Original Research Article

WHY DOES RISK COMMUNICATION MATTER? PREVENTIVE AND EXCESSIVE HEALTH BEHAVIOR AMONG UNINFECTED PEOPLE

Abstract

Given the recent public health emergency, the coronavirus has become one pandemic whose spread is not easy to control. Coronavirus can spread through various interactions between individuals. One of the government's efforts to prevent its spread is to use a risk communication approach to reduce the number of transmissions. However, the risk communication approach still uses a one-way performance in its implementation and has not been measured. This study identifies the major components of the risk communication approach used. One of our findings is that trust in government is the most vital basis for implementing risk communication that can be readily accepted by the community and can increase preventive behavior and the intention to behave more in self-protection. This research uses hierarchical component models (HCMs) research designs to provide practical and academic contributions.

Keywords: Risk Communication, Preventive Behaviour, Excessive Preventive Intention

Introduction

This section will explain why the risk communication approach taken by the DKI Jakarta government is very important to suppress the spread of the covid-19 virus and increase public awareness of preventive behavior and excessive preventive intention. However, the existing risk communication approach has not been specifically carried out based on things that are the main

focus of the community. This study will specifically identify the factors that form the greatest risk communication that can simplify the government's efforts to deal with the spread of the virus effectively and efficiently.

Backgrounds

The first time the coronavirus entered Indonesia was reported around February 2020. Exactly two people were tested positive for the Coronavirus on March 2 2020. The first announcement of the coronavirus case directly by President Joko Widodo with Minister of Health Terawan Agus Putranto, at Jakarta Merdeka Palace, Jakarta, on March 2, 2020. Additional positive cases in Indonesia began quickly since April 6, which was around 200-300 people per day, then moved up to 300-400 new patients per day and now almost 500 new cases per day. Finally, on May 28, 2020, a positive case of Covid-19 (Jannatin et al., 2021). Positive confirmed cases of Covid-19 in Indonesia are divided into three severity levels: 1) high, 2) moderate, and 3) low (Ministry of Health, 2020). Patients whose condition is high severity or are given intensive medical care at a health facility. Meanwhile, low-severity Covid-19 cases are managed the same way as the rest of the general population, meaning they have to stay at home and practice social isolation and physical distancing (Indonesian Ministry of Health, 2020).

At the same time, the government is aggressively promoting the Clean and Healthy Behavior (PHBS) program and the People's Healthy Living Movement (GERMAS) to encourage people to routinely engage in outdoor or indoor activities with sports to reduce the spread of Covid-19 (Ministry of Health of the Republic of Indonesia). 2020). In Indonesia since its inception, COVID-19 cases have increased to 1,285 cases in 30 provinces. The five provinces with the highest number of COVID-19 cases are DKI Jakarta (675), West Java (149), Banten (106), East Java (90), and Central Java. Java (63) (Ministry of Health of the Republic of Indonesia, 2020). The increase in cases is occurring quite rapidly, and there has been spread between countries. In response, WHO declared covid19 a pandemic (Cucinotta and Vanelli, 2020).

Occupying the highest province in Covid-19 cases, Jakarta is the capital city of the Republic of Indonesia. Jakarta is located

between 6° 12' South Latitude and 106° 48' East Longitude. The Jakarta area consists of a land area of 662.33 km2 and a sea area of 6977.5 km2. The total population of Jakarta in 2017 is based on the projected results of the 2010 population census of 10,374,235 residents, with a population growth rate of 0.94% per year (Mawarni, 2019). Based on the daily Covid-19 automated data collection in Jakarta from January – March 29, 2020, obtained from the Ministry of Health of the Republic of Indonesia. The Covid-19 pandemic that occurred in Jakarta experienced a rapid increase. The first finding was 177 cases, subsequent reports found 40 cases, and on March 29, 2020, the total number of COVID-19 cases was 678. With an average of 61 cases (Ministry of Health of the Republic of Indonesia, 2020).

Apart from the very fast spread of high Covid-19 cases in Jakarta, which is caused by the very high mobility of the population. As the capital city of Indonesia, Jakarta is the leading economic destination for job seekers who come from various regions in Indonesia. Jakarta's population density is also very high, allowing the transmission of COVID-19 to be high-speed (Tosepu et al., 2020). Another reason is that Jakarta may be a exceptionally thickly populated zone. The majority of the population is residents from outside Jakarta. Generally, they choose the location of residence in the area because of the affordable price factor (Fitria and Setiawan, 2014).

Appeals, prohibitions, and even large-scale social restrictions are implemented to reduce cases. To cope with the outbreak's rapid spread, residents have to increase their social awareness and reduce their social interactions. Social awareness requires health protocols, such as social distancing, wearing masks, and washing hands. Health care information during an infectious disease outbreak can significantly influence the behaviour of citizens. Information plays a vital role in building public awareness and shaping appropriate health behaviours (Roselina et al., 2021)

Given the high number of positive cases of COVID-19, the Ministry of Communication and Information through the Directorate General of Information and Public Communication initiated a public campaign to encourage public participation in the COVID-19 Handling and National Economic Recovery program. The public's need for one-stop information from the

centralized, integrated, relevant, and reliable government is a strong reason for implementing this Public Communication Campaign (Kominfo.go.id 2021).

