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MODEL OF SOCIAL MEDIA CRISIS COMMUNICATION FOR PREDICTING PUBLIC RESILIENCE

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By

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**MODEL OF SOCIAL MEDIA CRISIS COMMUNICATION FOR
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December 2021

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Many scholars have proved the application and effectiveness of technology in crisis
management and communication. In particular, social media has been effective for both
formal and informal communication during and after a crisis. However, what matters to
people when a crisis occurs is recovery, which involves resilience. Hence, researchers
must begin to experiment on how social media is helping people to recover from a crisis
and what social media task helps people recover quickly. Therefore, this study
investigates existing crisis communication models from literature to identify
commonalities within these models then proposes a social media crisis communication
and resilience model (SMCCR). Moreover, the objectives of the study are to find out the
impact of crisis response on social media interaction and public resilience, to determine
the direct impact of social media interaction on public resilience, and to investigate the
mediating effect of social media interaction on public resilience and the mediating effect
crisis response on public resilience.

An operational research framework comprising literature review, model development,
model validation, and result was adopted to address the research problem. An SMCCR
model was derived based on the synthesis and thematic analysis of existing theoretical
models. Specifically, situational crisis communication theory (SCCT), an interactive
crisis communication model (ICCM), STREMII model, and social media disaster
resilience model (SMDR) was adapted. A confirmatory study that involved an expert
evaluation, pilot test, and a survey was conducted. The expert evaluation was conducted
in two rounds with four experts, respectively. The first round was revised due to
aggregated ratings to improve the agreement among the experts. Subsequently, based on
the feedback of the experts, the questionnaire items were revised. 34 items were finalized
from the expert review and analyze by content validity index (CVI) and modified kappa
statistics. After passing the validation test, the instruments were pre-tested by 32
participants. The responses were assessed based on Cronbach alpha, regression model,
and the hypothesis was independently evaluated in process macro models. Afterward, a
survey was conducted with a population of social media users who had experienced the

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Covid-19 crisis and were practicing physical distancing in Malaysia. The final sample consists of 393 responses that were analyzed using variance-based structural equation modeling (PLS-SEM).

The reliability and validity of the SMCCR model were demonstrated through a confirmatory study. The findings revealed the relationships among model constructs, namely: crisis, crisis response, social interaction, and resilience. In this regard, all eight research hypotheses were supported. Descriptive statistics were also used to present the summary of the data collected in the study. The results of the investigation demonstrated the impacts of the SMCCR model in the real world and elucidated how it can assist crisis management organizations in understanding the impact of social media crisis responses and social interaction to improve the ability of the people to recover from the crisis. The study makes theoretical contributions by examining the role of social media crisis communication through crisis response and social interaction in addressing the impact of crisis communication on public resilience based on the theoretical lens of SCCT, ICCM, and SMDR. Likewise, the activities of crisis management to improve the ability of the people to recover from crisis quickly, the relationship between crisis, crisis response, social interaction, and resilience proves to be effective. This study offers empirical evidence that social media crisis communication influence people's ability to recover from the crisis through the mediation of crisis responses and social media interaction.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

MODEL KOMUNIKASI KRISIS MENGGUNAKAN MEDIA SOSIAL UNTUK MERAMAL KETAHANAN AWAM

Oleh

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Pengerusi : **Marzanah binti A. Jabar, PhD**
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Ramai sarjana telah membuktikan aplikasi dan keberkesanan teknologi dalam pengurusan krisis dan komunikasi. Khususnya, media sosial telah berkesan untuk komunikasi formal dan tidak formal semasa dan selepas krisis. Walau bagaimanapun, apa yang penting kepada orang ramai apabila krisis berlaku ialah pemulihan, yang melibatkan daya tahan. Oleh itu, penyelidik mesti mula mencuba bagaimana media sosial membantu orang ramai pulih daripada krisis dan tugas media sosial yang membantu orang ramai pulih dengan cepat. Oleh itu, kajian ini menyiasat model komunikasi krisis sedia ada daripada literatur untuk mengenal pasti persamaan dalam model ini kemudian mencadangkan model komunikasi dan ketahanan krisis media sosial (SMCCR). Selain itu, objektif kajian adalah untuk mengetahui kesan tindak balas krisis terhadap interaksi media sosial dan daya tahan orang ramai, untuk menentukan kesan langsung interaksi media sosial terhadap daya tahan awam, dan untuk menyiasat kesan pengantaraan interaksi media sosial mengenai daya tahan awam dan tindak balas krisis kesan pengantaraan terhadap daya tahan orang ramai.

