

Managing Complex Environment through Implementation of Cobit Principles: An Interpretation of the 2014 Flood at Kemaman, Terengganu

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Abstract:

Flood in Malaysia is considered as one of the major disaster and the impact that it brings need to be controlled and monitored. The governance of flood management can be improved to encourage better planning and decision making among agencies in reducing the impacts of the disaster. This article seeks to propose COBIT as an approach to address the issues related to flood management. The COBIT 5 framework can be adapted into flood management by identifying the roles and responsibilities, ways to handle the incidents during the disaster and to improve communication among stakeholders involved. A qualitative field study is employed in identifying the most suitable COBIT principles that can be adapted into flood management practices in Malaysia. As a result, this paper presented COBIT suitability in managing the disaster management practices within the context of flood disaster in Malaysia.

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1. INTRODUCTION

Northeast Monsoon in December 2014 was considered as one of the worse flood that happened in Malaysia, and had inundated several states throughout Malaysia that included Terengganu, Pahang, Kelantan, Perak, Johor, Selangor, and Perlis (Societies, 2014). Although these states were critically hit by the disaster, the district of Kemaman in Terengganu reported a milder impact. Proper preparations were made by implementing the well-constructed Standard Operating

Procedures. These includes good information repository of the victims and stakeholders, definition of clear roles and responsibilities and well-stocked relief centres.

The disaster management practices of Kemaman was regarded as an exemplary standard that could be adopted by other flood-prone areas in Malaysia as reported by (Bernama, 2014). Therefore, this study aims to gain insight on the Kemaman Standard Operating Procedures (SOP) as to how it was able to minimize the impact of the flood

disaster of December 2014. The results from interviews and site visits were transcript and plotted against processes in COBIT 5. The interview results are used to understand the problems and incidents faced during the flood management activities as well as the process in handling the problems and incident.

2. BACKGROUND OF RESEARCH

The occurrence of the dramatic flood that hits the country had caused significant losses of live and property close up to RM 1 Billion (Richard, 2015), which saw the Government of Malaysia, with other organization bodies to reconsider a better plan for addressing flood problems. From the hard structure planning to the soft structure planning, Malaysian have developed few flood mitigations under the Department of Irrigation and Drainage (DID) and the implementation of the Directive No.20. However, managing flood is chaotic, and it required a dynamic planning since every disaster happened is unique in nature (Marini, Mohammad, Azizah, Noor, & Siti, 2014); (Magiswary, Murali, & Maniam, 2014). Although, flood management is chaotic because of its dependence on the nature of the disaster itself, but, in 2014, SOP Kemaman, has been recognized as an SOP that meet the Gold Standard in the management of floods in that areas.

In Malaysia, NSC Directive No.20 and Fixed Operation Regulation (PTO) are the main instru-ments focus on managing the disaster generally (Zaharah, Zaiton, & Mohd, 2013); (Mohamad & Shazwani, 2015). However, according to (Zaharah, Zaiton, & Mohd, 2013), the Directive No.20 is classified as not a comprehensive instrument in managing flood because of the generalization of the content therefore, every organization is demanded ofhaving their own specific PTO in

managing the flood. Issues that worries researchers in governance of flood is the execution of flood management plans. Thus, it requires an improved governance instruments and flood plan for better execution of the existing SOP and PTO while dealing with the flood. Since Control Objectives for Information and Related Technology (COBIT) is a widely accepted framework and best practices for complex information technology management, a review of flood management using COBIT principles was carried out. The aim of the review is to assess the suitability of adopting COBIT principles for development of new flood management plan, specifically for the Kemaman SOP.

2.1 Brief Overview of COBIT Principles

COBIT is one of the Information Technology Management framework aligned with other framework such as ITIL, is a widely accepted framework and best practices within the fields. It has been studied for possible adoption into flood management since COBIT has been used in business arena as a possible framework in managing and controlling information and information technology risk and vulnerability in the complex business organization. An exploration into COBIT designed by Information System Audit and Control Association (ISACA), is deemed as a possible tool in creating a framework from which the governance of flood management (FM) could be produced and could help in harnessing in area other that business enterprises (Marini, Mohammad, Azizah, Noor, & Siti, 2014). COBIT principle explained its function and purpose to meet the business objective specifically in the areas of assurance, security, risk and control, and deliver value to the business. In this paper, we present outcome of the study from the fourth principle inside

COBIT, which is to enable a holistic approach. Enabling a holistic approach is the factor that, individually and collectively, influence whether something will work in the implementation (Ampe, 2017). Kemaman practices for the flood management is deemed suitable to be adopted into principles number four of COBIT, as the finding shared the same enabler between Kemaman's flood management and COBIT principles.

