

Knowledge and Practice Involving Disaster Management

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ABSTRACT

This paperwork highlighted a study done on the preparedness of the human resource involve under several agencies in Kedah on the level of understanding (knowledge) and practice of Directive No.20. Directive No.20 is about the Policy and Mechanism on National Disaster Management and Relief. The main purpose of the directive is to create systematic coordination among agencies involve in disaster management as well as relief and rehabilitation. It has been issued by the National Security Division (NSD) of the Prime Minister Department in 1997. A total of 15 agencies covering 9 districts made up the population of the study in which 120 respondents were selected based on proportionate stratified sampling. The response rate was 40% and the findings did confirm the relationships (positive correlation) between understanding the knowledge of Directive No. 20 and the practice of Directive No.20. Multiple Regression had also been used to ascertain whether the knowledge and practice of Directives No. 20 contribute to disaster preparedness factors. The test confirmed that both the independent variables explained 86 per cent ($R^2 = 0.860$) of the variance in disaster preparedness, which is highly significant as indicated by the F-value ($F = 137.651, p < 0.05$).

Keywords

Directives20, Disaster Management, Systematic Coordination

1.0 INTRODUCTION

Malaysia's experience with disaster management in the last decade was the prime reasons for the need to readdress the disaster mitigation problems toward better mechanism in such a manner that disaster rescue works could be performed in an efficient and effective manner. The aim was to reduce the feeling of discomforts amongst the Malaysian people and also to prevent the unnecessary loss of lives and damage to personal and national assets and properties.

In this regard, The National Security Division (NSD) in the Prime Minister's Department is responsible for the coordination of all activities related to disaster. The National Security Council (NSC) Directive 20 was issued to provide guidelines on the management of disasters to include the responsibilities and functions of the various agencies involved (NSC,1997). In carrying out its responsibilities, NSC established the Disaster Management and Relief Committee (DMRC) with the major aim of coordinating disasters at the three different levels, namely: Districts, States and Federal.

The main functions of the DMRC (include the following (NSC,1997):-

- Formulation of policies and strategies at the federal level and implementation at the state and district levels.
- To ensure sound coordination among the agencies involved.
- To determine the principal emergency agencies.
- To activate the Disaster Operation Control Center at District, State or Federal level.
- To coordinate and mobilize resources and logistics available both from government agencies and the private sector.
- To coordinate assistance and rehabilitation to disaster victims.
- To carry out post mortem analysis of the disaster.

In Malaysia the main agencies involved in disaster management (NSC,1997) include the following:-

- The Royal Malaysian Police
- The Royal Malaysian Army
- Special Malaysia Disaster Assistance and Rescue Team (SMART)
- Malaysian Meteorological Service (MMS)
- Drainage and Irrigation Department Malaysia (DID)
- The Public Works Department (PWD)

- Social Welfare Department
- The Local Authority
- Non-Governmental Organizations (eg. Malaysian Red Crescent Society and Scout Society)
- Civil Defense Department
- International Cooperation

Geographically and tectonically Malaysia was considered safe from severe hazards threat such as those attributed to plate tectonic movements, atmospheric low-pressure systems and volcanic eruptions.

However Malaysia did have her fair share of environmental hazard threats in the form of periodic monsoon and urban floods, landslides, episodic pollution and drought. In the last decade or so these events had increased both in terms of magnitudes and frequencies and had created much discomfort to the Malaysian people.

The potential risk of environmental hazard and the impact of consequent disaster on Malaysia would pose two severe setbacks, namely the direct loss of existing national assets in various forms and the diversion of national resources and effort away from ongoing subsistence and development. This had indicated that Malaysia need to develop a comprehensive approach to hazard management in order to reduce the occurrence of potential disasters (NSC,1997). To be effective this comprehensive approach would need to cover all aspects of disaster management cycle within appropriate balance of each component of response, development, prevention, mitigation and preparedness.

