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Social Marketing in Social Media: Investigating The Precursor in Influencing Behaviors of Government Healthcare Campaign

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Abstract. *Social media platforms have become a tool for spreading information in society, it enables the government to use this media for giving information to the public, especially in pandemic situations. Social media has revolutionized the way of reaching out to consumers and communicating with them. Branding in social media strategy is commonly used in advertising and product marketing but has not been widely used in the health communication field. In this study, we shine a light on the new way health communications marketing is reaching audiences with health messages. The information adoption process in social media might be a strategy for spreading trusted information on the internet, so this study aims to examine the precursor of this case. Using Structural Equation Model (SEM) we identify the relationship between variables influencing certain behaviors related to health content in social media. This study used snowballing technique for collecting data through online questionnaires with a sample of 297 respondents who were in accordance with the criteria of the population. We offer insight for future research on these topics by discussing the public marketing role in social media interaction. Our outcome of the study to serve as a platform to positively impact future research on information in social media regarding health is being delivered to society. Furthermore, the study may develop a socialization program to educate society, campaign for a healthy lifestyle, and health information media using social media.*

Keywords: *Social marketing, social media, information adoption, sharing behavior, cet framework.*

Abstrak. *Platform media sosial telah menjadi salah satu alat penyebaran informasi di masyarakat, sehingga pemerintah dapat memanfaatkan media tersebut untuk memberikan informasi kepada masyarakat, terutama dalam situasi pandemi. Media sosial telah merevolusi cara menjangkau konsumen dan berkomunikasi dengan mereka. Branding dalam strategi media sosial biasa digunakan dalam periklanan dan pemasaran produk namun belum banyak digunakan dalam bidang komunikasi kesehatan. Dalam studi ini, kami menyoroti cara baru pemasaran komunikasi kesehatan dalam menjangkau khalayak dengan pesan kesehatan. Proses adopsi informasi di media sosial dapat menjadi strategi penyebaran informasi terpercaya di internet, sehingga kami meneliti prekursor pada kasus ini. Dengan menggunakan Structural Equation Model (SEM) kami mengidentifikasi hubungan antara variabel yang mempengaruhi perilaku tertentu terkait konten kesehatan di media sosial. Penelitian ini menggunakan teknik pengumpulan data snowballing melalui kuesioner online dengan sampel 297 responden yang sesuai dengan kriteria populasi. Kami menawarkan wawasan untuk penelitian masa depan mengenai topik ini dengan mendiskusikan peran pemasaran publik dalam interaksi media sosial. Hasil penelitian kami berfungsi sebagai platform untuk mengedepankan penelitian di masa depan mengenai informasi di media sosial mengenai kesehatan yang disampaikan kepada masyarakat. Selanjutnya penelitian ini dapat mengembangkan program sosialisasi untuk mengedukasi masyarakat, mengkampanyekan pola hidup sehat, dan media informasi kesehatan melalui media sosial.*

Kata kunci: *Social marketing, social media, information adoption, sharing behavior, cet framework*

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Introduction

Social marketing is different from commercial marketing where the primary aim of the former is stimulating behavior change that will contribute to societal and individual gains. At the same time selling products and services that bring in revenue for the company is the main goal in the commercial sector (Lee & Kotler, 2019). Social marketing strategy has been used to introduce and induce certain behaviors among the targeted society. It consists of initiatives to advance the public's health, avoid accidents, preserve the environment, support local communities, and most recently, increase financial security (Lee & Kotler, 2019). In the healthcare sector, It has been utilized for numerous health campaigns (Agarwal et al., 2020).

During a crisis, reliable health information to the public from experts, officials government, and leaders talk with the public is crucial. Because, false information, fake news, and conspiracy theories have been widely disseminated online and on social media since the COVID-19 pandemic began. (Fagherazzi et al., 2020). In response to the significant number of misinformation, the government needs to ensure the availability of reliable information about COVID-19 to the public. They need to make efforts to use platforms to handle reliable information content, especially in health generated by healthcare professionals and pandemic experts.

A platform that is reliable, trustworthy, and able to reach all levels of society is required to spread the information. The platform must be reliable because it has to be efficient to inform the general public regarding the consequences and effects of the pandemic. Therefore, the government has considered social media as a platform to spread health information to the public. Furthermore in developing countries, social media is one of the most effective ways to stay informed and updated about infectious illness news and updates (Alfatease & Alqahtani, 2021).

