^2 = 0.016$, $p = 0.009$) that provided support to Hypothesis 13.

5. Conclusions

Crisis management is a dynamic process of interrelated phases with substantial impact from one crisis phase to the other. Results indicate

Table 2
Coefficients.

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	T	Sig.	Tolerance	VIF
1	(Constant)	0.941	0.392		2.4	0.017		
	Conventional crises	0.501	0.093	0.376	5.368	0	1	1
2	(Constant)	0.153	0.436		0.351	0.726		
	Conventional crises	0.412	0.094	0.309	4.398	0	0.931	1.07
	Leadership urgency	0.305	0.084	0.256	3.648	0	0.931	1.07
3	(Constant)	−0.251	0.461		−0.545	0.586		
	Conventional crises	0.411	0.092	0.308	4.451	0	0.931	1.07
	Leadership urgency	0.248	0.086	0.208	2.891	0.004	0.862	1.16
	Internal formal communication	0.206	0.084	0.171	2.459	0.015	0.92	1.09
4	(Constant)	0.102	0.482		0.211	0.833		
	Conventional crises	0.46	0.094	0.345	4.9	0	0.879	1.14
	Leadership urgency	0.347	0.096	0.291	3.626	0	0.675	1.48
	Internal formal communication	0.289	0.091	0.24	3.183	0.002	0.765	1.31
	Internal informal communication	−0.298	0.134	−0.2	−2.231	0.027	0.542	1.85

[a] Dependent Variable: pre-crisis management.

Table 3
Model summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	0.713[a]	0.508	0.505	0.59978	0.508	180.564	1	175	0	
2	0.738[b]	0.545	0.54	0.57826	0.037	14.266	1	174	0	
3	0.753[c]	0.567	0.559	0.56603	0.022	8.602	1	173	0.004	
4	0.762[d]	0.58	0.57	0.55875	0.014	5.538	1	172	0.02	2.033

[e] Dependent Variable: crisis.
[a] Predictors: (Constant), pre-crisis management.
[b] Predictors: (Constant), pre-crisis management, internal formal communication.
[c] Predictors: (Constant), pre-crisis management, internal formal communication, diminishment communication strategy.
[d] Predictors: (Constant), pre-crisis management, internal formal communication, diminishment communication strategy, decision making.

Table 4
Coefficients.

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	1.753	0.136		12.89	0		
	Pre-crisis management	0.573	0.043	0.713	13.437	0	1	1
2	(Constant)	1.288	0.18		7.164	0		
	Pre-crisis management	0.532	0.043	0.662	12.521	0	0.935	1.069
	Internal formal communication	0.193	0.051	0.2	3.777	0	0.935	1.069
3	(Constant)	0.951	0.21		4.526	0		
	Pre-crisis management	0.534	0.042	0.664	12.835	0	0.935	1.069
	Internal formal communication	0.18	0.05	0.186	3.583	0	0.928	1.077
	Diminishment communication strategy	0.139	0.047	0.147	2.933	0.004	0.992	1.008
4	(Constant)	0.245	0.365		0.673	0.502		
	Pre-crisis management	0.532	0.041	0.662	12.954	0	0.935	1.07
	Internal formal communication	0.16	0.05	0.165	3.175	0.002	0.901	1.11
	Diminishment communication strategy	0.152	0.047	0.161	3.223	0.002	0.979	1.022
	Decision making	0.173	0.074	0.119	2.353	0.02	0.957	1.044

[a] Dependent Variable: crisis.

Table 5
Model summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	0.654[a]	0.428	0.424	0.76422	0.428	130.692	1	175	0	
2	0.731[b]	0.534	0.529	0.69136	0.107	39.827	1	174	0	
3	0.755[c]	0.571	0.563	0.66557	0.037	14.746	1	173	0	
4	0.773[d]	0.597	0.588	0.64655	0.027	11.327	1	172	0.001	
5	0.781[e]	0.609	0.598	0.63875	0.012	5.231	1	171	0.023	
6	0.790[f]	0.625	0.612	0.62775	0.016	7.044	1	170	0.009	2.014

[g] Dependent Variable: post-crisis management.
[a] Predictors: (Constant), pre-crisis management.
[b] Predictors: (Constant), pre-crisis management, unexpected crises.
[c] Predictors: (Constant), pre-crisis management, unexpected crises, leadership urgency.
[d] Predictors: (Constant), pre-crisis management, unexpected crises, leadership urgency, intractable crises.
[e] Predictors: (Constant), pre-crisis management, unexpected crises, leadership urgency, intractable crises, crisis.
[f] Predictors: (Constant), pre-crisis management, unexpected crises, leadership urgency, intractable crises, crisis, internal formal communication.

that pre-crisis management phase influence heavily crisis and post crisis management phase. If public administration is well prepared doing the right things before a crisis then operates effectively regarding signal detection of a forthcoming crisis, crisis preparation and prevention, crisis recognition and containment and post crisis recovery and learning. This process is easier for conventional crises, which are easier to predict and handle.

