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Effectiveness of Covid-19 Information through Social Media based on Public Intention

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Abstract*—Corona Virus Disease-19 pandemic has changed people's habits today. Likewise, with the use of social media in terms of conveying information to the public. The government has now formed task forces in each region to prevent the spread of the virus. Among its duties is to convey information related to the prevention and spread of Corona Virus Disease-19. Considering that information delivery is deemed ineffective, some people do not fully know information about the Corona Virus Disease-19. The purpose of this study is to determine the effectiveness of information on Corona Virus Disease-19. To understand the relationship between the public's intention to end the Covid-19 pandemic and the effectiveness of Covid-19 information through social media the statistical analysis used is Cramer's V Non-Parametric Statistics, meanwhile, to find out whether the public's intention to end the Covid-19 pandemic affects the effectiveness of Covid-19 information through social media it is done through the partial least square approach. Questionnaire distribution via WhatsApp and made in google form to facilitate the distribution and filling. The number of responses was 401 respondents. The results obtained, the relationship between the latest education and attitudes when receiving hoax information and work relations with the frontline to end Corona Virus Disease-19 is that the community is declared insignificant, while the intention variable does not have a significant effect on the effectiveness factor. Different objects and respondents will be more interesting for further research as material for other researchers. Research results can be used as material for related parties, in this case the government to determine the media used to convey information about Covid-19.

Keywords*—coronavirus disease 19, social media, effectiveness, Cramer's V

I. INTRODUCTION

The accuracy of selecting the media used in conveying information about Corona Virus Disease 2019 (Covid-19) to the public will have a positive impact on preventing the spread of the virus [1-6]. The government is currently very aggressively carrying out activities to encourage people to adopt a healthy lifestyle in line with the health protocols from the Government and from the World Health Organization (WHO) in terms of preventing the spread of Covid-19 [7].

In Covid-19 socialization activities, several problems were found related to lack of information or panic, such as what happened with the public regarding Covid-19 which was thought to be ineffective. Meanwhile, according to several studies, the information will be conveyed well if it is conveyed effectively to the public [8] so that the Government itself will not spend high time and money.

The purpose of this study was to analyze the effectiveness (EFF) of delivering Covid-19 information to the public, in this study the population was the people of Sumedang Regency, West Java Province, Republic of Indonesia. The hypothesis for this research is:

RQ1: How to understand the relationship between people's intention to end the Covid-19 pandemic and the effectiveness of Covid-19 information through social media?

RQ2: Does the public's intention to end the Covid-19 pandemic affect the effectiveness of Covid-19 information through social media?

To understand the relationship between the public's intention to end the Covid-19 pandemic and the effectiveness of Covid-19 information through social media the statistical analysis used is Cramer's V Non-Parametric Statistics, meanwhile, to find out whether the public's intention to end the Covid-19 pandemic affects the effectiveness of Covid-19 information through social media it is done through the partial least square approach. To achieve these objectives, a research strategy is needed by compiling research starting from the presentation of the background to the problem, literature review, research methods, results, and discussion, to conclusions.

II. LITERATURE REVIEW

The World Health Organization is an international organization in the United Nations system that is responsible for global health. Under the conditions of the Covid-19 pandemic in 2020. WHO provided some information related to the virus. This information is used globally so that each country is recommended to follow the directions of WHO [7].

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The Government of the Republic of Indonesia through the Sumedang Regency Government provides all information obtained from WHO [9]. Then, the information is packaged in a delivery style that can be understood by the people of Sumedang Regency. Also, the Sumedang District Government made a District Decree so that the public could compare the information submitted with the contents of the District Decree. The Regent Decree issued by the Sumedang Regency Government can be seen through. One of the deliveries of information that can be widely used to the public is to use social media. This is based on social media users in Indonesia who reach a total of 150 million or 56% of the total population [10].