Public communication in handling COVID-19, which first aims to create behavioural change, then is Penta helix collaboration from various stakeholders, namely the government, media, business, academics, and the community. Finally, the core message to be conveyed through public communication is self-discipline, cooperation, optimism and positivity in overcoming and preventing the COVID-19 pandemic (Ksp.go.id, 2020). Through public communication carried out by the government, it is hoped that it will increase public awareness and discipline towards health protocols, increase the ability to choose and sort information obtained about COVID-19, and increase public trust in the government (Rengkung et al., 2021).

As part of the Director-General of Information and Public Communication of the Ministry of Communication and Informatics campaign, together with the Committee for Handling COVID-19 and National Economic Recovery (KPCPEN), launched the web series Stories in the Pause. The 15 short films were shown on the Kemkominfo TV Youtube channel starting December 11, 2021, aiming to build optimism in everyday life amid a pandemic, as well as a means of disseminating correct information related to COVID-19 and efforts to revitalize the country's creative industry (Tegal, 2021).

In addition to campaigns initiated by the Ministry of Communication and Informatics through the Directorate General of Information and Public Communication, the Indonesian Ministry of Health through the Directorate General of Health Promotion and Community Empowerment also issued a campaign using a risk communication approach that refers to increasing public knowledge of potential risks and threats of health problems so that they can decide on steps and actions that can protect themselves from these problems (Ministry of Health RI Directorate General of Health Promotion and Community Empowerment, 2020).

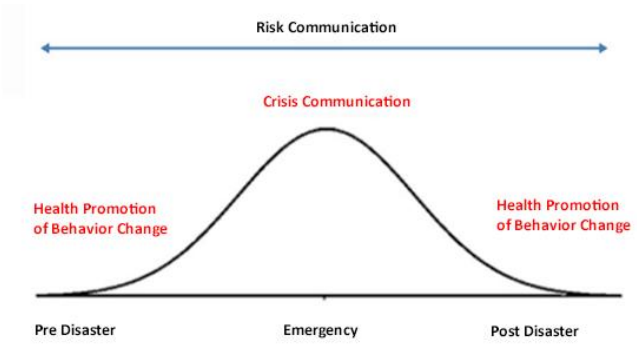

Figure 1. The Government's Risk Communication Approach

The picture above is a planning curve used by the Ministry of Health in collaboration with USAID and PT. XL Axiata Tbk. They started the campaign activity by promoting health behaviour change in the pre-disaster period and providing a crisis communication approach in emergency response conditions so that these conditions can be passed and reduced to post-disaster essentials.

For this reason, it is necessary to look at and consider the factors of the campaign message and the perceived risk perception of the public to determine the extent to which these factors can change people's behaviour to lead a healthy life based on the Health Belief Model theory. This is supported by previous research conducted by Heydari et al. (2021), which found that the community's preventive intention is influenced by risk communication, including components of new exposure, information gathering ability, trust in the government, and trust in the news media. Meanwhile, Liu et al., 2020 found that the risk perception factor affects people's preventive intention by looking at the media. This study explains that individual risk assessment is seen as an essential element of most theoretical models of health and risk behaviour, including the Self-Efficacy Theory by Bandura (1994), Health Belief Model by Rosenstock (1974), Theory of Reasoned Action by Fishbein and Ajzen. (1977) and Theory of Planned Behavior by Ajzen (1985).

This study aims to examine why the risk communication approach taken by the DKI Jakarta government is critical to suppress the spread of the covid-19 virus and increase public awareness of preventive behaviour and excessive preventive intention. However, the existing risk communication approach has

not explicitly been carried out based on things that are the main focus of the community. This study will specifically identify the factors that form the most significant risk communication that can simplify the government's efforts to deal with the spread of the virus effectively and efficiently. This study conducts an in-depth analysis of the sub-component constructs of risk communication: news exposure, information gathering ability, trust in government, and news media.

Literature Review

This section describes the theoretical foundation and discussion of previous research that can help us define the research concept and form the hypothesis tested in the next section.

Health Belief Model

The Health Belief Model was initially developed to study why patients may not seek screening for tuberculosis and are one of the most prominent public health frameworks for understanding why individuals may or may not act in the face of threats to personal or general health. Individual and community level by conceptualizing behaviour determinants into several contributing factors called constructs (Carico et al., 2021). The Health Belief Model has wide application as a conceptual framework to provide an explanation of the change and continuation of health-related behaviours and also guide health behaviour interventions, the Health Belief Model has undergone more expansion compared to other frameworks, and it consists of evaluation on perceptions of how susceptible individuals are to disease and how severe the condition might be. It also takes into account the perceived benefits. (Heydari et al., 2021). According to Liu et al., (2020) Health Belief Model is a behavioural theory that has been applied in health communication to identify factors. Influence decision making for public health behaviour. Wong et al. (2021) argue that the Health Belief Model (HBM) has been adopted as a conceptual framework that has been extensively evaluated. The Health Belief Model empowers researchers to explain and predict health promotion behaviours based on belief patterns by addressing associations between health behaviours and health care utilization.