Rangka kerja penyelidikan operasi yang terdiri daripada kajian literatur, pembangunan model, pengesahan model, dan keputusan telah diterima pakai untuk menangani masalah penyelidikan. Model konsep diperolehi berdasarkan sintesis dan analisis bertepatan model teori sedia ada. Khususnya, teori komunikasi krisis situasi (SCCT), model komunikasi krisis interaktif (ICCM), model STREMII, dan model daya tahan bencana media sosial (SMDR) telah disesuaikan. Satu kajian pengesahan yang melibatkan penilaian pakar, ujian juruterbang, dan kaji selidik telah dijalankan. Penilaian pakar telah dijalankan dalam dua pusingan dengan empat pakar. Pusingan pertama telah disemak semula kerana penarafan agregat untuk memperbaiki perjanjian di kalangan pakar. Seterusnya, berdasarkan maklum balas pakar, barangan soal selidik telah disemak semula. 34 item telah dimuktamadkan daripada kajian pakar dan dianalisis oleh indeks kesahihan kandungan (CVI) dan statistik kappa yang diubahsuai. Selepas lulus ujian pengesahan, instrumen telah dipra-uji oleh 32 peserta. Jawapannya dinilai berdasarkan alpha Cronbach, model regresi, dan hipotesis dinilai secara bebas dalam model makro

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proses. Selepas itu, satu kaji selidik telah dijalankan dengan populasi pengguna media sosial yang mengalami krisis Covid-19 dan mengamalkan penjarakan fizikal di Malaysia. Sampel terakhir terdiri daripada 393 respons yang dianalisis menggunakan pemodelan persamaan struktur berasaskan varians (PLS-SEM).

Kebolehpercayaan dan kesahihan model yang dicadangkan telah ditunjukkan melalui kajian pengesahan. Penemuan mendedahkan bahawa hubungan di kalangan konstruk model, iaitu: krisis, tindak balas krisis, interaksi sosial, dan daya tahan. Sehubungan itu, kesemua lapan hipotesis penyelidikan disokong. Statistik deskriptif juga digunakan untuk membentangkan ringkasan data yang dikumpulkan dalam kajian. Hasil siasatan menunjukkan kesan model yang dicadangkan di dunia nyata dan menghuraikan bagaimana ia boleh membantu organisasi pengurusan krisis untuk memahami kesan tindak balas krisis media social dan interaksi sosial untuk meningkatkan keupayaan rakyat untuk pulih daripada krisis. Kajian itu menjadikan sumbangan teori dengan meneliti peranan komunikasi krisis media sosial melalui tindak balas krisis dan interaksi sosial dalam menangani kesan komunikasi krisis ke atas daya tahan awam berdasarkan kanta teori SCCT, ICCM, dan SMDR. Begitu juga aktiviti pengurusan krisis untuk meningkatkan keupayaan rakyat pulih daripada krisis dengan cepat, hubungan antara krisis, tindak balas krisis, interaksi sosial, dan daya tahan terbukti berkesan. Kajian ini menawarkan bukti empirikal bahawa komunikasi krisis media sosial mempengaruhi keupayaan orang ramai untuk pulih daripada krisis melalui perantaraan tindak balas krisis dan interaksi media social.

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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

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Declaration by graduate student

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LIST OF ABBREVIATIONS

3Rs	Robust, Rapid, and Redundant
AVE	Average Variance Extracted
CB-SEM	Covariance Based Structural Equation Model
CCS	Crisis Communication Strategies
CERC	Crisis and Emergency Risk Communication Model
CR	Composite Reliability
CST	Channel Specification Theory
CVI	Content Validity Index
HTMT	Heterotrait-Monotrait Ratio of Correlations
ICCM	Interactive Crisis Communication Model
ICM	Integrated Crisis Mapping
ICT	Information and Communication Technology
I-CVI	Item Content Validity Index
IPMA	Importance-Performance Map Analysis
LM	Linear Model
MAE	Mean Absolute Error
MCO	Movement Control Order
NCC	Networked Crisis Communication Model
PLS	Partial Least Square
PLS-SEM	Partial Least Square Based Structural Equation Model
RMSE	Root Mean Square Error
SA	Situational Awareness
SARF	Social Amplification/Attenuation of Risk Framework
SCCT	Situational Crisis Communication Theory

SEM   Structural Equation Modelling

SLR   Systematic Literature Review

SMCC   Social-Mediated Crisis Communication Model

SMCMF   Social Media Crisis Management Matrix and Framework

SMDR   Social Mediated Disaster Resilience Model

UGT   Uses and Gratification Theory

VIF   Variance Inflation Factor

CHAPTER 1

INTRODUCTION

1.1   Background

The widespread adoption of technology has enabled crisis response and humanitarian development to be considered as the future of human progress and wellbeing (Qadir et al., 2016). The effort of crisis management is driven by advances in computing, communications, storage, processing, and analysis. Technology-driven emergency management is continuously evolving as a new research field. Each step to improve methods or tools can significantly contribute to saving human lives and resources. Emergency management, disaster management, and crisis management are often used interchangeably (Mijović et al., 2019). The role of disaster or crisis management is to coordinate efficient response to address communication, information, security, supply, lodging in a highly dynamic and uncertain environment (De Brito et al., 2016). The occurrence of a crisis, particularly a disaster, is hard to predict, but its effects can be minimized through enabling technologies (Starbird et al., 2010).

