



Institute of Technology Management and Entrepreneurship

**A MODEL FOR EFFECTIVE COMMUNICATION
BETWEEN METEOROLOGY ORGANIZATIONS AND SOCIETY
USING SOCIAL MEDIA**

اونيور سيتي تیکنیکل ملیسیا ملاک
UNIVERSITI TEKNIKAL MALAYSIA MELAKA
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Master of Science in Technical Communication

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**A MODEL FOR EFFECTIVE COMMUNICATION BETWEEN METEOROLOGY
ORGANIZATION AND SOCIETY USING SOCIAL MEDIA**

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**A thesis submitted
in fulfilment of the requirements for the degree of Master of Science
in Technical Communication**



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2023

DECLARATION

I declare that this thesis entitled “A Model for Effective Communication between Meteorology Organization and Society using Social Media” is the result of my own research except as cited in the references. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

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APPROVAL

I hereby declare that I have read this thesis and in my opinion this thesis is sufficient in terms of scope and quality for the award of Master of Science in Technical Communication.

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DEDICATION

I would like to dedicate my highest acknowledgement to my beloved parents and my precious siblings for always being with me through all the hardships of my study by consistently supporting and encouraging.



ABSTRACT

Meteorology organization is one of the most prevailing and favourite weather forecasts, constantly improving their services and information dissemination facilities. In addition, social media has become the primary consent to deliver effective meteorological and social communication. However, many studies have overlooked the effectiveness of social media in disseminating information to society. Likewise, the majority of meteorologists prefer traditional media to new media. Up to this date, there has been limited study regarding the effective communication involving Meteorology organizations and society using social media. Hence, this study aims to develop an effective communication model towards meteorology organizations and society. There are two objectives of this study. The first is to analyze the factors that influence effective communication between meteorology organisations and society using social media, and the second is to propose the appropriate model for effective communication between meteorology organisations and society. This research employs a three-phase process base design, the first data collection, the second data analysis, and the third stage of research model development. For the data collection, a literature study has been conducted to find all the factors influencing effective communication between meteorology organisations and society using social media. Then a survey was conducted in UAE with an estimated sample size is 384 respondents. In this research, a purposive sampling strategy was used. To develop an effective model, data were analyzed based on descriptive analysis. Based on the analysis, it is identified that the most robust relationship between an independent variable and dependent variable is the relationship between Human Engagement and Effective Communication, which has the highest correlation coefficient of $r=0.853$, followed by the second strongest of association strength is Information Transparency and Effective Communication, which take up $r=0.816$ and Information Sharing is $r=0.737$. All hypothesis is tested, and the result of hypothesis testing indicates that for H1 this study can conclude that Trust (TRU) has no significant relationship to Effective Communication (EC). While Human Engagement (HE), Information Sharing (IS) and Information Transparency (IT) were shown to have a significant relationship to Effective Communication (EC). Overall, the proposed model plan will help organization practitioners understand how they can effectively systematically communicate among society, which will give a clear organization to society or people around them as followers in their premises or management more efficiently and effectively.