The Health Belief Model (HBM) is a framework that has become one of the most widely used conceptual frameworks in behavioural health research, both to explain change and maintenance of health-related behaviours and as a guiding framework for interventions. The Health Belief Model consists of the following vital constructs: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, self-efficacy to engage in a behaviour, and cues to action (Suess et al., 2022).

Risk Communication Model

Individuals take actions during the risk communication process, namely receiving warning messages, finding out related content, accepting or believing the importance of the statements included in them, establishing the correctness of their interpretations with others, and taking actions or actions regarding messages to save their lives and property (Heydari et al., 2021). important principles in effective risk communication established in response to catastrophic environmental and pollution events in the late 20th century can provide important scientific insights into patient responses to the risks posed by coronavirus disease 2019 (COVID-19) (Malecki et al., 2021). Communication risk involves experts providing information that enables individuals and communities to make decisions during disasters. Life-saving efforts will fail when risk communication is not appropriately channelled (Benavides et al., 2021). Risk communication is "the real-time exchange of information, advice and opinions between experts or officials and people who face threats to their survival, health, economic or social well-being and the improvement of livelihoods. The ultimate goal is that all risk-takers can make informed decisions to reduce the effects of threats (risks) such as disease outbreaks and take protective and preventive measures (Tambo et al., 2021). According to (Faour-Klingbeil et al., 2021), risk communication can be vital in understanding public concerns about a pandemic and communicating risks about obtaining and preparing food during a pandemic.

Among the challenges of disaster risk management and climate change is inadequate risk communication across different response phases, stakeholders, and levels (Palttala et al., 2012). Risk communication here does not only refer to informing the public about their risk exposure or crisis communication through

various means of warning generation. Still, it has a broader connotation, which takes into account the local socio-cultural context, scale, uncertainty, causes of disasters, past experiences, lessons learned, trust, and ongoing engagement that influence risk perception and response, and through it the entire risk management process (Khan & Mishra, 2022).

Hyphotesis Development

Risk Communication and Excessive Preventive Intention

Risk communication is key to improving familiarity with and adherence to preventive measures in standard times, particularly during health emergencies. Failure to communicate the right message effectively can result in loss of trust, damage to the economy, and loss of lives. For risk communication to be effective, risk messages have to be shared with the public in an open and timely manner to reduce the knowledge gap and to convince the public to adjust their behavior during a crisis (Zhang et al., 2020). In addition to disseminating recommendations that are easy for the public to understand and comply with, trust in the message's source is essential for effective risk communication (Flyn et al., 1993). According to the two-step process model of behavior change, the initial step in attitude change is that media exposure affects people's cognitive beliefs (such as risk perception), which in turn causes. Certain behavior changes and the resulting behavioral changes are the second steps. As the main predictor of health behavior, risk communication is considered a core concept of health behavior theory, such as the health belief model, protection motivation theory, and prevention adaptation process model. Research has shown that they will actively adopt preventive health behaviors when people perceive risk. Thus, it is hypothesized:

H1: Risk Communication has positive and significant influence Excessive Preventive Intention

Risk Communication and Preventive Behaviors

People need the information to make informed decisions and behave in ways that best help avoid risk and uncertainty. Risk communication can occur in a non-binding one-way way and a more involved two-way way. Based on the Sandman (2003) category, risk communication in a severe pandemic like today is crisis communication. It is possible to think of risk communication as a means to raise awareness, increase knowledge, or change the behaviour and attitudes of the stakeholders involved, including those with exposure, specialists

and managers, those who make decisions, the general population, and the media, although they have different goals. When a crisis is experienced, communication contributes to minimizing damage and saving lives by influencing the actions taken by all individuals involved. Utilizing the principles of effective risk communication is considered indispensable to deal with this condition, including providing information on a regular and timely basis, sharing what is known about threats, avoiding speculation, always being honest, avoiding false promises, providing up-to-date information when available, and anticipating the need to repeat the message. Thus we hypothesized that:

H2: Risk Communication has positive and significant influence Preventive Behavior

Risk Communication, Preventive Behavior, and Excessive Preventive Intention

Risk communication is the real-time exchange of information, advice, and opinions between experts, community leaders, officials, and the people at risk and is an integral part of any emergency response. In epidemics and pandemics, in humanitarian crises and natural disasters, effective risk communication allows people at risk to understand and adopt protective behaviors. It enables authorities and experts to listen to and address people's concerns and needs so that the advice they provide is relevant, trusted, and acceptable (WHO, 2017). According to the health belief model theory, perceived risk is positively associated with intentions for preventive/protective behavior. In health communication, a high level of risk perception makes the individual's intention to be more involved in health protection behavior to avoid risk. Risk perception may semantically have real behavioral consequences. Communication risk over time leads to an increase in the perception of risk. In this way, the provision of risk information can be significantly useful in changing risk perceptions with subsequent changes in the impact of risk perceptions on risk behavior (Heydari et al., 2021).