Prior research has assessed social media as a source of information platform for the H1N1 influenza pandemic and the Ebola virus outbreak, as has been done in many other nations. (DSouza et al., 2020). Social media as a platform for health information related to infectious diseases by the government has also been used during Zika virus pandemic. As the Zika virus pandemic spreads north to America, Facebook has shown to be a reliable source of critical information and updates. (Galan-Ladero & Galan-Ladero, 2019; Sharma et al., 2017). Public health professionals, agencies, and organizations in other nations, like the USA, have tried to use social media platforms to convey information or have teamed with well-known users of these platforms to spread messages (Basch et al., 2021).

The capabilities of social media to distribute messages to various community groups in public and share the information with others to do so is defined as virality. Viral marketing first targets a small group of limited people before turning to their family, friends, relatives, and coworkers to promote and spread a message, it means the information will pass from one individual to another (Choshaly & Mirabolghasemi, 2020). Previous research has discussed the use of social media in the past from prior health crises, such as Ebola and Zika, and illustrates how health organizations use it. (Arriaga et al., 2021). In a previous systematic review research by Moorhead et al. (2013) identified ways that social media is being used in healthcare, such as using social media as a health platform, for health education and promotion (Giustini et al., 2018).

In promoting health information and education, social media is an easily accessible source that has provided unprecedented opportunities to communicate with larger stakeholders than before, including the public and society during certain situations. Furthermore, Governments may use their persuasion capabilities to distribute health messages to social media audiences in times of crisis, such as supporting safety and health protection guidelines or economic recovery (Femenia-Serra et al., 2021).

However, not many have discussed precursors or drivers regarding the distribution of health information on social media (Riaz et al., 2020). Therefore in this study, the author identifies and examines the "potential precursors" of the adoption of social media health information and their impacts on personal healthcare habits and health information-sharing behavior.

In Indonesia, health information content on social media is supported by the government. A special force in changing behavior (Satgas Bidang Perubahan Perilaku) was created to campaign for healthy lifestyles and new habits during the COVID-19 outbreak. With the significant influence of social media and the public, our government uses social media to spread information and to control the spread of COVID-19 with their persuasion messages for social marketing. The Indonesian government pushed to adopt the protocol of the "New Normal" which is in line with the advice from WHO recommendation guidelines and mandates countries to carry out effective risk communication (WHO, 2020). The illustration below is an example of the government campaign for social health on social media.

The Indonesian government maintains the spreading of the virus by the COVID-19 health protocol. According to the health ministry and the task force to swiftly handle COVID-19, are using masks, maintaining social distancing, and washing hands (3M) with additional avoiding crowds and restricting mobility (5M). Besides the campaign of changing behavior, essential information such as COVID-19 symptoms, vaccine information, and daily cases of COVID-19 are disseminated through social media platforms. In this government campaign, social media is being utilized because it is a powerful tool for searching and gathering health-related information (Herrera-peco et al., 2021). The following illustration is an example of changing behavior content in social media campaigns in order to prevent the transmission of COVID-19 implemented by the government, Ministry of Health through the Instagram platform.

Figure 1.
Government Social Media
Source: Instagram @satgasperubahanperilaku

Figure 2.
Health Protocol Content
Source: Instagram @Kemenkes_RI

The study contributes to filling the gap in the book of knowledge on consumer behavior in the social marketing context related to the continuance of social media platform usage in health campaigns. Like during epidemic such as Ebola and Zika, previous study limited mentioning the role of mass media and illustrates how health organizations use it. (Arriaga et al., 2021). Moreover, the authors found limited literature about social media health information during health emergency situations such as the COVID-19 pandemic (Basch et al., 2021; DSouza et al., 2020; Riaz et al., 2020; Xie et al., 2020). There are many study mentioning social media for public health but not yet mentioning the behavioral result nor the factor influencing from their campaign in marketing study particularly health behavior.

On social media information, there must be factors that influence it. We call this driving factor a "precursor", A precursor explains the event or phenomenon that comes before somebody/something comparable and contributes to leads or influences its development. (Oxford, 2023). The focus of this study is on the content of publication via Instagram. Because messages from authorities such as health organizations are implicitly embedded in visually attractive content like Instagram, which increases the message's persuasive power (Femenia-Serra et al., 2021). Other than that, this platform has appropriate social media characteristics to disseminate viral information as described previously.