Though Malaysia in general and Kedah in particular were considered safe from severe hazard threat there would be no guarantee that such disaster would not occur in the near future. For example on 26th December 2004, a devastating tsunami claimed 76 lives in Malaysia and destroyed properties along the coastal areas of northwest peninsular Malaysia. The states of Perlis, Kedah, Penang, Perak and Selangor were affected. As mentioned at the outset, The National Security Division under the Prime Minister's department is the organization responsible for coordinating disasters in the country. The national disaster management and relief Committee chaired by the Deputy Prime Minister acts as the national mechanism for coordinating of disaster management activities

Whilst there appear to be full agility of disaster preparedness mechanism at both the national and state level. Similar mechanism at district level was not left unattended systematically. At district level if disaster strikes at the outset this would be handled by the relevant agencies through the

mobilization of whatever resources available locally.

Once report on disaster was lodged, the district police chief and district fire brigade officer would as Commander and Deputy Commander respectively in activating the rescue works assisted by prime rescue agencies and other supporting rescue agencies. At this stage, the District Officer would chair the DMRC, thereby operationally managing the disaster search and rescue operations at the district level.

The objective of this paperwork is to ascertain the existence of relationship between the knowledge and practice of D20 and also whether the knowledge and practice of Directives No. 20 contribute to disaster preparedness factors.

The scope of Directive No.20 would cover three levels, namely: (i) national; (ii) state; and (iii) district. But due to time and financial constraint, this research was design to survey the activities of with regard to knowledge and practice of directive No. 20 at the district level in Kedah. Since the disaster Management and relief Committee at the district level involved representative from relevant agencies, respondents were selected from the DMRC at various districts in Kedah.

2.0 DIRECTIVE NO.20

Malaysia has an integrated disaster management system to deal with the most kind of disaster anticipated. This integrated system is known as the Directive No. 20: The Policy and Mechanism on national Disaster Management and Relief (NSC,1997). The directive tried to create systematic coordination among agencies involved in disaster management as well as relief and rehabilitation.

This directive was issue by National Security Division (NSD) of the Prime's Minister Department in 1997. It comprised of 29 titles and 13 appendixes. The objective of Directive No. 20 is to provide a policy guideline on the disaster management and rescue on the land in accordance to disaster level. It is also to provide a mechanism for management that decides on the roles and responsibilities of agencies that are involved in combating disaster.

Under Directives No.20(NSC,1997) disaster is defined as a sudden event, very complex in nature and causing fatality, lost of properties or environment and causing morbidity to the local society. This event requires frequent and excessive handling that involved resources, tools and manpower from many agencies with effective coordination which probably involving complex action and long period of duration. Events of

disaster that fall under the ambit of this directive include:

- Natural disaster such as flood, storm, drought, coastal erosion, landslide or disaster arising from storm and heavy rain..
- Industrial disaster such explosion, fire, pollution and leaking of hazardous materials from factories, plants and industrial centre that process produce and store such materials.
- Accident that involve transportation, drainage and transfer of dangerous materials.
- Collapse of high rise buildings and special structures.
- Air disaster involving places with building and people.
- Train collision or derailment.
- Fire involving big area or fire in high rise building or special structure where they are many peoples.
- Collapse of hydro dam or water reservoir.
- Nuclear accident and radiology.
- Emanation of toxic gasses at public places.
- Haze that cause environmental emergency that threaten public health and order.

According to the Directive the disaster management handling will be regulated based upon the disaster level as mentioned below:-

2.1 Level I Disaster

An under controlled local disaster that has no potential for further outbreak. This is expected to be less complex and may result in small loss of lives and properties. This type of disaster will not be detrimental to the daily routines of the people at large. Authorities at the district level will have the capacity to control and manage the situation through the agencies of the DMRC with restricted help from outside.

2.2 Level II Disaster

This will be a more serious disastrous event happening in a larger area or exceeding two districts and has potential for an outbreak. There may be potential for heavy loss of life and properties. This event would normally impede daily activities of the local people arising from demolition of infrastructure. Naturally, it is more complex from Level I Disaster and poses a lot of difficulty in terms of search and rescue. The local DMRC would handle this situation without or with limited outside help.

2.3 Level III Disaster

Originated from level II Disaster and is characterized by extreme complexity or the disaster

has taken place through wide area or exceeding two districts. This will be handled by the authorities at the federal level without or with assistance from overseas.