H3: Preventive Behavior has positive and significant influence Excessive Preventive Intention

H4: Preventive Behavior mediates the relationship between Risk Communication and Excessive Preventive Intention

Methodology

In this section, the research design will be explained first, and then there will be an explanation of how the data in this study were obtained, followed by a discussion on the determination of the survey instrument and its validation. Finally, the statistical

approach method in this study is explained to understand the flow of our research.

Research Design

This study was designed using hierarchical component models (HCMs) on the risk communication construct variable, higher-order components with four lower-order components following the model proposed by Heydari et al. (2021). HCMs provide a framework for researchers to model constructs on more abstract dimensions (higher-order components) and their more concrete subdimensions (lower-order components). HCMs refer to more general constructs measured at a higher level of abstraction while assessing several sub-components (dimensions) (Hair et al., 2018). Therefore, by determining the low-level components, HCMs include the concrete characteristics of the risk communication variable. It can be seen which factors are the biggest forming and are the main focus of the unit of analysis.

Data Collection Procedure

The data in this study were obtained using a questionnaire distributed to residents of DKI Jakarta, which is divided into five regions, where DKI Jakarta Province has six regencies/cities consisting of 1 Administrative District (Kabupaten Administrasi Kepulauan Seribu) and 5 Administrative Cities (Kota Administrasi Jakarta Barat, Kota Administrasi Jakarta Pusat, Kota Administrasi Jakarta Selatan, Kota Administrasi Jakarta Timur dan Kota Administrasi Jakarta Utara). We did not include one area, which is an administrative district. The data were collected from February 17– to September 13, 2021. Given the recent public health emergency, we carried out two survey approaches, both online and offline. The online survey allows respondents to fill in remotely without any physical interaction required. We periodically send 883 emails to prospective respondents we have contacted before and get 763 completed surveys. Meanwhile, we got 217 completed surveys through an offline survey by implementing the applicable health protocols when collecting data in the field. However, we filtered using a similar response pattern imputation to impute a small number of missing values, leaving 964 respondents available for data analysis (16 cases were missing

nearly all responses and, therefore, were excluded).

Measurements and Validation

The survey in this study is divided into two parts: a list of respondents' demographic questions and is continued by providing a list of statements relating to all measuring instruments on each of the current latent variables. The demographic is presented in Table 1. To measure the risk communication variable, we have adapted four components from previous literacy, namely news media exposure (2 items), information gathering ability (3 items), trust in the government (3 items), and trust in news media (3 items) were included in the survey. Meanwhile, preventive behaviour was measured using seven items and excessive preventive behaviour using three items, so there were 21 total questionnaires in this study. All the items were presented in Appendix 1 in detail.

Table 1: Demographic profile of respondents

Description		**Number**	**%**
Infection	Infected	0	0
	Uninfected	964	100
Gender	Male	375	38.9
	Female	589	61.1
Age	< 20	2	0.2
	21 - 30	249	25.8
	31 - 40	328	34.0
	41 - 50	176	18.3
	> 50	209	21.7
Marital status	Single	486	50.4
	Married	478	49.6
Education	< Diploma	253	26.2
	Bachelor's degree	347	36.0
	Master's degree	298	30.9
	Doctoral degree	66	6.8
Domicile	Kota Administrasi Jakarta Barat	256	26.6
	Kota Administrasi Jakarta Pusat	132	13.7
	Kota Administrasi Jakarta Selatan	252	26.1
	Kota Administrasi Jakarta Timur	197	20.4
	Kota Administrasi Jakarta Utara	127	13.2

The questionnaire draft was submitted to four academic experts with expertise in the study. As part of the expert discussion, the validity of the questionnaire, which consisted of items transparency, completeness, and correlation, was evaluated. Some questions were changed regarding transparency and content. Finally, following some previous literacies and the expert, risk communication is divided into four lower-order constructs which consist of 11 items in total discussion [Heydari et al., 2021; Takian, Raoofi & Kazempour-Ardebili, 2020; Bontempo, Bottom

& Weberp, 1997; Shih, Wijaya & Brossard, 2008; Cho et al., 2017]. News media exposure is measured by two items which are divided into traditional mass media and internet news exposure types, which were evaluated using a 5-point scale at a range of 1 (never) to 4 (very often) through identifying the frequency of the respondents' exposure to news and information on COVID-19 in the mass media and Internet over the previous three months. Information-gathering ability, trust in government and trust in news media were evaluated using a 7-point Likert scale which ranged from 1 (complete disagreement) to 7 (complete agreement). Meanwhile, preventive behaviour and excessive preventive intention against coronavirus were adapted from research conducted by Liu et al. (2020), consisting of seven and three items, respectively.