This study aimed to answer the following questions, below:
RQ 1: What are the potential precursors of social marketing in social media health information?
RQ 2: How the precursor of social media does affect user information adoption and their behavior such as information sharing?
RQ 3: How do social media platforms play an effective role in developing personal healthcare habits among users during the COVID-19 health emergency?

Conceptual Framework and Hypotheses

Communicative Ecology Theory (CET) Framework
The authors determine the potential precursor in social media regarding health behavior using Communicative Ecology Theory (CET). A conceptual framework for sociology, media, and communications known as "Communicative Ecology Theory" explains how technology, content, and social factors interact dynamically as people communicate with one another.

The communicative ecology has three layers, including the discursive (content), technological, and social. According to CET, an individual's behaviors in communication are the results of integrated antecedents in these three layers (Riaz et al., 2020). CET argues that the subject's communicative behavior results from a combination of those three layers, such as the discursive layer, technological layer, and social layer.

Discursive Layer

The circulation and exchange of the content of ideas, knowledge, stories, and images are involved in the discursive layer. Furthermore, the discursive layer is associated with the characteristic of content in health information and knowledge in a media platform, according to the Communicative Ecology Theory (Jin et al., 2019; Riaz et al., 2020). The communication materials that include conversational themes or ideas trigger up the discursive layer. The layer primarily refers to the characteristic of content in healthcare knowledge and the information that likely influences the behavior. Consequently, the discursive layer is used in this study to identify the precursor content from the health information content in social media.

Based upon CET, there are only severe studies that examine the precursors and drivers of health information and their results with several characteristics that represent information content. According to Jin (2019), there are severe characteristics in social media content at the discursive layer that may increase users' chances of spreading their knowledge information of healthcare and influence individuals such as positivity, emotionality, interestingness, and perceived usefulness. Additionally, the discursive layer's legitimacy of online health information is crucial because it encourages people to psychologically assess the value of the information and their trust in social media platforms. (Riaz et al., 2020). These characteristics in the discursive layer can be used to identify content as external factors of the precursor.

Technological layer

A technological layer is explained as media technology characteristics that connect people then allow them to interact and communicate easily (Riaz et al., 2020; Seol et al., 2016). The technological characteristic in this layer represents a platform used for information dissemination in health campaigns such as trust in the medium (platform). Trust is something that will be felt in the general technology environment in social media (Benson et al., 2019). Trust can be characterized as the assumption that each partner would behave in the other partner's interests and benefit, and trust also implies extensive information exchange (Zaheer & Trkman, 2017). Accordingly, trust in the medium becomes a characterizing element in the identification of precursors at the technological layer.

According to previous research from Jin et al. (2019), in a technological layer, trust in a medium becomes one of the most reliable indicators or precursors in predicting healthcare information diffusion spread. This earlier research also made the assumption that if a person believes that a social media platform can care about their well-being, they will use it and their behavior with regard to sharing health information will grow (Jin et al., 2019; Riaz et al., 2020). Prior research shows that trust is one of the key factors in predicting how attitude of users toward information-sharing. (Jin et al., 2019; Salehan et al., 2016). For health education, the higher people who trust health knowledge, the more likely they are to willing to adopt risk to the knowledge since a lot of the content on social media is false or misleading '(Huo, 2018).

Social Layer

The social layer is collected by people in the process of communicating. The social layer, according to Seol (2016), is made up of the activity of social interaction, referring to the connections or relationships between the subjects. People and social structures make up the social layer of the communication process (Jin et al., 2019).

Social influence contains a part of the communication process in social layers such as interactions among the members of a group society, environment, or virtual community. In our society's culture, collectivism also plays a role in social influence on social media. People tend to interact in the group society and share their thoughts also their health experiences together.

Extending the prior knowledge on the development, imitation, and bonding of social groups from prior studies before COVID-19 a previous study found social influence from a close circle to another circle of society guides behavioral change during a certain situation and crisis (Tuncgenc et al., 2021). Hence, social influence could come from an individual's family and peers as the closest circle they have personally known. In addition, social influence is a relationship between individuals on social media that might affect healthcare content seeking and sharing among the individual because social media users as individuals are influenced by peers buddies, close friends, family, and people around. (Riaz et al., 2020). Therefore, social influence acts as the identifier in precursors at the social layer in this study.