Furthermore DMRC was established with the purpose of handling disaster according to the levels specified, the DMRC will be organized as follows:-

- District level of DMRC for Level I Disaster.
- State level DMRC for Level II Disaster
- Federal level DMRC for Level III Disaster

When a disastrous event occurs the DMRC will be responsible for initiating following actions:-

- To evaluate the situation and determining the disaster level and scope.
- To formulate action plan for managing disaster.
- To determine capability in disaster management.
- To determine the types of assistance required from higher or outside authorities.
- To surrender or take over the disaster management based upon evaluation of event

District DMRC will comprise of 15 members representing various agencies involved in disaster management and relief works at the district level. The committee is headed by the District Officer and deputy Director of National Security Division acts as the secretary. Other committee members are District Police Chief, District Fire Brigade and Rescue officer, District Health Officer, District Engineer from Public Works Department, Representative from the Malaysian Arms Forces, Secretary of Town or District Council, District Social Welfare Officer, Branch Chief Civil Defense, District Information Officer, District Engineer from Drainage and Irrigation Department, District RELA Officer, District Manager Telekom Malaysia and District Manager Tenaga Nasional Berhad.

3.0 LITERATURE REVIEW

Disasters are extreme environmental events that adversely affect all areas in the world. Natural or unnatural disasters cause excess morbidity and mortality in both unpredictable and predictable ways. As vulnerability to disasters has increased, greater attention has to be directed to reducing risks associated with its occurrence through the introduction of planning to improve operational capabilities and mitigation measures that are aimed at reducing disaster impacts. Mitigating the effects of disaster requires the use of all component cycle of disaster management rather than focusing only on the crisis management portion of this cycle. In the past when a natural disaster occurred, government will follow up the disaster with impact

assessment study, response recovery activities and reconstruction activities will take place to return the region or locality to its pre-disaster state. Disasters were viewed as isolated events and were responded to by governments and relief agencies without taking into account the social and economic causes and implications of these events. In short, disasters were considered as emergencies and in several instances disastrous situations occurred due to lack of adequate preparedness.

The losses (human and assets) from disasters have increased despite advanced human interventions. Recurring losses from recurring disasters have led to paradigm shift from a traditional relief approach (where communities are considered as “victim” and “beneficiaries” of assistance) to disaster preparedness (a more holistic and long-term approach which incorporates vulnerability reduction as part of the development planning process). This comprehensive approach recognizes that disaster reduction is most effective at the community level where specific level needs are met.

Creating awareness about the local vulnerabilities and ensuring participation of local communities in disaster reduction interventions as well as preparedness initiatives are proving to be more effective. Physical, social and economic risks can be adequately assessed and managed at the community level and this understanding has resulted in a more focus on community-based approaches. Shaluf and Ahmadun (2006) reviewed the disaster types in Malaysia and the following have been noted:

- Disasters can be classified into natural, man-made and hybrid disasters.
- Natural and / or man-made disasters can trigger subsequent disasters.
- Malaysia experienced natural, man-made and subsequent disasters.
- The natural disasters were 49 percent of total disasters. Most of the natural disasters were resulted from the heavy rains. The landslides were 26 percent of the natural disasters.
- Malaysia has experienced 18 man-made disasters. The man-made disasters were about 46 percent of the total disasters.
- Malaysia has experienced 10 technological disasters. The technological disasters were 56 percent of the man-made disasters. Most of the technological disasters occurred last decade..
- Malaysia experienced two subsequent disasters (haze) which resulted from forest fires.
- Setting up of advanced warning systems which forecast the impending natural disasters can reduce the impacts of the natural disasters. The consequences of the

natural disasters also can be reduced through an effective disaster management.

- Technological disasters can be prevented or reduced through good design, operation, maintenance and inspection activities.
- The haze problems can be reduced through the implementation of the necessary measures which were recommended by the HAZE action plan.

Although Malaysia is geographically outside the Pacific Rim of fire and is relatively free from any severe ravages and destruction caused by natural disasters such as earthquakes, typhoon and volcanic eruptions, nevertheless the country is subjected to monsoon floods, landslides and severe haze episodes.