3. METHODOLOGIES

In this research, identification of gaps was first made through review of literatures with regards to flood in Malaysia within the years of 2010-2015, practices in governing and managing the recurring and worsening condition of floods in Malaysia and disaster handling through Hyogo Framework for Action and Sendai Framework for Disaster Risk Reduction. The review was aimed to establish a baseline for the Malaysian practice in governing and managing flood disaster. The exploration for the baseline led to a field

investigation to understand how Kemaman, Terengganu was able to minimize the impact of flood despite the unprecedented condition of the disaster. Where neighboring states suffered the worst recorded loss, the District of Kemaman were applauded for its success of excellent flood handling. On site interviews with key people of flood incident, coupled with post-disaster visits to relief shelter, command center and locations badly ruined by the disaster, have provided suggestion to what are the factors and characteristics that have marked the Kemaman practice as being the better practice. Further, result from finding were adopted into principle number four in COBIT 5 of seven enablers to establish and compare the Kemaman experiences with well accepted framework in IT Management. Critical analysis was carried out at the end of the study to provide recommendation over the Kemaman SOP for better planning on flood management. Figure 1 below, illustrate the methodologies involved in this studies.

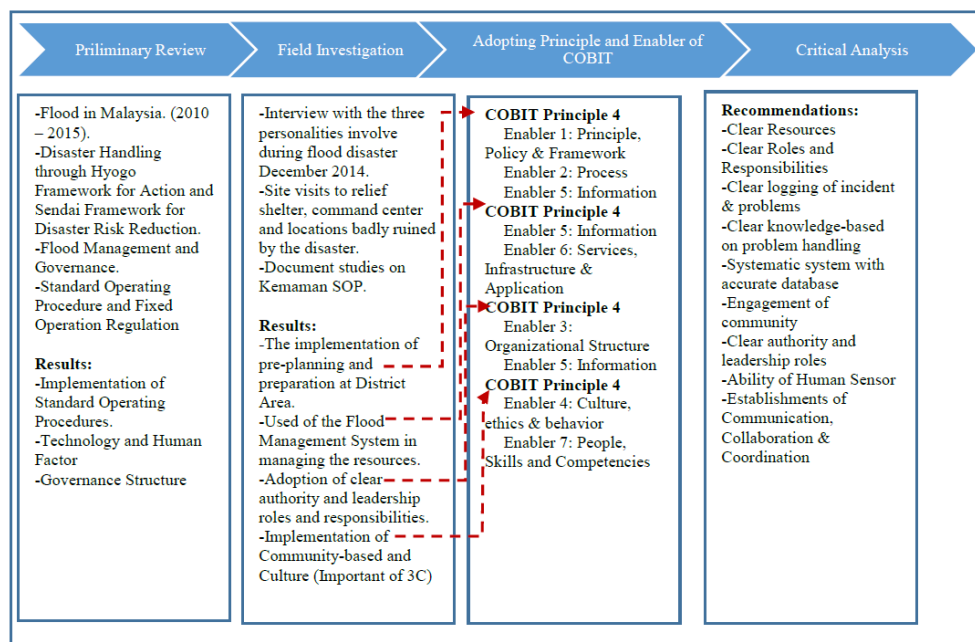


Figure 1. Methodologies involved for investigating the Kemaman Experience on December 2014 Flood Management

4. FINDINGS

Finding from the Kemaman has shown that flood management was well prepared and planned to reduce the impact informs of assurance, security, risk and control, and deliver value to the victims. From interview and site visits, result was then compared with one of COBIT principles, to form similarity of the objectives and to prove that COBIT principles can be adopted into flood disaster as claimed by (Marini, Mohammad, Azizah, Noor, & Siti, 2014). The finding was discussed in following section. Enabling a holistic approach has highlighted seven categories of enablers which define the different objective to be achieved. Figure 2 show the COBIT 5, seven enabler, which later is adopted into Kemaman experiences in managing flood.