Health Information Adoption

Information adoption is the act of adopting information as true and maintaining it going forward in the future (Li et al., 2019). The process of accepting information became an organism such as a mediator between precursors in this study to certain behavior as a response to health knowledge information. Previous research has been examined regarding information adoption in social media. The accepting process from the standpoint of the recipients, information adoption examines how they perceive and evaluate health information and provides a thorough model of social media adoption of health knowledge (Huo, 2018). Currently, the perceptions of information consumers are more vital than ever, and for the social media sector, they suggest a broad health knowledge adoption model.

The concept of the information adoption model originated from technology acceptance and was initially used in the context of intermediaries to examine how workers adopt recommendations (Sun & Wang, 2020). With the development of the information adoption concept, most of the previous research regarding information adoption only explores marketing messages, not much used in social marketing or public health information. In line with adoption information in marketing, the previous author found that social networks such as social media interaction are gaining an influence as a primary source of viral marketing to stimulate adoption (Fard & Marvi, 2019). Hence it supports the adoption of information messages in a health context as an organism that serves as a mediator toward certain behaviors in social media.

Hypothesis Development

Based on the framework scheme, and the above thought, this research leads to the following hypothesis:

H1. Content quality has positive effects on information adoption health care campaigns.

H2. Trust in medium has positive effects on information adoption health care campaigns.

H3. Social influence has positive effects on information adoption health care campaigns.

Information Sharing Behavior and Personal Healthcare Behavior

The individuals will react to environmental stimuli and have particular behaviors, according to the SOR framework (Kamboj et al., 2018; Cheng et al., 2021). The reaction such as a person's behavioral or physical response is referred to as an external response (Cho et al., 2019). In this study, the responses are as follows:

a. Information Sharing behavior

In particular, sharing behavior is defined as willingly giving resources to others. In accordance with prior research, the willingness or intention to interact with information-sharing behavior is a factor that influences sharing behavior to give resources to others.

According to previous research on sharing behavior, we found that we cannot gain any direct rewards such as monetary benefits or promotion opportunities, but sharing information is beneficial for knowledge sharing in the community, especially in the current condition when social media become a communication platform (Riaz et al., 2020). As beneficial knowledge sharing in the community, the information behavior consequence as a kind of physical response to the information that becomes the output response in health campaigns on social media during the COVID-19 era.

b. Personal Healthcare Behavior

Personal healthcare behavior is the behavioral habit that comes as a response or output from a healthcare campaign in a social marketing program. As discussed in previous research by Riaz in 2020 the following health programs such as campaigns on social media may be intended to influence people's healthcare behaviors. Also in line with the bottom line of a social marketing campaign like the current healthcare campaign is 'behavior change' (Kumar et al., 2021). Many of the studies conducted previously have ignored evaluating the effects on individuals' actual habits or behaviors in positive or negative responses (Riaz et al., 2020), the finding of. It has also been determined that incorporating theory into the creation of behavior change programs is a crucial component of successful programs such as health campaigns. –(Almosa et al., 2017; Concari & Kok, 2020). Therefore, in the context of the following arguments, actual personal healthcare behavior is constructed as health campaigns on social media.

From the previous study, we can see that social marketing focuses on constructs related to contextual behavior into predictable outputs or responses. In this study, we provided regarding health-sharing behavior and healthcare habits. Therefore, we propose the following hypotheses:

H4. Higher information adoption will affect positively health information-sharing behaviour.

H5. Higher information adoption will affect positively healthcare habits behaviour.

According to the literature review above, a comprehensive conceptual model is illustrated in Figure 3 below. It shows the discursive layer, technological layer, and social layer as the group of precursors that influence information adoption and leads to social behavior in healthcare campaign.

