



The Observation on the Basis of Critical Management to Reduce the Air Pollution in Tehran, Iran

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Abstract

According to the point that air pollution has become as a crisis in Tehran city and also how through the critical management, the pertinent strategies would be effective to control the current situation-only little studies have been accomplished in this base. Due to very harmful consequences resulted of Air pollution, actually Air pollution has become as one of the most tangible environmental difficulties in Tehran city and some other cities in Iran. Air pollution is a difficulty in Tehran city by which individuals' life time would be decreased for nearly five years. Representation of strategies issued for critical management to control Air pollution in district 19 of Tehran city is the aim of present paper. The methodology of present paper on the basis of the objectives represented about the air pollution, practicality and data collection is as well as the survey research types. The statistical society of present paper is involved of all the employees serving in governmental centers, municipalities and all the ones who referred to these centers; Importantly to say-all the individuals were the residents of district 19 of Tehran city. Through the society volume and Morgan's table, the sample volume was determined. The questionnaire in which the coping strategies for air pollution observed was used for data collection. The tests such as both 2 chi-square analysis test (one and two variable) and one-way ANOVA test could be mentioned as the applicable tests in present paper. The obtained results show that the most important pollutants in district 19 of Tehran city involve the nitrogen dioxide (NO₂), and sulfur dioxide (SO₂) resulted of brick burners and recycling centers which city's pollution is also due to cars as well.

Keywords: Air pollution, critical management, ANOVA test, Morgan table, environmental.

Introduction

The city is as the very permanent residency for the individuals, and it is also the place for living, training and occupation. The impact of urban space on economic and social affairs and on the feelings of the citizens is crystal clear. The aesthetic feature of city put the favorable impact on human's mind which makes the environmental experiences facilitated; importantly to say, it is very effective in bilateral emotional relations. Hence, the social coordination in the communities and the citizens' membership in the community would be come off as well¹.

From the most important consequences of excessive urban expansion, we could mention the destruction of green space, high cost of infrastructure, dependency on urban automobiles and as a consequence the expansion of traffic, social segregation, energy consumption, the emission of pollutants, the increase of temperature and also the reduction of weather quality. Due to the factors such as the excessive expansion of population, and consequently the urban expansion and also the diversity in social texture resulted of immigrants' immigration; the metropolises in Iran are going to be annihilated. Through this, the crisis "environmental pollution" resulted of the pollution in metropolises particularly in Tehran has been lead to the proceedings issued by urban managers to control this crisis.

In the past, coal in industry was a better choice to produce sulfur dioxide (SO₂)-whereas today due to existence of less compounds of sulfur dioxide (SO₂) in coal, The fuel of sulfur dioxide (SO₂) would not make many problems; but in this relation, the vehicles with motor engine are the main difficulties which produce nitrogen dioxide(NO₂) and non-reproducible organic components, which through being influenced of Solar ray, the nitrogen dioxide(NO₂) and non-reproducible organic components could be changed to ozone. Importantly, ozone has been mentioned as the most important air pollutant. The gas "nitrogen dioxide (NO₂)" could change the color of weather to brown color; this condition is a true fact which particularly it is occurred in summers. It also works fine in gasoline engine fuel, road dust, and pollen and smoke which all these could make the weather polluted in the winter².

Many definitions on the basis of air pollution have been mentioned, which here only two definitions are defined: air pollution could be due to several pollutants such as dust, metal steam, gas, mist, smoke, steam in outside which all these would bring about harms³. In the other word, the resources of air pollution involve natural pollution resources and environmental resources. In the Webster's dictionary, the crisis has been interpreted as unstable or crucial time or state of affairs in which

a decisive change is impending⁴. Sociologists have interpreted the crisis as the injustice existing in the society, social problems and similar cases⁵. The studies accomplished in this base show that several organizations believe in the point that crisis is the consequence of unfavorable management⁶. All the authors and thinkers serving in the field of critical management believe that there is only a particular concept about crisis which this is due to the level and type of crisis⁷. Before developing a suitable framework, the definition of a crisis must be established. Most of them synthesize previous definitions to some extent. Pearson and Clair offered one of the first comprehensive definitions: An organizational crisis is a low-probability, high-impact event that threatens the viability of the organization and is characterized by ambiguity of cause, effect, and means of resolution, as well as by a belief that decisions must be made swiftly.

Mitroff et al. believe that the vitality and stability of a vital and active system serving based on four fundamental strategies relies on the interaction between the requirements in this system by which all the requirements would be come off, for this only executives could act for it. Rezaeean has stated that through the critical management, five subjects such as organizing, making decision, the recognition of crisis factors, and designing could be defined. The control of crisis is possible in the situations while organizing the coping forces with critical strategies is more convenient. Based on the life cycle of crisis and various stages in this base, Roshandel, Arbatani and et al have represented a conceptual model well-knowing to a cycle model within the form of critical management involving previous models. The cycle model in critical management has been developed on four previous stages—pre, beginning, during and post of the crisis in which each of these stages in this model involves the particular management by which the control and the execution would be possible⁸.