A study conducted by Mileti and Paul (1992) on the disaster preparedness in Hawaii, concluded that more frequent inter-agency drills should be done to improve the disaster preparedness. The authorities should also increase funding for family emergency preparedness and local community response teams. The emergency response coordinators should conduct continuous training to make sure that they are more prepared. Metri (2006) proposed Quality Circle (QC) framework in India to enable the disaster that occurred can be tackled speedily. Owing to the direct involvement of public, the proposed framework strengthens the knowledge and awareness on disaster management which in turn helps towards disaster preparedness and disaster mitigation effectively.

In Malaysia, Billa, Shattri, Mahmud and Ghazali (2006) have proposed a spatial decision support system (SDSS) technology in flood disaster management that incorporate capabilities in the areas of dialog between system component, data acquisition, storage and retrieval and data modeling and manipulation. These capabilities broadly involve the sharing of interactive mapping tools, evaluation of results by multi-criteria evaluation techniques, visualization and display of results. A well design SDSS for flood disaster management should thus present a balance among these three capabilities. The efficiency and usefulness of flood forecast and warning are not only enhanced through the interaction of the various stages and components of system with and the potentially affected population but equally important is how the forecasts influence timely decision making and are used effectively by the protagonist in the flood management and mitigation process. Flood disaster management comprises of detection, forecasting and warning component for which various decision making criteria will be promoted by interest groups (Billa et al., 2006). Flood forecasting involves the receiving and interpreting of flood modeling data.

Although no two disasters are exactly alike, it is clear that many aspects of the full life cycle of any events including mitigation, preparedness, response and recovery activities did share some common elements. Hence, many researchers attempted comparative analyses of disaster events through well-planned research designs (La Porte & Consolini, 1991), opportunistic reconstructions (Mileti, 1975) or syntheses of published results (Mileti & John, 1990); (Drabek, 1969). Others took a mitigation focus and examined the institutional dynamics of emergent regulatory systems that were designed to reduce risk (Poole, 1997; Kingdon, 1984; Goodman, Saxe & Harvey, 1991)

4.0 THEORETICAL FRAMEWORK

The theoretical framework will show the interrelationships among the variables studied. The dependent variable is the “Disaster Preparedness” in which its variation had been described by the independent variables which are the “Knowledge of Directive 20” and the “Practice of Directive 20”.

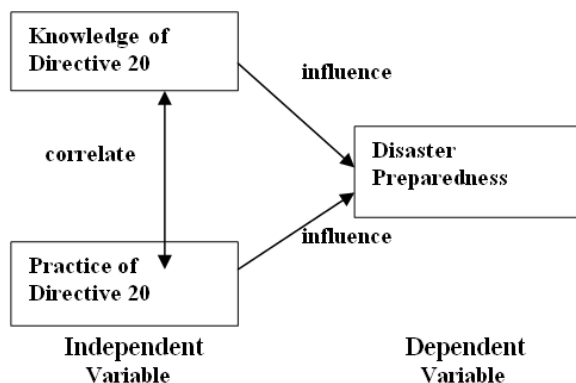


Figure 1: Schematic Diagram of the Theoretical Framework

5.0 METHODOLOGY

This paperwork is a part of a research done on the subject matter. One of the purposes of the research is to ascertain whether knowledge of Directive 20 and its practice amongst DMRC at the various districts contributes to disaster preparedness factor. It's a quantitative research and employed a hypothesis testing approach of investigation.

The unit of analysis of this study is individual who are the representative from various agencies that form the district DMRC. Essentially there are 15 members per DMRC for each of the 9 districts surveyed. The sampling design used is the proportionate stratified random sampling. For data collection about 120 questionnaires had been mailed to the respondents but the response rates were low (in this case the response was 11.6%

only). With such a very low return some of the required test and analysis cannot be performed. To overcome it interviews method has been used thus more time were needed to cover the 9 districts. As a result additional 34 more respondents manage to be interviewed making the final number of respondents to 48 or 40% of the sample.

A cross sectional study approach has been taken since the data was gathered just once over a period of time. This research was carried out in a natural environment where work proceeded normally or in other words in a non-contrived setting.