Several studies related to social media to convey information and receive information have been conducted in several countries [1-6]. The study discusses techniques in data retrieval and content on social media such as Twitter, Facebook, and Sina Weibo [1-6]. The purpose of this research is to build a large dataset from live social media streams. While in studies, doing data mining and content analysis from Weibo social media. Results in the study posts used consisted of an average of 2,956 posts per day. Using quantitative analysis found a positive correlation between the number of posts with the number of cases reported from Wuhan with about 10 Covid-19 cases per 40 social media posts. While on the study, produced a model for detecting Covid-19 positive reports from social media users' posts using machine learning [1, 2]. Also, the study makes information and warnings on disasters based on social media. To achieve these objectives can be done by studying case studies from 2008 to 2018 relating to the phenomenon of communication on social media in the event of a disaster. In a study testing the growth of social media in an organization by considering its impact on knowledge sharing on Knowledge Management Discussion Group. The results of this study can provide evidence that the Knowledge Management Discussion Group can positively influence the performance of an organization through social communication. In the study conducted a test to find out how social media can affect mental health and the spread of the Covid-19 panic virus in the Kurdistan region of Iraq. In this study using an online questionnaire and using a total of 516 social media users as a sample. The results of this study that social media has a significant impact on the spread of fear and panic with the potential for a negative influence on the mental health and psychological well-being of the community [3].

In other fields of studies, social media is used as a means of conveying information on political information, government information, library service information. This is a form of innovation from each organization. On the other hand, the effectiveness of the delivery of information related to Covid-19 has become interesting research for several researchers to continue to do, considering that it can be used as a basis for the outbreak to be resolved quickly [6]. Different sciences have used research that raises the question of the efficacy variable (EFF), including figuring out the impact of the effectiveness of Facebook. A report on the efficacy of Facebook ads in raising customer purchasing intentions. The results of the study showed that brand awareness and brand reputation were dramatically influenced by Facebook ads, both of which led to a substantial shift in buying intent [11].

The authors found a review in other studies related to the Intention (INT) variable that raised the question of the impact of the intention variable, examining the perceived satisfaction of students, behavioral intent, and e-learning effectiveness [12-14]. This analysis, therefore, explores the satisfaction of learners, behavioral intentions, and the Blackboard e-learning system's effectiveness [12-20]. Using a standard questionnaire, a total of 424 university students were surveyed. The findings have shown that perceived self-efficacy is a key factor influencing the satisfaction of learners with the Blackboard e-learning system. Perceived utility and perceived satisfaction all relate to the behavioral purpose of the learners to use the e-learning system. In addition, multimedia teaching, interactive learning experiences, and e-learning system quality can influence e-learning performance. This study presents a conceptual model for understanding the happiness, behavioral purpose, and efficacy of using the e-learning method of learners [21, 22].

Regarding the relationship between the two, namely the relationship of social media used to receive information with the effectiveness of the delivery of information, in this case, Covid-19 has not much research about the relationship between social media with the effectiveness of delivering information, especially in Sumedang Regency.

III. RESEARCH METHOD

To achieve the research objectives, it is necessary to determine the research method used. In this study, researchers used a research method with the following stages.

Figure 1 illustrated the steps in solving research problems and achieving research objectives. The first step the researcher identifies the problem. At this stage, the researcher tries to determine the main problems that must be resolved related to the task force in Sumedang Regency in terms of delivering information.

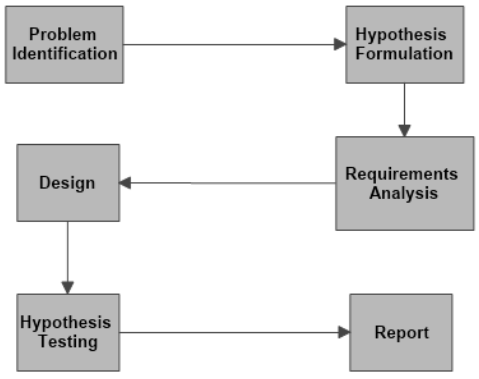

Figure 1. Research method

In the second stage, the researcher formulates the hypothesis and continues with the need's analysis activity [23, 24]. Researchers conducted a literature review, looking for relevant

sources and also models in which there are similar variables as material for the design of survey tools, namely the questionnaire as the fourth stage of the research method.