The stages for critical management planning in viewpoint of Kreitner: Forecasting the crisis and observing the critical points: The strategic planning is very helpful to find critical points. In a situation while the executives are concerned with the upcoming situation, they would go on to ask the questions about the upcoming situation. At this time the scenarios “critical points” would be discussed. Also, at this stage the taxonomy of crises would be accounted very helpful and effective. The occurrence of some crises such as unexpected death of one of the main executives is a probable event in all the organizations, so that this could be easily assumed. But, it has to be taken into account that any organization based on the particular characteristics in that organization have the particular disadvantages, which to overcome these disadvantages-a strategic planning is needed, for instance the collapse of plane is an unfortunate for airline passenger service agents.

The development of critical management team and training human resource: The teams of critical management in the organizations are similar to the groups serving in the police power developing for interfacing with masterpiece situations.

These groups in terms of the types of crises involve various expertisms, for instance the team of power ministry crisis is probably developed of an interview with presses, power engineering, a specialized expert and a juridical consultant. The capability to represent rapid response and make the individuals informed is from the fundamental characteristics in any critical management team. A study accomplished through the American management institute shows that post the *events of September 11th, 2001* in U.S, the development of critical management teams in American companies has been increased in such a way that pre this event, 38% of the companies had involved critical management team, but post that event roughly 54% and 62% of the American companies have been involved the critical management team, respectively in 2002 and 2003. Issuing regulations is very helpful to control air pollution resulted of automotives, for instance the output emission standards could be applied in two stages “industrial manufacturing” and “roads”. In the stage “industrial manufacturing”, the emission of various pollutants like NOx, HC and CO have been observed in standard condition of experiment. Recently post the revision of motor vehicle regulation, the national regulations related to this issue have become necessary. Recently, the reformed regulations for motor vehicles have been implemented through the Maharashtra government - based on this regulation, 3% Co volume and 65% Hartridge volume for gasoline motors and smoke density was determined .About the ruined vehicles with only five years lifetime, Co volume has been reported equal to 4.5% of the total volume of output gas disseminated through the exhaust. Keivani et al in their first association about the air pollution and the impacts on the management health represented a paper in which the air quality has been mentioned as a process. The air quality is a process involving all the objectives about the weather condition of a region. As a matter of fact, exploitation of the standards provided for the management of air quality is prepared to assess the current situation, to determine the objectives and to forecast the rate of pollution in future. Also, in case of the increase of pollutants’ density in the management of air quality, the applicable programs would be implemented.

Methodology

The present paper is a kind of functional research in which through the survey research type, the data collection is provided. It could be mentioned that the effective factors in the emergence and increase of air pollution in district 19 of Tehran city have been specified; also to achieve the aim of present paper, the questionnaire has been used in which through the Cronbach Alpha formula (84%), the reliability of the objectives of research has been obtained. Along this, several strategies to control the critical management have been represented. The statistical society of present paper involves all the employees serving in governmental centers, municipalities and the ones who referred to these centers; Accordingly, the residents of district 19 of Tehran were all the individuals developed the statistical society. In present paper, the simple randomized

sampling has been used, and based on the volume of statistical society- all the employees serving in governmental centers, municipalities and the ones who referred to these centers, 200 and 240 individuals were chosen for doing this research. According to the obtained results taking out the air quality monitoring stations, the most important weather pollutants in district 19 of Tehran involve the nitrogen dioxide (NO₂), and sulfur dioxide (SO₂) resulted of brick burners, recycling centers which city's pollution is also due to cars as well .The individuals participated in the present paper have mentioned the effective factors on the emergence of air pollution in district 19 of Tehran resulted of following factors:

Table- 1
The observation about the significant factors on the emergence of air pollution in district 19 of Tehran

Factors	Chi-2	Freedom degree	Significant level
Lack of sufficient culture through executives in Controlling the crisis of air pollution	590.35	4	0.001
The pollution resulted of cars	578.93	4	0.001
Low facilities related to public transportation	429.179	4	0.001
Directors 's performance in executing the urban affair	368.57	4	0.001
The pollution resulted of industrial and non-industrial factories, Recycling and brick burner centers	355.86	4	0.001
The high volume of automobiles in district 19 of Tehran city	305.33	4	0.001
The performance of environment directors	293.42	4	0.001
The low level of public culture level in using the transportation vehicles	277.84	4	0.001

Along this, the individuals participated in present paper have stated their viewpoints about the executives and their performance based on paying attention to the elements of critical management in controlling the air pollution. In present paper, the library studies and the questionnaire have been used. The present paper has been prepared in two sections – documentary and field studies that in the section “field studies”, the questionnaire has been used as the tool of research. The

analysis method in present paper is based on the strategies originated from the inferential statistics, for this SPSS software could be used to test the hypotheses.

