DIGITAL HUMANITARIAN NETWORK (DHN) FRAMEWORK TO SUPPORT DISASTER RISK REDUCTION (DRR) IN SARAWAK, MALAYSIA

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A thesis submitted in
fulfilment of the requirements for the award of the
Degree of Master of Science in Technology Management

Faculty of Technology Management and Business
Universiti Tun Hussein Onn Malaysia

NOVEMBER 2022

For my beloved husband, mother and father

ACKNOWLEDGEMENT

The researcher would like to express her deep sense of thanks and gratitude to her mentor, philosopher and guide, **Assoc. Prof. Sr. Dr Noralfishah Sulaiman** and KANZU Research: Resilient Built Environment (RBE) for the support given throughout the duration for this research. Her dedication and keen interest above all her overwhelming attitude to help her students had been solely and mainly responsible for completing my work. Her timely advice, meticulous scrutiny, scholarly advice and scientific approach have helped me to a very great extent to accomplish this task. My completion could not have been accomplished without my husband's help and support throughout my degree and my family for giving me motivation.

The cooperation given by Sarawak government, Sarawak Multimedia Authority (SMA) and Sarawak Disaster Management Agencies (SDMAs) is also highly appreciated. Appreciation also goes to everyone involved directly or indirectly towards the compilation of this thesis. In the end, the researcher thanks profusely all the staff of KANZU Research: Resilient Built Environment (RBE) for their kind help and cooperation throughout my study period.

ABSTRACT

In Malaysia, over the last 10 years' time, economic loss from flood events has doubled, and one-third of all disaster incidents consists of hydrological phenomena like floods and storms. In Malaysia, flood disaster, along with other crisis events linked with it, is still the biggest challenge for the government and disaster management agencies to strategize and plan properly in order to come up with an efficient and effective plan. For the disasters, risk reduction activities will be implemented to reduce the impact of a disaster on the community and economy. In Malaysia, Sarawak is one of the most vulnerable states for flood disasters. This study was conducted for Sarawak, which is likely to have disastrous events, mainly floods, affecting the economy and human life. Sarawak needs to be digitally connected with all Sarawak Disaster Management Agencies (SDMAs) to fight disasters and build resilient communities. Multi-agency coordination has always been a solid foundation for Disaster Risk Reduction (DRR). A comprehensive grasp of each agency's duties and management cultures is required for effective collaboration. This research aims to examine the relationship of DRR and Digital Humanitarian Networks (DHN) that involved in Sarawak, Malaysia. Then, it will access the relationship of DRR with social media and multi-agency collaboration in order to manage disasters and their impact on DRR activities in Sarawak, Malaysia. This research used quantitative techniques and questionnaire survey to achieve research aim. The finding concludes that DHN, social media and multi-agency collaboration have positive and significant relationship with DRR in managing disasters in Sarawak. The research objectives of this study proved that DRR activities in Sarawak can be improved through social media, DHN and multi-agency collaboration, presented in a form of framework as well. However, there is a need of DHN in Sarawak along with social media and multi-agency collaboration to mitigate the impacts of disasters in Malaysia. The study will open new opportunities for crisis reporting, redraw the existing constraints of safety, access, speed, and consequently may influence the quality of coverage and the visibility of some crises over others.