Questionnaire distribution via WhatsApp (instant messaging application for smartphones) and made in google form to facilitate the distribution and filling. The number of responses was 401 respondents from 1,154,458 Sumedang Regency as the population. The determination of the sample is obtained through the Slovin (a formula for calculating the minimum number of samples if the behavior of a population is not known with certainty) formula with an error rate of 5%. Sampling randomly from a clustered and stratified population with the stratified cluster random sampling method. 5 Likert (a Likert scale is a psychometric scale commonly involved in research that employs questionnaires) scale answers were included (strongly agree to strongly disagree).

After the data has been obtained through the results of filling out the questionnaire that has been returned and filled in, hypothesis testing is performed. And the final step is the preparation of conclusions and reporting.

IV. Result and Discussion

The profiles of respondents who filled out and returned the questionnaire can be seen in Table 1 below.

Table 1.
Respondents Profile

No	Question	Category	Q	%
1	Gender	Man	205	51
		Woman	196	49
2	Age/Generation	10-25 year	289	72
		26-39 year	50	12
		40-59 year	59	15
		60-74 year	2	0.5
		Other	1	0.25
3	Job	Government Employees	15	14
		Private Employees	23	6
		Teachers	29	7
		Lectures	19	5
		Entrepreneur	17	4
		Students	137	34
		Graduate Students	130	32
		Other	31	8
4	Last Education	Elementary School	4	1
		Junior High School	44	11
		Senior High School	241	60
		Associate Degree	3	1
		Undergraduate Degree	7	2
		Bachelor Degree	61	15
		Master Degree	23	6
		Doctoral Degree	3	1
		Other	15	4
5	Media recipient of Covid-19 information	Radio	0	0
		Television	161	40
		Handphone/SMS	31	8
		Smartphone	179	45
		Website	15	4
		Newspaper	1	0.25
		Other	14	3
6		Facebook	72	18
	Social media recipient of Covid-19 information	Twitter	19	5
		Instagram	128	32
		WhatsApp	91	23
		YouTube	50	12.5
		Tik Tok	2	0.5
		Telegram	0	0
		Other	39	10
7	Have received hoax information about Covid-19	Ever	280	70
		No Years	67	17
		Never	54	13
8	Have the knowledge and ability to distinguish which information about Covid-19 is a hoax and not	Can	307	77
		Can not	94	23
9	Attitude when receiving hoax information about Covid-19	Left alone	56	14
		Look for other comparisons of information	252	63
		Reported	17	4
		Provide correct information	76	19
10	Hoax information spreaders can be arrested and prosecuted legally	Yes	360	90
		Not	2	0.5
		Do not know	39	9.5
11	Media get hoax information	Newspaper	2	0.5
		Website	60	15.0
		Friend	37	9.2
		Facebook	131	32.7
		Twitter	1	0.2
		Instagram	34	8.5
		YouTube	9	2.2
		Tik Tok	4	1.0
		Telegram	1	0.2
		WhatsApp	122	30.4

Male respondents dominated filling out the questionnaire. The respondents that responded the most and filled out the questionnaire between 10-25 years. Respondents aged 10-25 years are very interested in filling out the online questionnaire form. Regarding the contents of the work on the questionnaire, there are 34% Elementary School, Junior High School, Senior High School, followed by 32%. This questionnaire is dominated by graduates. High school or equivalent 60%. As for the media used to receive information about Covid-19 is the Smartphone media (45%). This is by several studies which state that Smartphone is an effective media in conveying information, and Smartphone is identical to Generation Z which dominates the filling out of the questionnaire in this study [25-28]. Meanwhile, the last question about social media that was most widely used to receive information was Instagram social media with 128 respondents out of 401 respondents or 32%. Meanwhile, a lot of information is conveyed through the Website, for example, covid19.go.id.

To make it easier to understand the relationship between people's intention to end the Covid-19 pandemic and the effectiveness of delivering Covid-19 information, the authors used Cramer's V non-parametric statistical analysis.

Analysis of the relationship between recent education and attitudes when receiving hoax information about Covid-19.