Main Body

The world is under a massive movement “Global village”. As a matter of fact, we live in a world in which the components have been interrelated with each other through a complex system. While an accident occurs for Ultra Large Crude Carrier in Alaska or while the gas leaks in a factory in India, or even while an artifact in long land collapsed, at that time individuals would be informed of these events, it could be said that the news could be spread in the worldwide unexpectedly so soon. Presses and individuals are forward to being informed of events and news. As a matter of fact, spreading out the news could be undertaken by the ones who could implement the effective operations for critical management. To avoid the intensification of crises, the maintenance of communications and the preservation of the organizations against the threats and unexpected events are mentioned so important in the critical management. It is probable with the emergence of crisis in private section; the organizations lose their authenticity, by which many difficulties would come off in the organizations⁹. Notwithstanding the emergence of crisis and having less information in this base, it seems that many efforts to control the crises in critical management have been come off in which the cooperation between a group of authors has been mentioned as a true fact. According to the Mack Karti's statements, the achievement to a reasonable solution to void the abnormal conditions is the fundamental objective in critical management by which the fundamental values and advantages could be preserved¹⁰.

The process of critical management

Crises are involved of many various stages – importantly the crises involve causing root, start point, growth stage and the last the maturity period by which finally the temporary or permanent annihilation point would be resulted. The literatures provided about the critical management have been considered as a research domain in the management Erna. It is reported that strategic control involves the theories, patterns, strategies and methods by which through the critical management, we would learn that how the critical management avoids the crises, so that coping strategies would be resulted. Due to diverse, ambiguous and multidimensional origin of the crises - the process of critical management would be a difficulty, so that many authors have created so many models by which the complex process of critical management would be facilitated¹¹. There are many stages and proceedings in the process of critical management which through a general category, the models could be categorized in three categories: i. The proceedings pre crisis, ii. The proceedings during crisis, iii. The proceedings post crisis.

Various attitudes of the employees serving in governmental sector, municipalities and the ones who referred to the centers.

Table-2
The high volume of automotives in this district, the factor for intensification of air pollution crisis in this district

Groups	Totally agree	agree	disagree	Totally disagree	No opinion	Total
Number	87	104	35	2	7	235
Percentage	23%	27.51%	9.25%	0.52%	1.85%	62.16%
Number	66	48	18	5	6	143
Percentage	17.46%	12.69%	4.76%	1.32%	1.58%	37.83%
Number	153	152	53	7	13	378
Percentage	40.46%	40.2%	14.01%	1.84%	3.43%	100

According to the point that the value of chi-square (8.63), freedom degree (4) are significant at 0.05 level, so that it could be said there is a relation between the two groups of individuals serving in governmental sector - municipalities - the ones who referred to these centers, and the high volume of automotives which makes the city polluted. It means that there is not a same opinion about this, consequently it could be said that the ones who referred to these centers (27%), governmental sector – municipalities (13%) agree with this factor by which in this case the agreement coefficient is 15%.

According to the point that the value of chi-square (11.14), freedom degree (3) are significant at 0.01 level, so that it could be said there is a relation between the two groups of individuals serving in governmental sector - municipalities - the ones who referred to these centers, and one of the factors - the brick burners, recycling centers, heavy vehicle, and automotive which makes the city polluted. It means that there is not the same opinion about this, consequently it could be said that the ones who referred to these centers (36%), governmental sector – municipalities (16%) agree with this factor by which in this case the agreement coefficient is 20%. According to the point that the value of chi-square (25.52), freedom degree (3) are significant at 0.01 level, so that it could be said there is a relation between the two groups of individuals serving in governmental sector - municipalities - the ones who referred to these centers, and one of the factors - the brick burners, recycling centers, heavy vehicle, and automotive which makes the city polluted. It means that there is not the same opinion about this, consequently it could be said that the ones who referred to these centers (29%), governmental sector – municipalities (10%) agree with this factor by which in this case the agreement coefficient is 28%.

According to the opinion of environmental experts, the first serious trouble about the air pollution was emerged in 1995. At that time nearly 100 individuals including experts in the field of environment, geography and urbanization attempted to organize an association in the community hall of the Tehran city park by which the statement “Tehran’s weather condition” was published so that firstly the air pollution in Tehran city was mentioned as a “national crisis”. Over the years, Japan international cooperation agency come off effective in giving necessary strategies for Tehran’s air pollution in order to

improve the air pollution condition. In this relation, it has been stated that every day more than 1192 Ton pollutant materials are emitted in the Air. Most of these pollutants are related to the sulfur dioxide (SO₂) with 695 ton emission materials in each day, thereafter nitrogen dioxide (NO₂), Carbon monoxide (CO) and unburned hydrocarbons (UHCs) are the other pollutants in Air pollution. Also, it has been specified that, however, more than 800000 industrial units in Tehran are the main reasons for Air pollution, in this case 88% of air pollution in Tehran city is due to the pollution of the transportation vehicles¹².