ABSTRAK

Kerugian ekonomi akibat bencana banjir di Malaysia semenjak sedekad yang lalu telah meningkat melebihi dua kali ganda berbanding tahun-tahun sebelumnya, dan satu pertiga daripada kejadian bencana yang berlaku di negara ini adalah terdiri daripada fenomena hidrologi seperti banjir dan ribut. Di Malaysia, bencana banjir serta musibah dan bencana lain yang berkaitan dengannya terus menjadi cabaran yang terbesar bagi pihak kerajaan dan agensi pengurusan bencana untuk menyusun strategi dalam menghasilkan usaha serta rancangan yang cekap dan berkesan. Aktiviti pengurangan risiko perlu diterapkan serta dilaksanakan oleh pihak yang bertanggungjawab bagi mengurangkan kesan sesuatu bencana kepada masyarakat dan ekonomi. Di Malaysia, Sarawak merupakan salah satu negeri yang mempunyai risiko tertinggi serta paling terdedah kepada bencana banjir. Sehubungan dengan itu, negeri Sarawak telah dipilih untuk menjadi rujukan dalam kajian ini merujuk kepada fakta bahawa kejadian bencana terutamanya banjir yang menjejaskan ekonomi dan kehidupan rakyat sering terjadi di Sarawak. Sarawak perlu dihubungkan secara digital dengan Agensi Pengurusan Bencana Sarawak (SDMA) untuk bersama-sama memerangi bencana dan membina komuniti yang berdaya tahan. Penyelarasan pelbagai agensi menjadi asas yang kukuh untuk Pengurangan Risiko Bencana (DRR). Oleh itu, pemahaman menyeluruh oleh setiap agensi mengenai tanggungjawab dan budaya pengurusan amat diperlukan bagi mewujudkan kerjasama yang berkesan. Penyelidikan ini bertujuan untuk mengkaji hubungan DRR dan Rangkaian Kemanusiaan Digital (DHN) yang terlibat di Sarawak, Malaysia. Selain itu, hubungan DRR dengan media sosial dan kerjasama pelbagai agensi akan turut dibincangkan dalam usaha menangani bencana dan kesannya terhadap aktiviti DRR di Sarawak, Malaysia. Penyelidikan ini menggunakan teknik kuantitatif dan tinjauan soal selidik untuk mencapai matlamat kajian. Hasil dapatan merumuskan bahawa DHN, media sosial dan kerjasama pelbagai agensi mempunyai hubungan yang positif dan signifikan dengan DRR dalam menguruskan bencana di Sarawak. Objektif kajian dalam penyelidikan ini membuktikan bahawa aktiviti DRR di Sarawak boleh dipertingkatkan melalui media sosial, DHN dan kolaborasi pelbagai agensi, serta boleh dipersembahkan dalam bentuk rangka kerja. Oleh hal yang sedemikian, DHN serta media sosial dan kerjasama pelbagai agensi di Sarawak adalah amat diperlukan dalam usaha mengurangkan kesan bencana di Malaysia. Kajian ini akan membuka peluang baru untuk pelaporan krisis, perangkaan semula kekangan keselamatan, akses, kelajuan yang sedia ada, dan seterusnya dapat mempengaruhi kualiti liputan serta keterlihatan beberapa krisis berbanding yang lain.

CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

ADPC	-	Asian Disaster Preparedness Centre
AI	-	Artificial Intelligence
AM	-	Additive Manufacture
API	-	Application Program Interface
AR	-	Augmented Reality
AWAM	-	All-Women's Action Society
BRC	-	Building Resilient Communities
CDMRC	-	Centre for Disaster Management and Relief Committee
CDR	-	Community Disaster Resilience
CERT	-	Community Emergency Response Team
COBIT	-	Control Objectives for Information and Related Technologies
CPRC	-	Crisis Preparedness and Response Centre
DBMS	-	Database Management System
DDMRC	-	District Disaster Management and Relief Committee
DHN	-	Digital Humanitarian Network
DID	-	Drainage and Irrigation Department
DM	-	Disaster Management
DMOs	-	Disaster Management Organisations
DMRC	-	Disaster Management and Relief Committee
DRR	-	Disaster Risk Reduction
DSS	-	Decision Support System
FBO	-	Faith-Based Organisations
FDMRC	-	Federal Disaster Management and Relief Committee
GIS	-	Geographic Information System
HFA	-	Hyogo Framework for Action