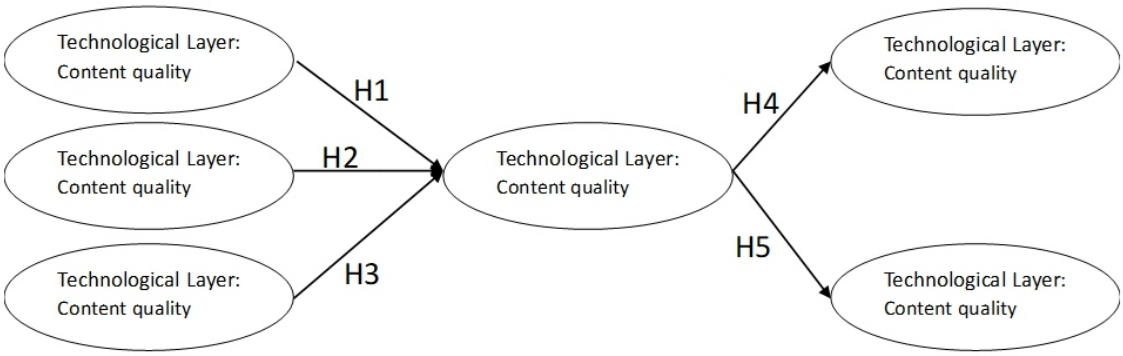

Figure 3
Conceptual Framework
Source: formulated by author

Research Methodology

To answer the hypothesis and achieve the research objectives, this research uses a literature review to understand health knowledge and information in social media including to fill the gap about the potential precursors of social media health information. Afterward, to prove the hypothesis, we conducted a quantitative test using Structural Equation Modeling (SEM) to incorporate and examine the structural connection between latent constructs and measurable variables. Using SEM, we could examine the interrelated relationship between multiple dependent and independent constructions simultaneously. This method was conducted to check relationships among the constructs. This study uses a PLS variant based. The measurement and structural models are tested in this study using the partial least squares (PLS) approach. In this study, the partial least squares (PLS) method is adopted in order to test the measurement and structural models. Developed by Herman Wold (1982), Variant-based (PLS-SEM), provides a structural equation modelling approach with better flexibility compared to covariance-based (CB SEM) (Hair et al., 2020). Because it estimates the various and connected dependencies in a single analysis, this method is selected for this study.

Population and Sample

The data for this study was gathered using an online survey platform, and it was constructed using a quantitative research methodology. The population in this study is defined as social media users who are exposed to information regarding health campaigns. Snowball sampling tends to be used when it is harder to identify members of the intended population, in this case, we used snowball sampling in order to reach out to respondents who are exposed to viral information. The primary data was obtained through the survey method, which was distributed by questionnaire to the respondents. The survey strategy is usually associated with the deductive approach.

Furthermore, in order to test the questionnaire to the respondent, a pilot study is conducted in this study. The term "pilot-testing" refers to testing the questionnaire with a small sample of participants in order to find and fix any potential issues. The initial pilot-test sample in this study is 40 participants while the overall sample is 297 participants. The criteria of the respondents who are media users in big cities in Indonesia, especially in Java. The sample comprised social media users, actively using social media in daily usage and specifically those who were exposed to a certain campaign via the Instagram platform, specifically content from the Indonesian Ministry of Health's official Instagram.

Research Variable

The variables used in the questionnaire were acquired through the results from the literature review. For stimulus variables as predictors that identify certain behaviors are divided into three category such as discursive layer, technological layer, and social influence. Items for healthcare content and the discursive-layer factors (interestingness, usefulness, emotionality, positivity, and information credibility) were adapted from Jin et al., (2019) and Riaz et al., (2020). Items for the technological and social layer were adapted from Riaz et al., (2020). The items for information adoption were adapted from Huo (2018) and Li (2019). Furthermore, the behavioral variables such as information-sharing behavior and healthcare behavior were adapted from Riaz et al,. (2020). All Construct items in the research are measured using five-point Likert scale (1= "strongly disagree" to 5= "strongly agree").

Table. 1
Operational Variable

Construct Var	Indicator	Item	No Item	Outer Loadings	Result	Scales
Discursive Layer (Content quality) Adapted from: (Jin et al., 2019) and (Riaz et al., 2020)	Interestingness	This health information content is interesting	DL1	0,743	Supported	Ordinal
	Perceived usefulness	This health information content is useful	DL2	0,789	Supported	Ordinal
	Positivity	This content would reflect positively	DL4	0,810	Supported	Ordinal
	Information Credibility	This content provided the correct health information I require (Credible)	DL5	0,798	Supported	Ordinal
Technological Layer. Adapted from: (Riaz et al., 2020)	Trust in medium	I believe that the health content I receive from social media does not mislead me	TL1	0,762	Supported	Ordinal
	Trust in medium	Instagram is the most social medium to seek health content and information during the pandemic	TL2	0,867	Supported	Ordinal
	Trust in medium	I know this platform gives proper information regarding health content, especially during the pandemic	TL3	0,899	Supported	Ordinal

Table. 1 (Continued)
Operational Variable

Construct Var	Indicator	Item	No Item	Outer Loadings	Result	Scales
Social Layer Adapted From: (Riaz et al., 2020)	Social Influence	Most of my friends know information about COVID-19 from social media such as Instagram	SL1	0,84	Supported	Ordinal
	Social Influence	My Family members know information about Covid-19 from social media such as Instagram	SL2	0,744	Supported	Ordinal
	Social Influence	My colleague knows information about COVID-19 from social media such as Instagram	SL3	0,871	Supported	Ordinal
	Social Influence	People on my social media know information about COVID-19 from social media such as Instagram	SL4	0,863	Supported	Ordinal