Mainly, the crises could be the consequences of the various elements and the chains of errors and mistakes. If due to the emergence of sequential errors, a matter goes beyond, so that in this case a difficulty would be realized. Generally, a crisis starts with the emergence of unintentional or deliberate stimulant.

The stage pre crisis

Forecasting stage: This stage has been mentioned as the first step in the comprehensive model “critical management“, this is likewise the recognition and expectation stages in the other models. In this stage, the critical approach and superior strategy in order to forecast the various crises have to be introduced; for this, the informational systems and environmental surveys are needed.

Prevention stage: prevention is a very important stage in critical management process which this stage is considered post the forecasting stage. Importantly to say, through prevention stage many crises could be prevented or the intensification of crises could be avoided as well.

Preparation stage: whether we want or not, crises occur continuously, so that, It is reasonable that despite the predictive and forecasting proceedings, there are many strategies to cope with various crises. In the other word, we have to be ready for coping with crises.

The stage for the start of crisis

In most models represented for critical management, the stages for critical management are limited to three stages including the stages pre, during and post crisis, so that it has to be taken into accounted that in 24 hours related to first hours of crisis

emergence, the characteristics and requirements would be represented¹³. The value of time in critical management in a procedure similar to geometrical sequence increases, which in most cases the things which we think are low cost and applicable, within taking no consideration they would be high cost and inapplicable¹⁴. The necessity of the period for the start of crisis has been added to the cycle of critical management.

Warning stage: As the topic in this stage shows, in this stage applying the warning systems, databases, information centers, and the collective medias -particularly the radio and television could make the community aware of the probable dangers by which the necessary proceedings in order to protect the population facing the crisis¹⁵.

The primary assessment stage: In this stage and in the early 24 hours of crisis, a primary assessment from the level and intensification of crisis has to be considered, actually based on the primary assessment a particular attention has to be paid on all the human forces¹⁶.

The rapid response stage: Some believe this stage as one of the steps during the crisis, while a series of necessary proceedings by the title of "rapid response" have to be taken into account. For instance, the majority of individuals believe that crises might be the results of outbreaks; in fact if in the early stages of crisis start, if the outbreaks do not be controlled, the situation would be awful, particularly due to the main crisis - other crises would be come off as well. Therefore, controlling outbreaks through applying informational and relational technologies are the most important proceedings considered in this stage originated from critical management process¹⁷.

The stage during crisis

Emergency stage: This is one of the important stages in the critical management process, which no more definitions are needed in this base. In fact, in this stage refugees and injured ones have to be helped.

The stage for particular operations: Generally, while the crisis gets so hard which the control of it by typical forces gets impossible, in this case the particular forces would be the ones who would control the situation, along this the particular operations are needed.

The control stage: controlling the annihilation of the crisis is mainly one of the objectives of critical management. In the other word, in the stage for particular operations the control of crisis and critical cases has to be come off.

The stage post crisis

Recycling stage: this stage starts post controlling crisis and current situation. In this stage, the proceedings to make the situation normal realize. In the recycling stage, the social crises

are needed by which post controlling the crisis, again other proceedings are needed in order to make the situation calm.

Conclusion

According to the obtained results, all the participants in the statistical society of this research believe in a fact that district 19 of Tehran is the most polluted district in Tehran. To get into a better conclusion from the obtained results, we were attempted to observe the effective factors on the emergence of this crisis which post doing a lot of observations and the obtained results, it could be concluded that all the factors in this base confirmed. Also, the obtained results show that directors serving in the district 19 of Tehran believe in the latent factors in the critical management as the fundamental strategies to transit from the critical situation to get the normal situation in the emergence of air pollution. From the strategies which could be mentioned effective for controlling the crisis of "air pollution", particularly in district 19 of Tehran, you could refer to the results of present paper including: i. Applying more limitations related to using the automotive vehicles, ii. Applying more limitations related to the industrial and non-industrial factories likewise applying the heavy financial system and environmental fines, iii. Advancing the natural resources and recreation environments like park, and many other places in district 19 of Tehran, iv. Create the limitation while the heavy vehicles enter to district 19 of Tehran, v. Change the automotive paths in the central part of district to the pedestrian paths, vi. Represent the citizen trainings in form of book, catalogue, and environmental advertisements on the basis of traffic culture and using the public transportation vehicles.

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