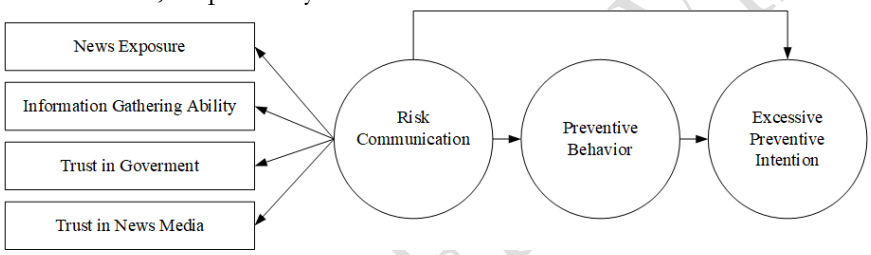

Figure 2: Research Model

Analytic Strategy

After we collected 964 data through online survey surveys, the analysis phase in this study began with the launch of normally distributed data, then continued with carrying out Confirmatory Factors Analysis (CFA) along with causal path analysis using structural equation modeling (SEM). Confirmatory Factors Analysis (CFA) analysis is done by summarizing the information contained in the original (initial) variables into one new dimension or variate (factor) through data summarization. The confirmatory factor analysis test was only carried out on constructs that have hierarchical component models (HCMs) models, namely risk communication with the components of the fourth dimension, namely news media exposure, information gathering ability, trust in the government, and trust in news media with a total of 11 questions that were answered—divided into every existing dimension. The confirmatory factor analysis test was carried out by testing convergent validity, VIF collinearity, discriminant validity, and construct reliability. Based on the test results, it was

found that the value of loadings on the high-order (HOC) and lower-order (LOC) constructs had met the test requirements above 0.7 (Hair et al., 2017). Next, we have examined the collinearity between construct reflective items by examining the inner Variance Inflation Factor (VIF) value. High correlations are usually not expected between the measurement indicators of the model. In addition, correlations between items show problematic collinearity (Hair et al., 2014). The results show that the VIF value for all predictor constructs is less than 5. Therefore, collinearity is not a problem between construct dimensions (Hair et al., 2014; Hair et al., 2011).

The test is continued by looking at the discriminant validity for each construct with the correlation value between the constructs in the model. To measure discriminant validity, Wong (2019) and Andriani and Putra (2019) stated that there were two testing steps, namely the Fornell larcker criterion and the heterotrait-monotrait ratio of correlations (HTMT). However, Henseler et al. (2015) recommend using the HMTinference rather than Fornell's Larcker criterion. This is based on the failure of the Fornell-Larcker criterion to identify discriminant validity, especially for large cases or complex research models. For this reason, researchers only use HMTinference as a test to identify discriminant validity. We found that the confidence interval (CI) value of both 2.5% and 97.5% of each dimension to the variable value was less than or equal to 1.00, so it was concluded that there was no discriminant validity for each supporting indicator problem. After testing discriminant validity, the reliability test was carried out using the composite reliability test, Cronbach's alpha, and Rho_a by looking at all latent variable values with a composite reliability value of 0.7 (Hair et al., 2017). We completed the Confirmatory Factors Analysis (CFA) test by testing the significant relationship between the HOC constructs and LOCs, where the results (Table 2) in this study found that the overall LOCs constructs forming the HOC (risk communication) construct were found to have t-statistics values above 1.96 and p-value is below 0.05, it can be concluded that all LOCs dimension constructs are components that make up the HOC construct. From the research findings, the component of trust in government (β = 0.920) is the largest in compiling risk

communication, followed by information gathering ability (β = 0.894), news exposure (β = 0.876), and trust in news media (β = 0.800).

Table 2: Significance Test of Loadings (Reflective Measurement Model of Second Order Constructs)

	Original Sample (O)	T Statistics (|O/STDEV|)	P Values
Risk Communication [HOC] -> Information Gathering Ability [LOC]	0.894	117.958	**0.000**
Risk Communication [HOC] -> News Exposure [LOC]	0.876	72.403	**0.000**
Risk Communication [HOC] -> Trust in Goverment [LOC]	0.920	116.424	**0.000**
Risk Communication [HOC] -> Trust in News Media [LOC]	0.800	35.173	**0.000**

Results and Discussion

After performing factor analysis with Confirmatory Factors Analysis (CFA), we performed causal path analysis using structural equation modeling-partial least square (SEM-PLS). We start by analyzing the measurement model to ensure (1) the validity or ability of the indicator items to measure the latent construct either through convergent or discriminant testing and (2) the reliability or consistency of the indicator items to measure the intended latent construct. Given that the measurement model in this study uses reflective measurements, loadings greater than 0.7 are recommended by Hair et al. (2017). We tested all measuring items and found the loading value to be above 0.7. Next, we looked at the average variance extracted (AVE) value and found that the overall latent construct had a value of 0.5 according to the recommendations from Hair et al. (2017); where this ratio implies that the latent variable has accounted for more than 50% of the variance of the reflective indicator. While in the reliability test, we found that the entire construct had a construct reliability value above 0.7 both in the composite reliability test, Cronbach's alpha, and Rho_a. Details on the concurrent validity test results can be seen in Appendix 2.