Table. 1 (Continued)
Operational Variable

Construct Var	Indicator	Item	No Item	Outer Loadings	Result	Scales
	Knowledge adoption	I agree with the health knowledge information argument posted	IA1	0,758	Supported	Ordinal
	Knowledge adoption	The health information posted enriched my knowledge.	IA2	0,692	Supported	Ordinal
Information adoption Adapted from: (Chaoguang Huo, Min Zhang, 2018) and (Li et al., 2019)	Knowledge adoption	In the future, I intend to follow the recommendations provided by the posted health knowledge	IA3	0,842	Supported	Ordinal
	Knowledge adoption	I will promote the suggestions given by, to people	IA4	0,812	Supported	Ordinal
	Knowledge adoption	I trust the information in the health information post	IA5	0,836	Supported	Ordinal

Table. 1 (Continued)
Operational Variable

Construct Var	Indicator	Item	No Item	Outer Loadings	Result	Scales
Information sharing behavior Adapted from: (Riaz et al., 2020)	Sharing behavior	I want to forward to my friend the news information regarding COVID-19 on social media	SB1	0,950	Supported	Ordinal
	Sharing behavior	I want to share COVID-19-related pictures on social media with my friends	SB2	0,947	Supported	Ordinal
	Sharing behavior	I want to re-share Covid-19 information I see on my social media	SB3	0,940	Supported	Ordinal

Table. 1 (Continued)
Operational Variable

Construct Var	Indicator	Item	No Item	Outer Loadings	Result	Scales
Healthcare behavior Adapted from: (Riaz et al., 2020)	Personal healthcare habit	After reading content on social media regarding the important of masks, I use masks regularly when I go outside.	HB1	0,739	Supported	Ordinal
	Personal healthcare habit	I repeatedly sanitize and wash my hands after knowing it will prevent the transmission of COVID-19	HB2	0,818	Supported	Ordinal
	Personal healthcare habit	I became care of physical distancing after reading information on social media about transmission.	HB3	0,872	Supported	Ordinal
	Personal healthcare habit	Often, I avoid visiting public places, after reading Covid-19-related content on social media	HB4	0,781	Supported	Ordinal
	Personal healthcare habit	Often, I restrict mobility to a certain place, after reading COVID-19-related content on social media	HB5	0,780	Supported	Ordinal

Source: Author data processing

Result and Discussion

Data Research Findings

The research was conducted on the general public who use social media in everyday life. A total of 297 respondents participated in this study. Based on the data we collected, the respondent profile was classified by gender, age, occupation, level of education, and daily social media use.

The respondent profile shows that 72.1% are female out of 297 respondents and the rest 27.9% are male. Then, out of 297 respondents that passed 58,2% of them are young adults with the age range of 18-25 years old, with a time range in spending time on social media every day such as 2-3 hours a day (31.3%) and more than 3 hours (34.7%).

Table. 2
Respondent Demographic Characteristic

N		297	%
Gender	Male	83	27,9%
	Female	214	72,1%
Age	18-25	173	58,2%
	26-45	53	17,9%
	>45	71	23,9%
Occupation	Student	155	52,2%
	Employee	101	34,0%
	Housewife	26	8,8%
	Retired	7	2,4%
	etc	8	2,7%
Education Level	Highschool	126	42,4%
	Diploma/Bachelor	130	43,8%
	Magister&Doctoral	41	13,8%
Domicile	Sumatra	15	5,1%
	Banten	9	3,0%
	DKI Jakarta	23	7,7%
	West Java	76	25,6%
	Central Java	6	2,0%
	DI Yogyakarta	8	2,7%
	East Java	18	6,1%
	Kalimantan	2	0,7%
	Papua	1	0,3%
Social media use in a day	<1 Hour	23	7,7%
	1-2 Hours	78	26,3%
	2-3 Hours	93	31,3%
	>3 Hours	103	34,7%

Source: Author data processing

Model Evaluation

SEM is divided into two categories, such as covariance-based (CB SEM) and variant-based (PLS-SEM). This study uses a PLS variant based. In the variance-based (PLS-SEM) there are severe stages of model evaluation, such as evaluation of the outer model or measurement model; evaluation of the inner model or structural model. The outer model assessed convergent validity, discriminant validity, and reliability tests (Cronbach's or Composite Reliability (CR)). Confirmatory factor analysis (CFA) was conducted to calculate the factor loadings and validity of constructs. CFA is the measurement part of SEM, which shows relationships between latent variables and their indicators. The other part is the structural component, or the path model, which shows how the variables of interest (often latent variables) are related.