The ability of the CMT leader to assess information and make decisions about reaction in conditions of urgency is positively related to the pre-crisis management phase since has a strong impact on signal detection of the forthcoming crisis, crisis preparation and crisis prevention during initial crisis stages especially for conventional crises. The prescribed ability seems also very important for public administration's recovery and learning after unexpected and intractable crises. Moreover, the ability of CMT members to make decisions in crucial conditions is a predictor of crisis recognition and crisis containment. CMT members should be highly experienced in order to cooperate effectively with CMT leader making the right decision in conditions of extraordinary stress during crisis phase.

As it was stated, government, public organizations and security/armed forces should be well prepared in order to manage crisis situations effectively. Internal formal communication is very important

Table 6
Coefficients.

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	1.394	0.173		8.042	0		
	Pre-crisis management	0.621	0.054	0.654	11.432	0	1	1
2	(Constant)	0.795	0.183		4.336	0		
	Pre-crisis management	0.505	0.052	0.532	9.621	0	0.877	1.14
	Unexpected crises	0.311	0.049	0.349	6.311	0	0.877	1.14
3	(Constant)	0.152	0.243		0.624	0.533		
	Pre-crisis management	0.447	0.053	0.471	8.478	0	0.805	1.242
	Unexpected crises	0.291	0.048	0.326	6.091	0	0.866	1.154
	Leadership urgency	0.231	0.06	0.204	3.84	0	0.875	1.142
4	(Constant)	−0.097	0.248		−0.392	0.696		
	Pre-crisis management	0.43	0.051	0.452	8.347	0	0.797	1.254
	Unexpected crises	0.212	0.052	0.237	4.071	0	0.689	1.451
	Leadership urgency	0.239	0.059	0.211	4.085	0	0.874	1.144
	Intractable crises	0.184	0.055	0.189	3.366	0.001	0.746	1.34
5	(Constant)	−0.38	0.274		−1.386	0.168		
	Pre-crisis management	0.33	0.067	0.348	4.932	0	0.46	2.173
	Unexpected crises	0.195	0.052	0.219	3.763	0	0.676	1.48
	Leadership urgency	0.235	0.058	0.208	4.061	0	0.873	1.145
	Intractable crises	0.184	0.054	0.188	3.404	0.001	0.746	1.34
	Crisis	0.187	0.082	0.158	2.287	0.023	0.479	2.087
6	(Constant)	−0.222	0.276		−0.807	0.421		
	Pre-crisis management	0.316	0.066	0.333	4.788	0	0.457	2.187
	Unexpected crises	0.216	0.052	0.243	4.196	0	0.659	1.517
	Leadership urgency	0.265	0.058	0.234	4.573	0	0.84	1.191
	Intractable crises	0.184	0.053	0.189	3.468	0.001	0.746	1.34
	Crisis	0.241	0.083	0.204	2.911	0.004	0.45	2.224
	Internal formal communication	−0.159	0.06	−0.139	−2.654	0.009	0.801	1.249

[a]Dependent Variable: post-crisis management.

especially during pre-crisis and crisis management phases, since formal communication channels should be open in order to develop clear communication. Structure, procedures, formal communication channels in sequence of crisis plans help and guarantee the quality of the proper and continuous flow of useful information to CMTs, sharing of information between CMTs leaders and members in order to make the appropriate decisions in urgency and crucial conditions promoting fast response to forthcoming crisis and crisis containment.

Furthermore, external communication mainly through mass media is an important factor that affects and contributes to crisis recognition and crisis containment based on diminishment of facts towards public opinion followed by bolstering actions, regarding public administration image and responsibilities Implications for management include the need to implement cultural and structural changes in central, local government, public organizations and agencies. Public administration should provide positive reinforcements in order to develop crisis management team leader and members' ability to make decisions in conditions of urgency and crucial conditions, to transform internal formal communication channels and procedures, to redesign external communication strategy with focus on clear communication in order to manage effectively today's crises (e.g. refugee crisis, natural disasters, terrorist attacks) in a dynamic and unpredictable environment that is synthesized by crises (i.e. political instability crisis, financial crisis, trade conflicts, war conflicts).

It should be noted that the participants of the study come from the Greek Public Sector. Ideally the results of this study should be used as "lessons learnt", as feedback with an aim to advance the crisis management capacities of the Greek State. Greece has gone through a number of smaller and larger crises in the last few years. Starting from the Peloponnese fires, to the austerity measures and the various episodes of violence that occurred, to the floods of western Attica to tragedy in Mati, the Greek State has been criticized for its ability to provide an adequate Civil Protection Mechanism. In a European level, the large scale catastrophes of Portugal in 2017 have led to the development of a brand new, more centralized Civil protection mechanism,

known as RescEU.

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