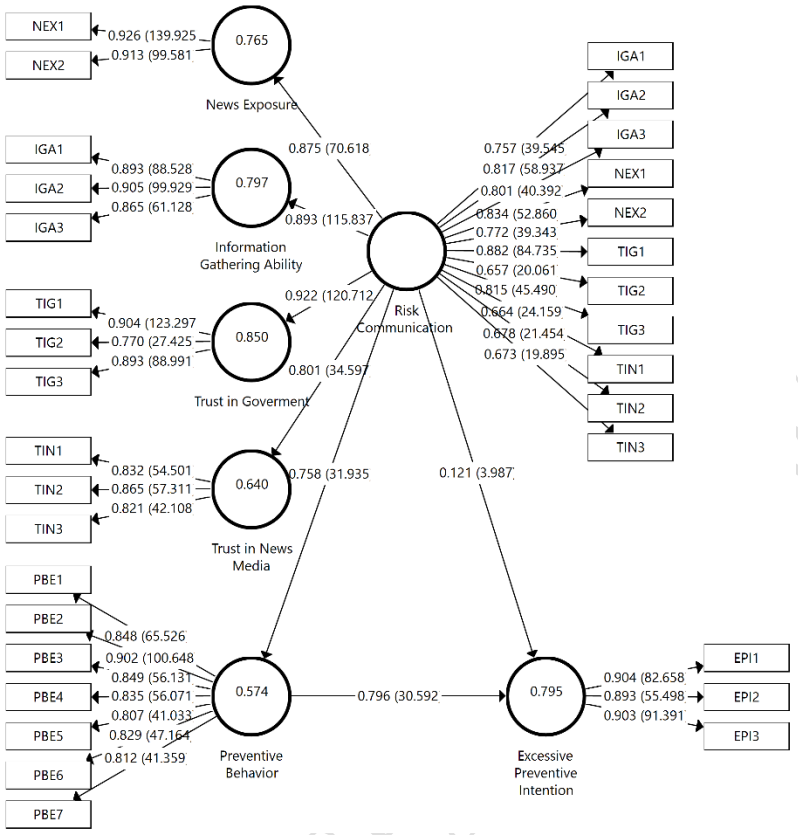

Figure 3: Research Model

In the initial step in carrying out discriminant validity testing using HTMTinference, we used a bootstrapping procedure with a re-sample of 5000, which was run to get a confidence interval (CI) value of less than or equal to 1.00, and we found that there were no problems with discriminant validity (Henseler et al., 2015). In this study, it was found that the confidence interval (CI) value of both 2.5% and 97.5% of each dimension of the variable value was less than or equal to 1.00, which can be seen in Appendix 3, so it can be concluded that for each supporting indicator there is no discriminant validity problem. We also analyze the discriminant validity test using cross-loadings to take a deeper look at how each measuring item is related to the intended construct. The results show that all indicators should contain the highest scores on the related constructs. The test is continued by analyzing the structural model, looking at the R-squared adjusted value. The value in this test indicates the extent to which the exogenous construct explains the endogenous construct. However, if an R-Squared adjusted is used (Hair et al., 2017), this

coefficient can be biased upwards in complex models where more paths lead to endogenous constructs. More importantly, the coefficient of determination needs to be assessed in the context of a research project discipline to assess whether the R-Squared value obtained is large enough. Because this research model is quite complex, the R-Squared adjusted value will be used to analyze the coefficient of determination. We found that all R-Squared adjusted values were above 0.50 (medium) and 0.75 (substantial).

Predictive relevance (Q^2) for the structural model we use to measure how well the observed values can be generated. According to Hair et al. (2017), if the value of Q^2 is greater than zero for certain endogenous latent variables, it shows that the PLS path model has predictive relevance for that construct. This statistic was obtained by a sample reuse technique called "Blindfolding," The distance of removal is set between 5 and 12, where the number of observations divided by the distance of removal is not an integer (Hair et al., 2012). For example, if you select an omission distance of 7, every seventh data point is omitted, and the parameter is estimated with the remaining data points. According to Hair et al. (2017), the omitted data points are considered missing values replaced with average values. The estimated parameters help predict the omitted data points and the difference between the actual data points and the predicted data points becomes the input for the Q^2 calculation. Blindfolding is only applied to endogenous constructions with reflective indicators. If $Q^2$is greater than zero, this indicates the predictive relevance of the pathway model in the context of endogenous constructs and corresponding reflective indicators. We have found a predictive relevance (Q^2) value above 0.000 which means that our research model has a relevant predictive value.