ICT	-	Information and Communication Technologies
IDNDR	-	International Decade for Natural Disaster Reduction
IoT	-	Internet of Things
IR	-	Industrial Revolution
KSOP	-	Kemaman SOP
MAC	-	Multi-agency Collaboration
MCO	-	Movement Control Order
MHO	-	Malaysia Humanitarian Organisation
MIS	-	Management Information System
MOBILISE	-	A Collaborative Multi-agency Platform for Making Communities resilient
MOH	-	Ministry of Health
MSRI	-	Malaysian Social Research Institute
MVFRA	-	Malaysian Volunteer Fire & Rescue Association
NADMA	-	National Disaster Management Authority
NGOs	-	Non-Governmental Organisations
NHRI	-	National Human Rights Institution
NSC	-	National Security Council
OCHA	-	United Nations Office for Coordination of Humanitarian Affairs
SBTF	-	Standby Task Force
SD	-	Standard Deviation
SDMAs	-	Sarawak Disaster Management Agencies
SDMC	-	Sarawak State Disaster Management Committee
SFDRM	-	Sendai Framework Disaster Risk Management
SFDRR	-	Sendai Framework for Disaster Risk Reduction
UHP	-	Ushahidi Haiti Project
UI	-	Universal Integration
UKPN	-	State Security and Enforcement Unit
UN	-	United Nations
UNICEF	-	The United Nations Children's Fund
UNISDR	-	United Nations (UN) International Strategy for Disaster

		Reduction
UNITAR	-	United Nations Institute for Training and Research
UNOSAT	-	United Nations Operational Satellite Applications Programme
UTHM	-	Universiti Tun Hussein Onn Malaysia
V&TCs	-	Volunteer & Technical Communities
VOST	-	Virtual Operation Support Team
WHO	-	World Health Organisation
WWF	-	World Wildlife Fund

LIST OF APPENDICES

CHAPTER 1

INTRODUCTION

1.1 Introduction

Across the world, both in developing and developed countries, Disaster management (DM) and Disaster Risk Reduction (DRR) have been of great importance globally. Out of natural and man-made disasters, floods are the most prevalent global disaster event affecting millions annually (UNISDR, 2019). In Malaysia, over the last ten years, according to EM-DAT (CRED, 2020), economic loss from flood events has doubled, and one-third of all disaster incidents consist of hydrological phenomena like floods and storms. In Asia, among the ASEAN states in the high-risk category, Malaysia has the highest percentage (67%) of the population exposed to floods among ASEAN states, potentially impacting health outcomes and livelihoods of around 4.8 million people living in high environmental risk areas (CRED, 2020). Therefore, developing a long-term sustainable policy of a resilient community at the local levels is a key outcome for the National Disaster Management Authority (NADMA), Malaysia, and helps guide policymaking at the state and local levels (Maidin et al., 2019).

The term "disaster" comes from the French word "*desastre*," which is a mixture of two words: "*des*," which means "*bad*," and "*aster*," which means "*star*." As a result, the word denotes a 'Bad or Evil star.' According to Oxford University Press (2018), a disaster is a sudden accident or natural disaster that causes significant damage or death to people, plants, and animals. The United Nations defines disasters as:

> "a major disruption of a community's or society's functioning, resulting in widespread human, material, economic, and environmental losses that exceed the afflicted community's or society's ability to manage using its resources" - (UNISDR, 2009).

Many government organisations throughout the world have lately begun attempts to strengthen their disaster management (DM) capacities in response to the lessons and criticisms learned from recent large-scale disasters and recovery efforts. While a revision of DM capability may entail a transformation of organisational structures, business processes, and technical infrastructure across multiple organisations, the field of DM suffers from a lack of theoretical foundation. Disaster may occur rapidly, instantaneously, and indiscriminately and could be occurred in the form of natural or man-made (Vasilescu et al., 2008). Also, disasters are the ultimate test of emergency response capability as it disrupts thousands of lives every year and has lasting effects on people and property (Nilsson, Sjöberg, and Larsson, 2013). Furthermore, disasters can come in the form of hazards if vulnerable people are affected (Center for Excellence in Disaster Management and Humanitarian Assistance, 2016).

Disaster management organisations (DMOs) are groups that work to prevent, mitigate, and recover from unanticipated occurrences that negatively impact people or resources and jeopardise an organisation's ability to continue operating (Sulaiman et al., 2019). Any natural or man-made tragedy qualifies as an unexpected event. DMOs are in charge of planning for disasters before they occur and reconstructing society. DMOs may include various government agencies (e.g., Police, Fire, Medical Services), non-government organisations (e.g., UN, Red Cross), and some private sector first responder organisations (e.g., utility, transportation, healthcare, construction firms). The availability of good governance in DM is important to link as well as coordinate the relevant authority, the related agencies, and the community.

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