Social media has proven to be effective in helping the affected citizens and is important as an information source (Groen et al., 2017). Crisis management and communication are increasingly being challenged by the impact of social media as a forum for crisis communication. Social media builds upon crisis informatics is a concept that views emergency response as an expanded social system (Reuter et al., 2018) where it encourages stakeholders (i.e., public, emergency managers) to participate in generating and sharing disaster-related information to a broader audience (Kar, 2016). Crisis management evaluates what happened to increase resilience in future events (Palttala & Vos, 2012). Social networking sites are used as a forum for crisis communication (Iannarino et al., 2015). This pave the way for new questions, including how and to what purpose organizations will use social media to have interaction in inter-media dialog how neutral crisis management voices stay neutral on social media (Chewning, 2015).

Most extant research is based on the prevalent situational crisis communication theory (SCCT) (Coombs, 2018). However, certain theories from many domains have been adapted to solve the issues associated with social media communication. The majority of these studies focused on major or minor areas, including the stages of crisis (pre-crisis, crisis, and post-crisis), the response strategy employed by an organization or the public, the orientation of strategy messages employed, relationships and emotions, and understanding the behaviour of social media users and their interactions. The Coombs' SCCT theory is heavily influenced by image repair theory. Despite its contributions, SCCT focuses exclusively on the sender and ignores the receivers' perceptions of the sender's message. Another shortcoming of the SCCT is that it places a greater emphasis on the organization and less on the public. However, the importance of communication between senders and receivers in crisis communication is stressed (Johansen & Frandsen, 2007; Gascó et al., 2017). This restriction harmed SCCT's effectiveness in guiding organizations' crisis response (Gascó et al., 2017), particularly in a dynamic environment enabled by social media.

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The social networking platforms have heightened concerns about the public's ability to analyse information and the possible visibility of crisis-related difficulties (Roh, 2017). The SCCT's prediction of an appropriate response strategy is its strength (Alfonso & Suzanne, 2008), and it is significantly more efficient for natural disasters (Kriyantono, 2012). SCCT is a conventional theory that emphasises the message over the means of communication. Stewart and Wilson (2016) highlighted that despite the theory's advancements, it cannot give the solutions required by social media's dynamic nature. According to Kriyantono (2012) and Avvenuti et al. (2016), an active application of crisis theory is unquestionably more pertinent when the crisis is a natural disaster.

Similarly, the social-mediated crisis communication model (SMCC) was proposed to address SCCT's shortcomings about new media (social media). According to the SMCC, social media facilitates a variety of forms of public engagement and exchanges between stakeholders due to everyone's involvement in crisis response. Furthermore, the social-mediated disaster resilience model (SMDR) was developed to study the role of social media in community resilience (Möller et al., 2018). Moreover, Lambret & Barki (2018) introduced the social media crisis management matrix and framework (SMCMF), and Cheng (2018) introduced an interactive crisis communication model (ICCM), which adapted the SCCT's strengths for social media crisis management and communication. However, additional refinement is required to address the holistic picture of the dynamics and characteristics of both social media and the dynamic nature of the crisis.

While there is a growing literature suggesting the impact of crisis responses and social interaction and how this can affect stakeholder relationships or build resilience (Chewning, 2015; Tan et al., 2017; Valecha, 2019), for example, authors in Meer et al. (2017) investigated the change of relationship when an organization is under pressure by using a general structural path model and concluded that stakeholder's relationship changes during normal times and in crisis times. Plessis (2018) affirms this view based on dialogic communication theory, which shows that stakeholder relationships should increase during and after the crisis using open, responsive, transparent, and interactive dialogic content that should support and build relationships. Besides, Hellsten et al. (2019) network theory identified the relationship between actors involved in an issue arena and suggested the interaction between authors, topics, and addressed actors.

Accordingly, the study of social media crisis response and social interaction is understudied. Hence, studies investigating the impact of social media interaction on community resilience and the impact of the crisis and crisis response that is mediated by interaction on resilience are lacking. Hence, it is observed that one of the objectives of crisis informatics is to understand the interaction between stakeholders involved (Tan et al., 2017). Therefore, this study draws upon situational crisis communication theory (SCCT) (Coombs, 2007; 2014), interactive crisis communication model (ICCM) (Cheng, 2018), STREMII model (Stewart & Wilson, 2016), uses and gratification theory (UGT) (Whiting & Williams, 2013), and social mediated disaster resilience model (SMDR) (Moller et al., 2018) to investigate the impact of the crisis, crisis response and social media interaction on community resilience.