Table 3: Coefficient of Determination and Predictive Relevance Tests

	Q^2 (=1-SSE/SSO)	R Square	R Square Adjusted
Excessive Preventive Intention	0.635	0.795	0.795
Information Gathering Ability	0.623	0.797	0.797
News Exposure	0.640	0.765	0.765
Preventive Behavior	0.394	0.574	0.574
Trust in Goverment	0.618	0.850	0.850
Trust in News Media	0.446	0.641	0.640

According to Avkiran and Ringle (2018), efforts to develop a goodness-of-fit index for PLS-SEM have not been fully

successful. The simulation study of Henseler and Sarstedt (2013) shows that goodness-of-fit (according to Tenenhaus et al., 2004) and goodness-of-fit (according to Vinzi et al. 2010) indices are not suitable for validation of research models in SEM-PLS (GoF = square root of (average AVE) x (average R-squared)). Finally, consistent PLS (PLSc) makes it possible to correct the so-called PLS bias, and thus, mimic the results based on the CB-SEM factor model (Bentler & Huang, 2014; Dijkstra, 2014; Dijkstra & Henseler, 2015).In such a situation, one can return to fit measures such as standard root mean square residual (SRMR) and normed fit index (NFI) (Henseler et al., 2014). For this reason, we use two test models, including the standardized root mean square residual (SRMR) and the normed fit index (NFI) proposed by Hu and Bentler (1998) in Ramayah et al.(2017) that the model in this study has been considered to have a good fit because the standardized root means square residual (SRMR) value below 0.08 and the normed fit index (NFI) was found above 0.9 (Hair et al., 2014).

We found that risk communication positively and significantly affected excessive preventive intention ($\beta = 0.121$, $t > 1.96$, $p < 0.05$) and preventive behavior ($\beta = 0.758$, $t > 1.96$, $p < 0.05$). This proves that all risk communication efforts carried out by the government can increase compliance behavior and a greater desire to protect themselves from the spread of the coronavirus. The community had a complete picture of how their condition was when they contracted the disease. Meanwhile, we also found that preventive behavior had a positive and significant effect on ($\beta = 0.796$, $t > 1.96$, $p < 0.05$) excessive preventive intention. Along with people taking preventive measures against themselves, they directly increase their intention to protect themselves more tightly to avoid the coronavirus virus.

Table 4: Hyphotheses Testing

	Original Sample (O)	T Statistics (|O/STDEV|)	P Values
Risk Communication -> Excessive Preventive Intention	0.121	3.987	**0.000**
Risk Communication -> Preventive Behavior	0.758	31.935	**0.000**
Preventive Behavior -> Excessive Preventive Intention	0.796	30.592	**0.000**
Risk Communication -> Preventive Behavior -> Excessive Preventive Intention	0.603	23.222	**0.000**

Based on the test results on the indirect effect of risk communication on excessive preventive intention through preventive behavior, it has path coefficients, T-Statistic > 1.96, and p-value <0.05, so it can be concluded that preventive behavior mediates the relationship between risk communication

and excessive preventive intention. The results of the estimation of changes in the value of the indirect influence path coefficient in this model will be further analyzed using the Variance Accounted For (VAF) method according to Hair et al. (2014) as follows:

$$\text{VAF} = \frac{(a*b)}{(a*b)+c}$$
$$\text{VAF} = \frac{(0.758*0.796)}{(0.758*0.796) + 0.121}$$
$$\text{VAF} = \frac{0.603}{0.724}$$
$$\text{VAF} = 0.757\ (76\%)$$

Based on the calculation of VAF, found to mediate partially with a magnitude of 76% (Partial). However, when referring to the theory development carried out by Hair et al. (2017), preventive behavior was found to have a complimentary mediation mediating effect, which means that whether there is a direct or indirect relationship, risk communication can influence excessive preventive intention and preventive behavior is an important variable between the two variables. Although risk communication efforts can directly increase the behavior of people's intentions to prevent excessive transmission of the virus, this desire will be greater if people consciously take preventive actions before the emergence of excessive interest.

Conclusion

The findings in our study reveal that the most significant forming component of risk communication is trust in government; this is following the guidelines for implementing the principles of risk communication and community involvement made by the WHO organization. Public confidence in governments, institutions, and organizations responding to a pandemic is critical to controlling outbreaks. Trust in scientific advice and recommended behaviour is also essential. Distrust varies and is related to structural, historical and cultural factors. Understanding them is key to developing a trust-building strategy. On the other hand, WHO suggests that national governments should lead communications. Compared to the public's trust in media coverage, the public is more confident in the exposure of news officially issued by the government. For this reason, the DKI Jakarta government is expected to foster public trust in its

institutions and agencies. Including providing information on a regular and timely basis, sharing what is known about the threat, avoiding speculation, always being truthful, avoiding false promises, providing updated information when available, and anticipating the need to repeat messages.