H0: $\rho = 0$ (there is no relationship between last education and attitude when receiving hoax information about Covid-19)

H1: $\rho \neq 0$ (there is a relationship between last education and attitude when receiving hoax information about Covid-19).

Table 2.
Cramer's V Coefficients and Criteria

Cramer's V Coefficients	Criteria
> 0,25	Very high
> 0,15 – 0,25	High
> 0,10 – 0,15	Moderate
> 0,05 – 0,10	Low
> 0 – 0,05	No relationship / Very Low

Test criteria: reject H0 if p-value < α/2 and accept in other cases. Table 2. illustrate Cramer's V Coefficients and Criteria

Table 3.
Symmetric Measures 1

		Value	Approximate Significance
Nominal by Nominal	Phi	0.205	0.853
	Cramer's V	0.199	0.853
N of Valid Cases		401	

Based on Table 3. The statistical analysis output above, the coefficient value of Cramer's V is 0.199 with a p-value of 0.853 which is much smaller than α/2 (0.025), so it can be concluded that H0 is accepted. This means that there is no relationship between recent education and attitudes when receiving hoax information about Covid-19.

Analysis of the relationship between whether you can tell which information about Covid-19 is a hoax and not and attitude when receiving hoax information about Covid-19.

H0: $\rho = 0$ (there is no relationship between whether you can tell which information about Covid-19 is a hoax and not and attitude when receiving hoax information about Covid-19)

H1: $\rho \neq 0$ (there is a relationship between whether you can tell which information about Covid-19 is a hoax and not and attitude when receiving hoax information about Covid-19)

Test Criteria: Reject H0 if p-value < α/2 and accept in other cases.

Table 4.
Symmetric Measures 2

		Value	Approximate Significance
Nominal by Nominal	Phi	0.173	0.007
	Cramer's V	0.173	0.007
N of Valid Cases		401	

Based on table 4. The statistical analysis output above, the coefficient value of Cramer's V is 0.173 with a p-value of 0.007 which is much smaller than α/2 (0.025), so it can be concluded that H0 is rejected. This means that there is a relationship between whether you can tell which information about Covid-19 is a hoax and not and attitude when receiving hoax information about Covid-19. Analysis of the relationship between hoax information obtained from and attitudes when receiving hoax Information about Covid-19.

H0: $\rho = 0$ (there is no relationship between hoax Information obtained from and attitudes when receiving hoax information about Covid-19).

H1: $\rho \neq 0$ (there is a relationship between hoax information obtained from and attitudes when receiving hoax information about Covid-19). Test Criteria: Reject H0 if p-value < α/2 and accept in other cases.

Table 5.
Symmetric Measures 3

		Value	Approximate Significance
Nominal by Nominal	Phi	0.362	0.002
	Cramer's V	0.209	0.002
N of Valid Cases		401	

Based on the statistical analysis output above on the Table 5, the coefficient value of Cramer's V is 0.209 with a p-value of 0.002 which is much smaller than α/2 (0.025) so it can be concluded that H0 is rejected. This means that there is a relationship between hoax information obtained from and attitudes when receiving hoax information about Covid-19. Respondents were asked through a questionnaire distributed according to the list of questions below (Table 6).

Table 6.
A-List of Questions on the Questionnaire

	Questionnaire Questions
EFF1	How effective is the dissemination of information about Covid-19 through social media?
EFF2	How you believe information about Covid-19 through social media
EFF3	How do you believe in using a mask to prevent Covid-19
EFF4	How much do you believe in social distancing to prevent Covid-19
EFF5	Disseminating information about Covid-19 should use multimedia assistance through social media
INT1	Information about Covid-19 on social media is always awaited
INT2	Information about Covid-19 on social media is always obtained every day
INT3	Moved to want to do something to immediately end Covid-19
INT4	The front line for ending Covid-19 is the Society

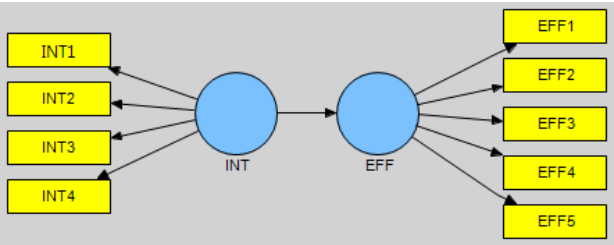

Figure 2. Path Model

Path Model in Figure 2. Analysis of the Relationship between Recent Education and the effectiveness of disseminating information about Covid-19.