1.2   Problem Statement

The application and effectiveness of technology in crisis management and communication have been proven by many scholars. In particular, social media has been effective for both formal and informal communication during and after a crisis. However, what matters to people when a crisis occurs is recovery, which involves resilience. Hence, researchers must begin to experiment on how social media is helping people to recover from a crisis and what social media task helps people recover quickly. However, the study of how social media usage predicts public resilience has not been well addressed in the literature (Moller et al., 2018). Specifically, the impact of social media interaction and crisis response upon public resilience has not been fully addressed.

Hence, the use of social media enabled groups and individuals to collaborate and engage in crisis communication. Social media is now the game-changer that could impact every aspect of life through which people interact. Social media has enabled the digital convergence of people, information, and resources during crises (Palen & Sophia, 2007). Publics are far from being passive receivers, and their participation in crisis response is not new; they actively seek out crisis information and exchange views with others (Ji & Kim, 2019). The dependence of formal and informal stakeholders (management and public) response is an established requisite for effective crisis communication and management (Palen et al., 2010; Purohit et al., 2014). Social media hypothetically intensifies the influence of the public's responses (Purohit et al., 2014).

Remarkably, the emergence of crisis/disasters exposed stakeholders to digital interaction, and the nature of its range makes people have minimum physical interaction. Following the emergence of Coronavirus (Covid-19), stakeholders are increasingly exposed to digital interaction. As a result of the crisis and the nature of its spread, it becomes more difficult to have physical interaction. The situation worsens as crisis management authorities force citizens to stay at home for several weeks in the name of self-isolation or quarantine. Therefore, community resilience has become even more important to avoid panic. Social media has proven to be effective in helping the affected citizens and is important as an information source (Groen et al., 2017).

1.3   Research Question

The study's background and research problem provide the basic information that guides the formulation of the research question. Thus, the main focus of this study is defined by the following research question:

What is the impact of social media crisis communication on the ability of people to recover from a crisis?

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Specifically, the main research question is further split into sub-questions to help systematically address the research problem. Therefore, the main research question is sub-divided into three as presented in the following:

Research sub-question 1: What social media crisis communication models and factors affect public resilience during crisis communication using social media?

Research sub-question 2: How do the most crucial social media crisis communication factors predict public resilience?

Research sub-question 3: How has social media crisis communication affected public resilience?

1.4   Research Objectives

The research aims to investigate the impact of social media crisis communication on the ability of the people to recover from crisis. Hence, to achieve the aim of the study, the following research objectives are covered. The research objectives correspond to each research question.

- To identify the main indicators of public resilience in crisis communication using social media.

- To propose a model for crisis communication using social media for predicting public resilience.

- To examine the impact of social media crisis communication on predicting public resilience.

1.5   Research Scope

This study focuses on public resilience due to the crisis and the factors that significantly impact resilience building. The study builds upon social interaction and examines the relationship between crisis, crisis response, social media interaction, and resilience to crisis, which is still unclear. Moreover, drawing upon SCCT, SMDR, STREMII, and ICCM models, the study demonstrates that crisis, crisis response, and social media interaction affect community resilience. The model's mediation constructs, crisis response, and social interaction are the most significant aspect of this study.

1.6   Research Contribution

This research focuses on crisis management and communication theoretical models' effectiveness to advance the use of social media as the crisis communication medium. The usage of social media has the three characteristics of the resilience model (robust,

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rapid, and redundant), which can improve community resilience. Therefore, the outcome of this study is a social media crisis communication and resilience model. The proposed model studied the impacts of social media usage for crisis response and social media interaction on public resilience to enrich the crisis communication literature further. The model could be helpful for crisis management authorities to understand how social media crisis communication affects public resilience. Moreover, applying the model could help authorities improve their social media crisis communication strategies.

1.7   Organization of Thesis

Chapter one provides the background of the study and discusses the research problem with the corresponding research questions. The aim and objectives of the study are also presented. Furthermore, the scope and contributions of the research endeavor are explained.

The organizations of the remaining chapters are presented as follows;

Chapter 2 evaluates the existing literature on social media crisis communication models to identify commonalities within these models. The social media-based crisis communication model to study the impact of the crisis, crisis responses, and social media interaction on community resilience were derived.

Chapter 3 discusses the research methodology of the study. Specifically, the chapter explains the steps and techniques used in data collection and model validation processes.

Chapter 4 discusses the development process of the proposed social media crisis communication and resilience model and the research hypothesis. Moreover, the chapter presents the expert's review of the instrument's early validation phase, the pilot test procedures, and the measurement models.

Chapter 5 presents the finding and discussion of the study. In particular, the proposed model based on the structural equation modeling approach was discussed, and the results were analyzed.

Chapter 6 summarizes the research work and discusses the research conclusions, limitations, and future work.

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