The development of the research instruments was mainly based upon the Directive 20 (D20) issued by the National Security Division of the Prime Minister Department and some literatures on disaster management preparedness. D20 would require member agencies of the DMRC to have sufficient knowledge on disaster management and relief works. This includes the need to gather information on potential risk of disaster, search and rescue operation must be performed smoothly, identification of transfer and relief centre, coordination of disaster aids, activation of disaster operation center (when disaster has occurred at level I), performing post mortem and identifying weakness of post disaster phase, preparation of necessary report and allocation of tasks amongst committee members. D20 had also stipulated actions of agencies involved which conform to the practice of this directive. This includes reviewing of disaster situation, identifying disaster's level and scope, charting action plan, identifying types of external aids and assistance, responsibility to transfer and take control of the disaster management situation and determining capabilities to execute disaster rescue and relief works.

Based on the above inputs, questionnaire was developed to be used in this research. It was organized into four parts, namely: Section A – Departments background (comprising of two parts – membership and district); Section B – Knowledge of D20; Section C – Practice of D20; and Section D – Disaster Preparedness. The reliability test performed on the instruments used indicated that all variables recorded a Cronbach Alpha score of more than 0.85 (average score 0.9109).

The theoretical framework will show the interrelationships among the variables that are deemed to be integral to the dynamics of the situation being investigated. The dependent variable in this model is the “Disaster Preparedness” in which its variation is described by the independent variables “Knowledge of D20” and “Practice of D20”. The alternate hypothesis stated that knowledge and practice of D20 will both explain the variance in the disaster preparedness.

6.0 FINDINGS

A total of 9 districts had been selected for this survey. Namely: Kubang Pasu, Kota Setar, Padang Terap, Pendang, Kuala Muda, Baling, Yan, Kulim and Bandar Bahru. There are altogether 48 respondents comprising of the various agencies that make up the DMRC at the district level.

Pearson Correlation had been used to describe the relationship between the two continuous variables, namely the knowledge of D20 and practice of D20. The test confirmed that there is a significant positive relationship exists between knowledge of D20 and practice of D20 ($r = 0.867$, $p < 0.05$). Thus H_0 is rejected and H_1 is accepted at 95% confidence level. Knowledge of D20 amongst DMRC members at district levels positively associated with practice of the D20.

This shows that the members of the DMRC at the district level know very well their roles during and after the emergency situation arising from any disastrous events taking place in their respective district. Members of the agencies within the DMRC at district level having adequate knowledge of D20 to ensure smooth activation of disaster search and rescue work in the event of disaster's strike. The agencies involved in disaster management are required to prepare, update and apply the Standard Operating Procedure (SOP) at their respective agencies in performing the rescue works during the disaster period. The SOP will have to comply with the D20 and any changes thereof will require the agencies to refer to the National Security Division (NSD).

This hypothesis is consistent with earlier studies in which education can influence positively the nature, intensity and distribution of traumatic and disaster stress reactions amongst rescue agencies in managing disaster situation (Bolin & Klenow, 1988; Eng, Hatch & Callan, 1985; Gerrity, 1994; Goodman, Saxe & Harvey, 1991; Riad & Norris, 1996; Walls & Zarit, 1991).

Multiple Regression has been used to ascertain whether the knowledge and practice of Directives No. 20 contribute to disaster preparedness factors. The test confirmed that both the independent variables explained 86 per cent ($R^2 = 0.860$) of the variance in disaster preparedness, which is highly significant as indicated by the F-value ($F = 137.651$, $p < 0.05$). It indicates that both "knowledge of D20" and "practice of D20" contribute to the prediction in "disaster preparedness". Therefore we can accept H_1 that both variables (knowledge and practice D20) significantly predict "disaster preparedness" at 95 per cent confidence level.

7.0 CONCLUSION

The Directive 20 is no doubt is an effective mechanism in disaster management and relief effort but the problem with Malaysia is that this mechanism is not being put to extreme test as Malaysia is lucky to be located in a relatively safe part of the world away from many major natural disaster. It has always be a case to disaster management in Malaysia to be rather on the reactive mode rather than on the proactive mode as in many instances our response is only after disaster has occurred. This indicates that Malaysia need to develop a comprehensive approach to hazard management in order to reduce the occurrence of potential disasters. To be effective, this comprehensive approach clearly needs to cover all aspects of the disaster management cycle and needs to include an appropriate balance of each component of response, recovery, development, prevention, mitigation and preparedness.

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