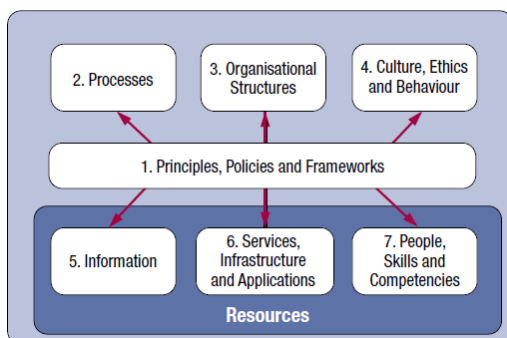


Figure 2. COBIT 5, Seven Enablers

Information gathered during the interview and site visits on December 2014 Flood in Kemaman will be discussed based on seven categories of enabler in COBIT Principles as follows:

4.1 Principles, policies and framework.

Principles, policies and framework are official documents that describe behavior of disaster practitioners into practical guidance used for disaster management activities. These documents explained the disaster activities, and action to be taken with the specified person-in-charge, agencies involve,

stakeholder information's, command and control, and any related information of the flood management. The general SOP and specific PTO created by the government and organization are the best combination in executing the correct plan before, during and after the flood.

The use of the SOP and PTO may help the management team to organize and prepare necessary asset and activities including the evacuation center, food and supply, search and rescue team, rescue assets, expenses, and other related information. However, the SOP and PTO created need to allow flexibilities and simplicity based on skill, experience and knowledge over the management process because rapid changes of environment during the flooding. Hence, the SOP and PTO must be flexible enough to allow unexpected opportunities and able to adjust to new environment, depending on the demand and complexities of flood situation(Mohd, 2016). It is evident that flood management in Kemaman relied on having SOP and PTO as a guideline for managing a process, which is mapped in one of the COBIT principles.

4.2 Processes

Occurrence of past flood, training and simulation conducted by the land and district office that involved head of villagers has provided valuable lesson to be learned by all the stakeholders in flood management. The information and experiences gathered from these activities is considered as the best guide in establishing an organized set of processes, practices and activities, which used before, during and after flood. A well and prepared processes arose from the lesson is one of the best way to develop flood management plan. The result, including information and feedback gathered during the past flood, training and simulation will be considered and

further discussed at the district level to develop a better execution of flood.

These allow the management in having better procedures, and well prepared processes in event of flood. COBIT shared the same principle of having well prepared process for better understanding overall activities in executing the problems. Input been collected from the victims, past-flood and any related resources in making sure Kemaman having an organized plan and executing the correct procedures.

4.3 Organizational structure

A main key decision maker in event of flood is District Officer, who is directly assigned as Head of Disaster Operation when a flood hit. Issues arise will be tabulated and discussed at District Operation Room located at Land and District Office. The issues to be explored cover all aspect such as livelihood, economic and result are based on consensus from all relevant disaster agencies, with the final approval come from the District Officer.

Besides of including the local people in a team of flood management plan, Kemaman has improved its practice by having another manpower for key decision maker that is located at the disaster area to monitor and spontaneously react based on the situation and flood level. This proved that it is vital for everyone involved in the team to have good skills, which may based on the experience, knowledge, and environment understanding that may seriously provide advantages in executing effective and efficiency flood management plan. COBIT highlighted importance of having well organizational structure in executing correct plan of complex environment. This can be seen where at the end of the enabler, it required the organization of having good activities and decisions based on the issues tackled.

4.4 Culture, ethics and behavior

One of the best ways in handling flood is the establishment of Village Community Committee (VCC), complete with roles and responsibilities for each individual. The committee clearly and specifically include the residents from flood-free areas, local peoples and head of villages, identified from past flood, training and simulation conducted. The involvement head of villages as the head of evacuation center, while local peoples gathered in creating teams for search and rescue, with support from residents of flood-free areas have bring advantages to the management of flood in reducing the number of death and well organized food and supply.