Tabel.3
Convergent Validity

Construct Var	AVE	CR	Result
Discursive Layer	0,617	0,866	Supported
Technological Layer	0,713	0,881	Supported
Social Layer	0,691	0,899	Supported
Information adoption	0,624	0,892	Supported
Information sharing behavior	0,639	0,898	Supported
Healthcare behavior	0,895	0,962	Supported

Source: Author data processing

Tabel.4
Discriminant Validity (Fornell-Larcker Criterion)

	Discursive Layer	Healthcare Behavior	Information Adoption	Sharing Behavior	Social Layer	Technological Layer
Discursive Layer	**0,785**					
Healthcare Behavior	0,524	**0,799**				
Information Adoption	0,591	0,524	**0,790**			
Sharing Behavior	0,403	0,375	0,631	**0,946**		
Social Layer	0,405	0,347	0,581	0,467	**0,831**	
Technological Layer	0,470	0,329	0,651	0,524	0,618	**0,845**

Source: Author data processing

The bootstrapping method was used in the SmartPLS as the next stage in testing the hypotheses. The SmartPLS used the bootstrapping method as the sequence of evaluating the hypotheses. Bootstrapping is a nonparametric procedure that allows testing the statistical significance of various PLS-SEM results such as path coefficients, HTMT, and R^2 values. This research uses the SmartPLS application to derive the PLS-SEM.

A bootstrap procedure with 5.000 resamples is conducted to analyze hypotheses by testing the structural relationship on the significance of path coefficients. The research uses 5% of the two-tailed significance level (t-value = 1,96) as a statistical decision based on Hair Jr. et al. (2019). The hypothesis uses SmartPLS to estimate the P-values and T-statistic. With P-value significance $p<0.05$.

Tabel.5
Heterotrait-Monotrait Ratio (HTMT)

	Discursive Layer	Healthcare Behavior	Information Adoption	Sharing Behavior	Social Layer	Technological Layer
Discursive Layer						
Healthcare Behavior	0,628					
Information Adoption	0,709	0,610				
Sharing Behavior	0,463	0,418	0,696			
Social Layer	0,483	0,402	0,680	0,531		
Technological Layer	0,578	0,398	0,793	0,606	0,750	

Source: Author data processing

Tabel.6
R Square

	R Square	**R Square Adjusted**
Healthcare Behavior	0,274 (weak)	0,272
Information Adoption	0,559 (moderate)	0,555
Sharing Behavior	0,398 (moderate)	0,396

Source: Author data processing

Table.7
Hypothesis testing T-statistic, P-value, and effect size table (F^2)

Hypotheses	Variable	Original Sample	T-Statistics	P-Values	Effect Size (F^2)	Result
Hypothesis 1	**DL -> IA**	0,176	2,174	**0,030**	0,190 (moderate)	Accepted
Hypothesis 2	**TL -> IA**	0,510	5,116	**0,000**	0,161 (moderate)	Accepted
Hypothesis 3	**SL -> IA**	0,240	2,314	**0,021**	0,070 (moderate)	Accepted
Hypothesis 4	**IA -> SB**	0,593	8,375	**0,000**	0,661 (strong)	Accepted
Hypothesis 5	**IA -> HB**	0,508	6,141	**0,000**	0,378 (strong)	Accepted

Source: Author data processing

The following statement are the analysis of the direct effects of inner model:

1. The direct effect of DL on IA is 0.332, which means that there is a positive effect of 33.2% between Discursive Layer and Information Adoption.
2. The direct effect of TL on IA is 0.355, which means that there is a positive effect of 35.5% between Technological Layer and Information Adoption.
3. The direct effect of SL on IA is 0.227, which means that there is a positive effect of 22.7% between Social Layer and Information Adoption.
4. The direct effect of IA on SB is 0.631, which means that there is a positive effect of 63.1% between Information Adoption and Sharing Behavior.