MODEL KOMUNIKASI YANG BERKESAN ANTARA ORGANISASI JABATAN KAJICUACA DAN MASYARAKAT MENGGUNAKAN MEDIA SOSIAL

ABSTRAK

Jabatan kajicuaca adalah salah satu penyampai ramalan cuaca yang paling digemari yang mana ianya berterusan menambahbaik servis dan fasiliti-fasiliti penyampaian maklumat sedia ada. Sebagai tambahan, umum bersetuju bahawa media sosial sudah menjadi medium penyampaian yang berkesan dalam aspek meteorologi dan komunikasi sosial. Walau bagaimanapun, banyak kajian-kajian yang terlepas pandang terhadap keberkesanan sosial media dalam penyampaian maklumat kepada masyarakat. Selain itu, majoriti ahli kajicuaca kebanyakannya masih lagi lebih suka menggunakan media tradisional berbanding medium media baharu. Sehingga kini, terdapat limitasi kajian berkaitan keberkesanan komunikasi yang melibatkan jabatan kajicuaca dan masyarakat menggunakan media sosial. Oleh itu, tujuan kajian ini adalah untuk membangunkan model komunikasi berkesan terhadap jabatan kajicuaca dan masyarakat. Terdapat dua objektif dalam kajian ini. Pertama adalah untuk menganalisis faktor-faktor yang mempengaruhi komunikasi efektif antara jabatan kajicuaca dengan masyarakat dengan menggunakan media sosial dan yang kedua adalah untuk mencadangkan model yang berkesan untuk komunikasi berkesan antara jabatan kajicuaca dan masyarakat. Kajian ini terdiri daripada tiga fasa asas kajian yang mana pertama adalah pengumpulan data, yang kedua adalah analisis data dan fasa yang ketiga adalah pembangunan model kajian. Bagi fasa pengumpulan data, kajian kesusasteraan telah dilaksanakan untuk mengenalpasti faktor-faktor yang mempengaruhi keberkesanan komunikasi antara jabatan kajicuaca dan masyarakat. Satu tinjauan kaji selidik telah dilaksanakan di UAE dengan anggaran saiz sampel seramai 384 responden. Untuk membangunkan model yang berkesan, data juga telah dianalisis dengan analisis deskriptif. Berdasarkan analisis, hubungan antara pembolehubah bebas dan pemboleh ubah bersandar yang terkuat telah dikenalpasti iaitu hubungan antara penglibatan manusia dan komunikasi berkesan dengan pekali korelasi tertinggi iaitu $r=0.853$. Ianya diikuti hubungan antara ketelusan maklumat dan komunikasi berkesan sebanyak $r=0.816$. Manakala hubungan perkongsian informasi dan komunikasi berkesan ditangga ketiga dengan nilai $r=0.737$. Kesemua hipotesis telah diuji dan hasil pengujian hipotesis menunjukkan bahawa kepercayaan tidak mempunyai hubungan yang signifikan terhadap Komunikasi Berkesan. Manakala penglibatan manusia, perkongsian maklumat dan ketelusan maklumat menunjukkan mempunyai signifikan terhadap komunikasi berkesan. Secara keseluruhannya, model yang dicadangkan akan membantu pengamal organisasi untuk lebih memahami bagaimana mereka boleh meningkatkan keberkesanan komunikasi dalam kalangan masyarakat dengan langkah yang sistematik. Hal ini akan meningkatkan imej organisasi kepada masyarakat sekeliling mereka untuk menjadi pengikut kepada premis dan pengurusan yang berkesan dan efisien.

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TABLE OF CONTENTS

	PAGE
DECLARATION	
APPROVAL	
DEDICATION	
ABSTRACT	i
ABSTRAK	ii
ACKNOWLEDGEMENTS	iii
TABLE OF CONTENTS	iv
LIST OF TABLES	vii
LIST OF FIGURES	x
LIST OF APPENDICES	xi
LIST OF ABBREVIATIONS	xii
LIST OF PUBLICATIONS	xiii
CHAPTER	
1. INTRODUCTION	1
1.1 Introduction	1
1.2 Research background	1
1.3 Problem statement	3
1.4 Research questions	4
1.5 Research objectives	5
1.6 Scope of study	5
1.7 Significant of study	6
1.8 Operational definition	6
1.9 Organization of research	7
1.10 Summary	8
2. LITERATURE REVIEW	9
2.1 Introduction	9
2.2 Literature review	9
2.2.1 Conducting a systematic literature review	10
2.2.2 Planning the systematic literature review	10
2.2.2.1 Research question	10
2.2.2.2 Formulation and validation of review protocol	12
2.2.3 Conducting the review	18
2.2.3.1 Identifying relevant	18
2.2.3.2 Data extraction and quality assessments	18
2.2.3.3 Reporting the review	18
2.2.4 The review result	19
2.2.4.1 Quality assurances	19
2.2.4.2 Quality extraction	23
2.3 Effective communication between meteorology and society	28
2.3.1 What is effective communication?	28
2.3.2 The type of information does the organization/ meteorology disseminate to society	31

2.3.3	Related works on factors that influence effective communication	36
2.3.4	Related works on effective communication	57
2.4	Definition of social media	66
2.4.1	Social media platforms	68
2.4.2	Facebook	69
2.4.3	Twitter	70
2.5	Theoretical framework	72
2.6	Conceptual model	73
2.7	Research hypothesis	74
2.8	Conclusion	75
3.	RESEARCH METHODOLOGY	76
3.1	Introduction	76
3.2	Research design	76
3.2.1	Research philosophy	77
3.3	Research methodology	79
3.4	Primary data and secondary data sources	79
3.5	Research location	80
3.6	Research strategy	80
3.7	Research population and sampling	80
3.7.1	Population	81
3.7.2	Sampling technique	82
3.7.3	Sample size	83
3.8	Procedure of data collection	85
3.9	Research instruments	86
3.10	Ethical consideration	87
3.11	Time horizon	88
3.12	Data analysis procedure	89
3.12.1	Population	89
3.12.2	Sampling technique	90
3.12.3	Sample size	90
3.13	Pilot test	91
3.13.1	Cronbach's alpha for 50 respondents	92
3.14	Construct measurement	93
3.14.1	Nominal scale	93
3.14.2	Ordinal scale	93
3.14.3	Likert scale	94
3.15	Summary	95
4.	RESULTS AND DISCUSSION	96
4.1	Introduction	96
4.2	Missing data analysis	96
4.3	Frequency analysis result	97
4.3.1	Demographic profile respondents	98
4.3.1.1	Distribution of gender	98
4.3.1.2	Age of the respondents	98
4.3.1.3	Education level of the respondents	99
4.3.1.4	Employment sector of respondent	100