The involvement of local people and head of village has proven that the 3C's (Coordination, Collaboration and Communication) in flood management are manageable due to having of local knowledge and understanding of local People, Places and Practices (3P). The Coordination, Collaboration and Communication between the stakeholder, NGO's and management team are easily managed by the help from the VCC. Well understanding of culture, ethics and behavior among the team is another point highlighted by COBIT in a way of having better plan while dealing with the complex issues. This is another reason of Kemaman was able to minimize the impact of the flood in December 2014.

4.5 Information

As highlighted in COBIT, Information is an important element in any situations because of the understanding depends from information shared among stakeholders. In a case of flood, the input from river water level that lead to the overflow and flood is been monitored by the district and land office. The water level need to be monitored closely as

heavy rain is the main cause of flood in Kemaman. This type of information is very important to the village and areas that will be affected by flood since they need to prepare the necessary equipment's in getting ready to move to the evacuation center. Monitoring water level via closed-circuit television (CCTV) is one of the ways to gather the information in preparing the villagers for the incoming flood.

Furthermore, the use of local language to inform the villages regarding the current situation is another type of direct information that may help the victim to understand the phenomena and risks that they will face. Hence, the villages will clearly understand the situation and making better decision. Based on experience from past flood, used of human sensor is another type of information that brings advantages to the management and other agencies team. In some situation, total reliance on technology is not the best solution, since some time technology may not provide accurate and specific information such as rain fall reading, according to a statement from Mr. Wan Abdul Hakim, State of Air Putih Assemblyman. Thus, knowledge and understanding from the expertise in area of flood which classify as human sensor will then bring better solution and preparation can be made early.

4.6 Services, Infrastructure and Application

District of Kemaman Integrated Flood Disaster Management Portal developed by MCMC is another tool used by Kemaman Land and District Office in managing the flood disaster. It is a complete system that provides important function such as residents' information, evacuation center with its capacities, list of stakeholder and NGO and any flood related information. The system

allow the management to manage the victim information before, during and after the flood; where before the event, all the resident need to fill up their information into the system; while during the event, the system help in identifying the number of victim placed on the specific evacuation center on top of providing the GPS information. After flood, the system helps management in organizing and dis-tributing the help to the victim such as food and supply, money, and any matters related to the live-lihood. It also helps the management team in having an organized plan in event of flood. This is similar to COBIT, where to achieve objective set by organization, the used of system and support tool bring advantages either for the organization itself or for the consumer (in this situation, its victims).

4.7 People, Skills and Competencies

In managing the flood, skilled people will provide the biggest advantages to the team. Skilled people basically can be categorized as person with vast experiences in flood, which typically is the local people, or person involve in managing past flood. Skilled person has wide knowledge and understanding of environment when it related with the flood, such as important location to be fo-cused, before attending to other area.

For any issues arise, there is a need of skilled people to troubleshoot the problems. Skilled peo-ple are one of factors that contribute and lead to successful execution of correct plan and solution emphasized in COBIT principles. Having people with vast experiences and information of manag-ing flood may lead to effective and efficient result in flood management.

As for COBIT principles adopted into other complex environment, based on discussion above, the principles proposed in

COBIT can be adopted into flood management plan for better solution and well organized framework of flood disaster. The main factor in ensuring a successful adoption of COBIT in flood management is to have a set of principle, policy and framework in managing any situation. Key players are also important in making sure principle, policy and framework executed correctly to meet the objective. Thus, COBIT principles can be used as guideline and later be adopted in building an effective flood management with the support of other principles in COBIT.

5. CONCLUSION

The finding then adopted into COBIT principle, to validate the theory from (Marini, Mohammad, Azizah, Noor, & Siti, 2014) where established COBIT principles can be fashioned into other field of complex environment. Finding from both COBIT and Kemaman practices shown that, COBIT principles can be used as guideline in preparing better executing plan across another field of management. Further studies on COBIT principles with other complex environment may strengthen theory from (Marini, Mohammad, Azizah, Noor, & Siti, 2014). The recommendation listed can be considered in a way of having a better plan and effective procedure of flood management. The exploration regarding the practices of flood management in other areas, may help government, NGO and private organization to develop well SOP and PTO in managing the flood in details.

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