Table 7.
Symmetric Measures 4

		Value	Approximate Significance
Nominal by Nominal	Phi	0.392	0.001
	Cramer's V	0.196	0.001
N of Valid Cases		401	

H0: $\rho = 0$ (There is no relationship between Last Education and the effectiveness of disseminating information about Covid-19)

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H1: ρ ≠ 0 (There is a relationship between Last Education and the effectiveness of disseminating information about Covid-19)

Test Criteria: Reject H0 if p-value < α/2 and accept in other cases.

Based on Table 7. The statistical analysis output above, the coefficient value of Cramer's V is 0.196 with a p-value of 0.001 which is much smaller than α/2 (0.025), so it can be concluded that H0 is rejected. This means that there is a relationship between Recent Education and the effectiveness of disseminating information about Covid-19.

Analysis of the Relationship between Recent Education and Trust in information regarding Covid-19.

H0: ρ = 0 (There is no relationship between Last Education and Trust in information about Covid-19)

H1: ρ ≠ 0 (There is a relationship between Last Education and Trust in information about Covid-19)

Test Criteria: Reject H0 if p-value < α/2 and accept in other cases.

Table 8.
Symmetric Measures 5

		Value	Approximate Significance
Nominal by Nominal	Phi	0.402	0.001
	Cramer's V	0.201	0.001
N of Valid Cases		401	

Based on Table 8. The statistical analysis output above, the coefficient value of Cramer's V is 0.201 with a p-value of 0.001 which is much smaller than α/2 (0.025), so it can be concluded that H0 is rejected. This means that there is a relationship between Last Education and Trust in information about Covid-19.

Analysis of the Relationship between Social Media which is always used to receive/read Covid-19 information and how effective is the dissemination of information about Covid-19.

H0: ρ = 0 (There is no relationship between Social Media which is always used to receive/read Covid-19 information and how effective is the dissemination of information about Covid-19)

H1: ρ ≠ 0 (There is a relationship between Social Media which is always used to receive/read Covid-19 information and how effective is the dissemination of information about Covid-19)

Test Criteria: Reject H0 if p-value < α/2 and accept in other cases.

Table 9.
Symmetric Measures 6

		Value	Approximate Significance
Nominal by Nominal	Phi	0.316	0.021
	Cramer's V	0.158	0.021
N of Valid Cases		401	

Based onTable 9. The Statistic Analysis output above, the coefficient value of Cramer's V is 0.158 with a p-value of 0.021 which is much smaller than α/2 (0.025), so it can be concluded that H0 is rejected. This means that there is a relationship between Social Media which is always used to receive/read Covid-19 information and how effective is the dissemination of information about Covid-19.

Table 10.
Conclusion Cramer's V

N.	Relationship	Cramer's V	P-Value	Critical Value	Conclusion	Relationship level
1.	Latest Education and Effectiveness of information dissemination about Covid-19	0.196	0.001	0.025	Significant	High
2.	Latest Education and Trust in information about Covid-19	0.021	0.001	0.025	Significant	High
3.	Latest Education and Attitude when receiving hoax information Covid-19	0.119	0.853	0.025	Not significant	Moderate
4.	Social Media is always used to receive information and how effective is the dissemination of information Covid-19.	0.158	0.021	0.025	Significant	High
5.	Can you tell which information about Covid-19 is a hoax and which is not and your attitude when receiving hoax Information Covid-19	0.173	0.007	0.025	Significant	High
6.	Media get hoax information and attitudes when receiving hoax Information Covid-19	0.209	0.002	0.025	Significant	High

To answer the second research question, whether the public's intention to end the Covid-19 pandemic affects the effectiveness of Covid-19 information through social media, data processing is carried out using structural equation modelling analysis, after knowing and understanding the relationship between the public's intention to end the Covid-19 pandemic and the effectiveness of Covid-19 information through social media, then to find out whether the public's intention to end the Covid-19 pandemic affects the effectiveness of Covid-19 information through social media with the help of structural equation modelling analysis.