4.3.1.5	Social media used to communicate with meteorology organization	101
4.4	Descriptive analysis	102
4.4.1	Reliability analysis result	102
4.4.2	Pearson's correlation	104
4.4.2.1	Pearson's correlation between independent variable and dependent variable	105
4.4.3	Multiple regression analysis	107
4.4.3.1	Regression coefficient analysis	110
4.5	Hypothesis testing	116
4.6	A model of effective communication between meteorology organizations and society through social media	117
4.7	Summary	118
5.	CONCLUSION AND RECOMMENDATIONS	119
5.1	Introduction	119
5.2	Summary of research objectives	119
5.2.1	Summary of research objective 1	119
5.2.2	Summary of research objective 2	121
5.3	Research contribution	123
5.4	Contribution towards organization	124
5.5	Limitations	125
5.6	Future works	126
5.7	Summary	127
	REFERENCES	128
	APPENDICES	152

اوتنور سیتی تیکنیکل ملیسیا ملاک

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

LIST OF TABLES

TABLE	TITLE	PAGE
2.1	Summary of PICOC	11
2.2	Research questions	11
2.3	Digital database library	12
2.4	Search term	13
2.5	Inclusion and exclusion criteria	14
2.6	Quality assessments	15
2.7	Question scores	16
2.8	Data extraction	17
2.9	Number of paper study for quality assessment	19
2.10	Quality assurances	20
2.11	Quality extractions	23
2.12	Type of paper study	27
2.13	Type of information disseminated to society	33
2.14	Common factors of effective communication	41
2.15	Mapping factors of effective communication between organization and society using social media	47
2.16	Operational definition of a factor in effective communication	53
2.17	Construct of effective communication	55

2.18	Approaches/framework/model/techniques on effective communication	58
2.19	Formulation of research hypothesis	74
3.1	Philosophy of positivism paradigm (Saunders et al., 2016)	78
3.2	UAE population statistics by year-historical population (UAE Population Statistics, 2020)	81
3.3	Determining sample size from a given population (Krejcie and Morgan, 1970)	84
3.4	Cronbach's Alpha coefficient (George and Mallery, 2003)	92
3.5	Pilot study Cronbach's Alpha coefficient	92
3.6	Table of Likert scale's question	94
4.1	Cases with missing data	97
4.2	Gender distribution	98
4.3	Reliability table	102
4.4	Reliability analysis for Cronbach' Alpha	103
4.5	Summary of measurement of strength based on the correlation coefficient (Hair et al., 2010)	104
4.6	Pearson's correlation analysis result	106
4.7	Anova Analysis	108
4.8	Model Summary	109
4.9	Regression coefficient analysis result	110
4.10	Relationships between trust (T) and effective communication (EC)	113

4.11	The relationship between human engagement (HE) and effective communication (EC)	114
4.12	Relationships between information sharing (IS) and effective communication (EC)	115
4.13	Relationships between information transparency (IT) and effective communication (EC)	116
4.14	Hypothesis testing for effective communication using social media	116



LIST OF FIGURES

FIGURE	TITLE	PAGE
2.1	Three phases of systematic literature review	10
2.2	Selection processes	14
2.3	Challenging effective communication	52
2.4	Statistic of social media user in UAE	70
2.5	Theoretical framework	73
2.6	Conceptual framework	74
3.1	Figure of nominal scale's question	93
3.2	Figure of ordinal scale's question	94
4.1	Age of respondents	99
4.2	Education level	100
4.3	Sector of employment of respondents	100
4.4	Social media usage between respondents and meteorology	101
4.5	Statistical diagram	111
4.6	A model of effective communication between meteorology organization and society through social media	118
5.1	A finalized model for effective communication between meteorology organizations and society using social media	122