In addition, an exciting finding in this study is the importance of the risk communication factor, which is no longer an alternative approach in preventing the spread of the coronavirus. Risk communication can directly increase public awareness of preventive behaviour and over-intentions that are more protective against the spread of the coronavirus. In addition, the risk communication approach carried out by the DKI Jakarta government so far has only been carried out with a one-way direction, regardless of whether the person applies preventive behaviour. Therefore, there is a need for a two-way approach that can monitor the extent to which the community implements these preventive behaviours. Because although risk communication can increase people's intention to carry out excessive self-protection directly, the implementation of preventive behaviour by the community can strengthen the emergence of extreme interest in their self-protection. A practical risk communication approach should focus on the effectiveness of risk mitigation measures and ensure that this communication is actively perceived. Thus, risk communication must be carefully defined and planned across behavioural action lines, which is considered efficient and reliable by many individuals in the target audience (Heydari et al., 2021).

However, this research was only conducted in the DKI Jakarta area, where the results of community behaviour cannot be generalized nationally. For this reason, we hope that further research can expand the coverage area nationally, where the risk communication approach is the responsibility of the national government. In addition, we also suggest that further research can compare by dividing the respondents into two groups, namely people who have been infected and those who have never been infected. It aims to see the differences between the two groups and how risk communication can be carried out in each group.

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Appendix

Appendix 1: Item Scales

Risk Communication

News Exposure

How often you have seen, read, or heard any coverage on the Covid-19 virus via traditional mass media?

How often you have seen, read, or heard any coverage on the Covid-19 virus via internet or social media?

Information Gathering Ability

Receiving information about COVID-19 is easy for me.

I know where to find information about COVID-19.

It is easy for me to understand the information about COVID-19.

Trust in Government

I am confident that the government protects the citizens from the COVID-19 infection.

The government spare their best efforts to minimize COVID-19 infection.

I trust in the cooperation and coordination of relevant authorities in the country.

Trust in News Media

News media provide accurate information about COVID-19.

News media provide sufficient information about COVID-19.

I trust in news stories reported by news media about COVID-19.

Preventive Behavior

Minimize social activities; avoid infected areas; avoid crowded public places.

Wear a single-use medical face mask when visiting public places, or taking public transport; wear a surgical mask when visiting a fever clinic.

Keep my hands clean and wash my hands frequently; minimize contacts with objects in public places.

Refrain from touching my mouth, nose, and eyes with unwashed hands; cover my mouth and nose with my elbow when sneezing or coughing.

Monitor my health conditions; wear a face mask and visit a nearby clinic for medical help when any suspicious symptom comes up.

Ensure my home is adequately ventilated.

During the pandemic, I took personal preventive measures according to the above preventive measures.

Excessive Preventive Intention

I think the above preventive measures are not enough to prevent COVID-19.

I tend to take more stringent preventive measures besides the above preventive measures.

I don't think the above preventive measures can guarantee my protection against COVID-19.

Appendix 2: Construct Reliability and Convergent Validity

Constructs	Items	Loadings	α	rho_A	CR	AVE
Risk Communication [HOC]	IGA1	0.7574	0.927	0.932	0.938	0.582
	IGA2	0.8171				
	IGA3	0.8011				
	NEX1	0.8338				
	NEX2	0.7722				
	TIG1	0.8818				
	TIG2	0.6574				
	TIG3	0.8146				
	TIN1	0.6639				
	TIN2	0.6784				
	TIN3	0.6730				
Information Gathering Ability [LOC]	IGA1	0.8932	0.866	0.867	0.918	0.789
	IGA2	0.9054				
	IGA3	0.8650				
News Exposure [LOC]	NEX1	0.9257	0.817	0.820	0.916	0.845
	NEX2	0.9127				
Trust in Goverment [LOC]	TIG1	0.9044	0.820	0.842	0.893	0.737
	TIG2	0.7703				
	TIG3	0.8934				
Trust in News Media [LOC]	TIN1	0.8317	0.790	0.790	0.877	0.704
	TIN2	0.8646				
	TIN3	0.8210				
Preventive Behavior [HOC]	PBE1	0.8482	0.931	0.932	0.944	0.707
	PBE2	0.9016				
	PBE3	0.8492				
	PBE4	0.8347				
	PBE5	0.8070				
	PBE6	0.8291				
	PBE7	0.8123				
Excessive Preventive Intention [HOC]	EPI1	0.9045	0.883	0.884	0.928	0.810
	EPI2	0.8931				
	EPI3	0.9027				

Appendix 3: Discriminant Validity ($HTMT_{Inference}$)

	Original Sample (O)	Sample Mean (M)	2.5%	97.5%
Preventive Behavior -> Excessive Preventive Intention	0.796	0.796	0.744	0.846
Risk Communication -> Excessive Preventive Intention	0.121	0.121	0.062	0.181
Risk Communication -> Information Gathering Ability	0.893	0.893	0.877	0.908
Risk Communication -> News Exposure	0.875	0.875	0.848	0.897
Risk Communication -> Preventive Behavior	0.758	0.757	0.708	0.801
Risk Communication -> Trust in Goverment	0.922	0.922	0.906	0.936
Risk Communication -> Trust in News Media	0.801	0.800	0.752	0.842
Risk Communication -> Preventive Behavior -> Excessive Preventive Intention	0.603	0.603	0.554	0.655