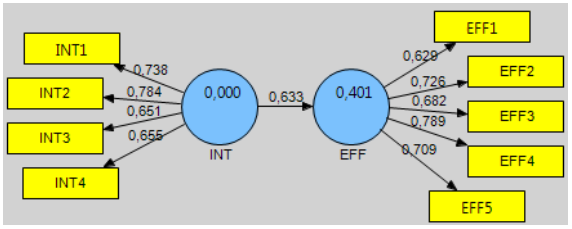

Figure 3. PLS Algorithm Results

From Figure 3 there are values below 0.708, namely:

Intention indicator number 3 (INT3), Intention indicator number 4 (INT4), effectiveness indicator number 1 (EFF1), and effectiveness indicator number 3 (EFF3). These three indicators must be removed. After deleting these indicators, the results are in Table 11 regarding the Outer Loading results and the PLS quality criteria overview.

Table 11.
Results Outer Loading And PLS Quality Criteria

	EFF	INT	AVE	Composite Reliability	R^2	Cronbach's Alpha
EFF2	0.729539		0.585351	0.808790	0.358037	0.646971
EFF4	0.794463					
EFF5	0.769842					
INT1		0.852294	0.733707	0.846399		0.637116

As we can see from Table 11, for all the reflective structures, the composite reliability is greater than 0.708 and the deletion of indicators increases the values.

Table 12.
Path Coefficients

Original Sample	Sample Mean	Standard Deviation	T-Statistics	P-Values
0.598362	0.606192	0.079668	7.510685	0.079668

From Table 12, it is found that the Intention (INT) variable does not significantly influence the Effectiveness (EFF) through bootstrapping to assess the significance of the path coefficient.

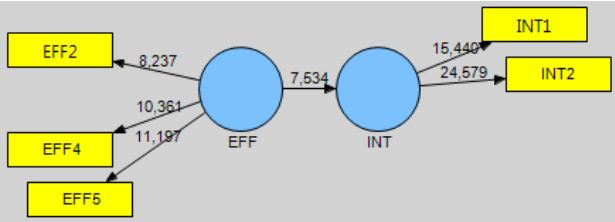

Figure 4. Bootstrap Results

The minimum number of bootstrap samples must be at least equal to the number of valid observations, but must be 5,000 (Figure. 4.). The number of cases must equal the number of valid observations in the original sample. The critical scores for the two-tailed test were 1.65 (significance level = 10%), 1.96 (significance level = 5%), and 2.57 (significance level = 1%). In applications, you should usually consider path coefficients with a probability of error of 5% or less as significant [29]. It is interesting to discuss the relationship between Intention and Effectiveness. As in previous research, especially regarding the relationship between items on the respondent's profile, it was found that the education that the respondents had did not guarantee to understand information about Covid-19 as a whole so that indirectly it also resulted in the delivery of information about Covid-19 through social media. [1-6]. effective. The results of filling out the questionnaire also indicate that the Intention variable does not significantly affect the effectiveness, this is by other studies that state that the Intention of the information received does not guarantee that it will change even though it is supported by effective information via social media.

V. Conclusion

Research questions have been answered through several processes to answer them, to understand the relationship between the public's intention to end the Covid-19 pandemic and the effectiveness of Covid-19 information through social media can be accepted and understood. The results obtained, the relationship between the latest education and attitudes when receiving hoax information and work relations with the frontline to end Corona Virus Disease-19 is that the community is declared insignificant, while the intention variable does not have a significant effect on the effectiveness factor. Different objects and respondents will be more interesting for further research as material for other researchers. Research results can be used as material for related parties, in this case the government to determine the media used to convey information about Covid-19.

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