LIST OF APPENDICES

APPENDIX	TITLE	PAGE
A	Questionnaire	152

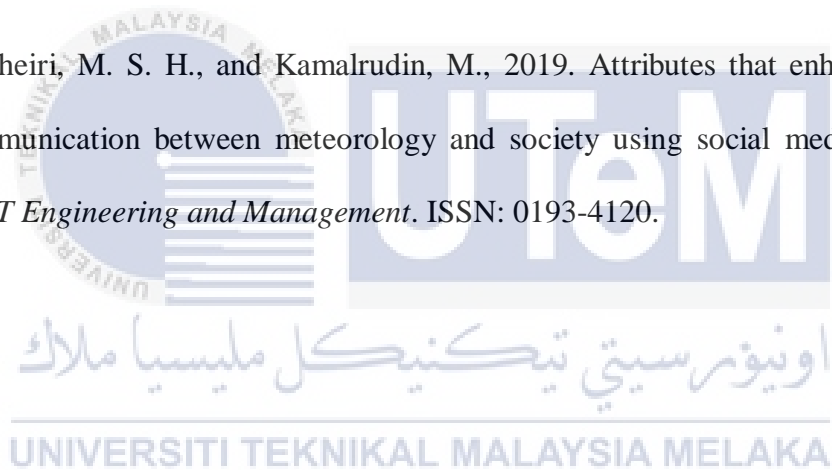


LIST OF ABBREVIATIONS

HE	-	Human Engagement
ICT	-	Information and communication technology
IS	-	Information Sharing
IT	-	Information Transparency
MRA	-	Multiple Regression Analysis
PICOC	-	Population, Intervention, Comparison, Outcome and Context Criteria
R ²	-	Rsquare
RQ	-	Research Question
SD	-	Standard Deviation
SLR	-	Systematic Literature Review
SPSS	-	Statistical Packages for Social Sciences
TRU	-	Trust
UAE	-	United Arab Emirates

LIST OF PUBLICATIONS

1. Almheiri, M. S. H., and Kamalrudin, M., 2021. A model for effective communication between meteorology organization and society using social media. *Journal of Management Information and Decision Science*. ISSN 15247252, 15325806, Under Review.
2. Almheiri, M. S. H., and Kamalrudin, M., 2019. Attributes that enhance effective communication between meteorology and society using social media: A review. *TEST Engineering and Management*. ISSN: 0193-4120.



CHAPTER 1

INTRODUCTION

1.1 Introduction

A leading and well-liked provider of weather forecasts, meteorology organisations are always enhancing their offerings and infrastructure to better serve the public. Additionally, social media has taken the lead in facilitating efficient communication between meteorology and society. This study intends to improve social media communication between meteorology and society. This chapter offers a thorough backdrop for the study, then discusses its motivation and a review of related studies or literature in the context of effective communication through social media as a medium and communication problems between meteorology and society. The problem statement comes next, upon which the research goal, objectives, and questions are created. The significance and scope of the research are discussed in the next part, along with the suggested approach for achieving the goals and objectives of the study.

1.2 Research background

The ability to observe and document meteorological conditions at particular locations on the surface of the earth, as well as the capacity to evaluate substantial scale changes in weather systems globally, are all parts of meteorology organisation. Reviewing contemporary meteorology reveals that it is a fascinating and important field of study. From the Tower of the Winds in the Agora of Athens to the first networks for collecting, exchanging, and reviewing data globally, meteorologists have pioneered scientific

methodologies, philosophical notions, and institutions (Fierro, 1991; Obassi, 2003; Woods, 2005; Walker, 2011).

By advising societies on how to deal with environmental threats like local and global climate change, natural catastrophes, pollution, and disease, the meteorology organisation now plays a second role in society. Institutions involved in meteorology have a long history of working closely with other scientists to apply science in practise.

Geographers are now concerned about the same things that meteorologists are: how humans are affecting the local and global environment. Anthropologists, who study people and their behaviours, have found that communities are impacted by climate and that sometimes communities purposefully alter their climate (as they did in the Jura Mountains by shifting ice into the valleys). Other research on communities has produced useful climatic information in far-off places and over extensive time periods (Clarke and Nuttall, 2009).

Depending on the stage, extreme weather occurrences like droughts and floods, which have the potential to spread disease infestations, might result in considerable economic losses. Early forecasts provide for the right corrective action that may assist prevent or lessen economic losses. In order to raise and maintain society's knowledge of climatic information, strategic and tactical decisions may be made easier with the timely availability of meteorological information and services.

The efficient communication of the meteorology department has grown to be a focus of attention in addition to the dissemination of knowledge to society. This is due to the fact that effective communication is a two-way information-sharing process where a message or piece of information must be simple enough for society to understand. However, the process of information dissemination frequently crosses over into both society and meteorology. For instance, the majority of meteorologists disseminate information in writing, which makes it challenging for them to communicate the discovered information to the general public.

Additionally, it is believed that the main obstacle to spreading information throughout society is the insufficient provision of high-quality communication services. A recent study concluded that the method for informing society about weather forecasts has to be improved. However, it might make it more difficult to share meteorology information with the general public. Creating a model of good communication through social media is vital as improving effective communication becomes the most important goal. Therefore, the effectiveness of social media in connecting meteorology and society was assessed in this study by society from various groups.

1.3 Problem statement

In order to inform society, meteorology organisations must offer good communication. Information dissemination techniques that are effective will have an impact on society. Ineffective communication will have an effect on the economy, causing many economic losses in the agriculture industry and beyond. As a result, the main goal of meteorology is frequently to share knowledge with people through social media. Its goal is to make sure that knowledge is provided to society as effectively as possible.

However, a lot of studies haven't taken into account how well social media works for spreading information throughout society. Similarly, the majority of meteorologists favour conventional media over new media (Kongthon et al., 2012). Meteorologists struggle with inadequate ICT infrastructure, poor communication inside the company, and constrained access to fresh data. For instance, obtaining information in a timely and appropriate manner is one of society's biggest problems. As a result, society has trouble evaluating the veracity of the information it receives (Aswani, 2017). The public is likewise concerned about the lack of easy access to important information. It suggests that building effective social media communication will help to improve the current way of informing public about weather

forecasts. Additionally, the aviation industry, transportation agencies, construction firms, and lastly the general public user provide the majority of the meteorology data that is needed. Faster meteorological information is essential for public users to be notified of extreme weather events. The process of disseminating meteorology information to the general public should, therefore, be enhanced through a structured communication channel in light of the identified emerging issues.

1.4 Research questions

This research has formulated the following research questions in order to conduct this study:

1. What factors influence effective communication between Meteorology organizations and society using social media?
 - 1.1 Does the trust factor have a significant relationship with effective communication?
 - 1.2 Does Human engagement factor have a significant relationship with effective communication?
 - 1.3 Does Information sharing factor have a significant relationship with effective communication?
 - 1.4 Does transparency factor have significant relationship with effective communication?
2. What is the appropriate model for effective communication between meteorology organization and society?

1.5 Research objectives

The major goal of this study is to suggest strategies for social media-based effective communication between meteorology and society. The following goals are the focus of our research:

1. To analyze the factors influencing effective communication between meteorology organisations and society using social media.
 - 1.1 To examine the relationship between the trust factor and effective communication.
 - 1.2 To examine the relationship between the human engagement factor and effective communication.
 - 1.3 To examine the relationship between information-sharing factors and effective communication.
 - 1.4 To examine the relationship between the transparency factor and effective communication.
2. To propose the appropriate model for effective communication between organizations and society.

1.6 Scope of study

The main goal of this study is to examine the variables that affect social media communication effectiveness and determine whether social media should be used by meteorology to share new information with the public. A vast group of people who coexist in society make decisions about how to carry out tasks and share information about what has to be done (Cambridge, 2021). As a result, in this study, society in the United Arab Emirates is referred to as the public user. The rapid development of social media since the establishment of Twitter in 2006 (Crunchbase, 2020) and Facebook in 2004 (Facebook,

2020) has completely changed how people communicate online (Kaplan and Haenlein, 2010). Social media has been employed in crisis communications in recent years because it can help with responder coordination and assistance distribution (Lachlan et al., 2015). "Social media can be advantageous in the face of crises as information and pleas for help can spread across the world in a matter of minutes," write Lachlan et al. (2015). Particularly during natural catastrophes, Twitter is frequently cited as the "most useful social media tool" (Liu et al., 2012). As a result, this study concentrated on Twitter and Facebook as social media channels for information sharing between meteorology organisations and the general public.

1.7 Significant of study

This study is thought to produce beneficial outcomes that greatly benefit society. With the help of this new model, meteorology management is expected to be able to enhance their technology and services for informing the public via social media.

1.8 Operational definition

These studies outlined the operational definition for each element in this section.

Below is a definition of operational:

Trust is a set of precise beliefs focusing on the goodness, moral character, and competence of the other party (Gefen et al., 2003).

Human Engagement is to measure the degree of involvement across three different categories: engagement opinion, engagement behaviour, and engagement conditions (Society for Human Resource Management, 2012).

Sharing Information is a procedure used to provide the knowledge to a group or person (Dalkir, 2005).