The direct effect of IA on HB is 0.524, which means that there is a positive effect of 52.4% between Information Adoption and Health behavior

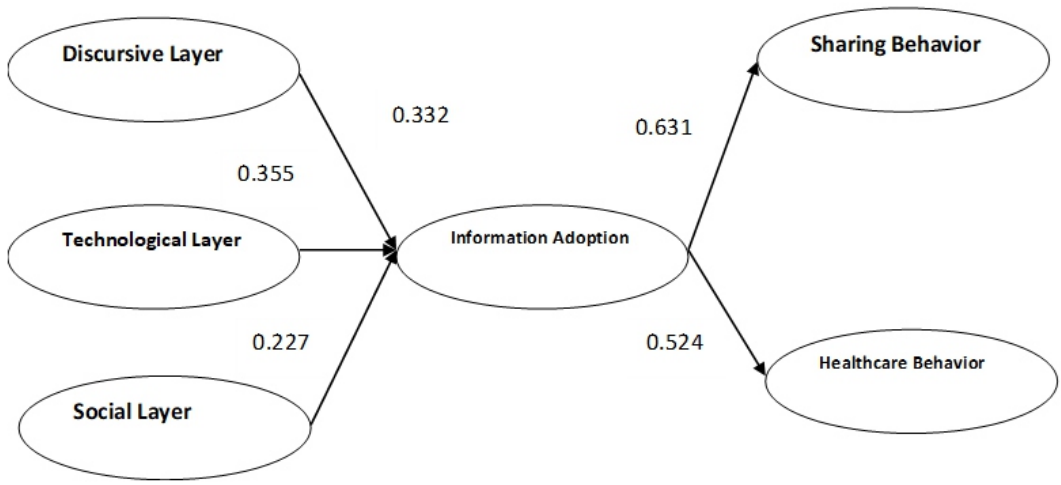

Figure 4
Path Analysis Figure
Source: Author data processing

In addition, according to Huber et al. (2007), the Path coefficient must be at least 0.100 and at a significance level of at least 0.05. The significant path coefficients further show that the precursor variable such as the CET framework is related to behavior in a viral message. According to the statistics, the hypothesis is interpreted as a statement regarding the state of the population to be tested for its truth based on data obtained from a statistical research sample.

Using path coefficients, we could understand the estimated path relationships in the structural model, which correspond to standardized betas in regression analysis based on Hair (2019). Furthermore, based on these previously, the following hypotheses are accepted. Here are the details of the hypothesis testing examination:
Reject H0 if the p-value (p-value) or sig < 0.05.
Accept H0 if p-value (p-value) or sig > 0.05.

Discussion
The hypothesis test finds out how influential viral marketing is in public health marketing. Based on the survey, it was found that all the hypotheses accepted which explain the Communicative Ecology Theory (CET) framework such as the Discursive Layer, Technological layer, and Social Layer in social media platforms happened to be influential in influencing certain behaviors such as sharing behavior and actual habits behavior in viral marketing on social media related to public marketing. This finding is in line with the statement external factors have an impact on user behavior by influencing information dissemination and users response to that information.

Hypothesis. 1 concludes discursive layer explains content quality such as Interestingness, Perceived usefulness, Positivity, and Information credibility in social media has a positive effect on information adoption health care campaigns. It is also explained by previous research regarding content quality where the more interesting content is more likely to be disseminated (Wei et al., 2020).

However, there is a difference in one of the points of the indicator, the emotional factor is removed from the assessment because it is not supported, the point is unique because we know how emotion plays an important role in social media (Mahmood et al., 2021; Shawky et al., 2019).

Hypothesis 2 is accepted. This leads to the technological layer assessed by trust in the medium or the platform in social media has a positive effect on information adoption in health care campaigns. It is also shown in severe studies that there are factors that lead people to trust news on social media and might be explored for more, it also supports the trust closely associated with engagement of the news (Sterrett et al., 2019). This result also supports the adoption model for sharing behavior in line with the study in the context of news sharing, where trust in source credibility in the medium supports the intention to adopt the information and the intention to share it '(Thompson et al., 2020).

Hypothesis 3 is accepted. This leads to the social layer assessed by social influence in social media having a positive effect on information adoption health care campaigns. It is supported by previous research that states that social media has transformed society into creators of data and enabled them to interact without limitations on time or location (Femenia-Serra et al., 2021). Also, social media influencers are more likely to be heard and influence other users.

From our study we also can conclude that Hypotheses 4 and 5 are accepted, more over the path coefficient between information adoption to sharing behavior and health behavior show a significant direct effect which means there is a positive effect among the variable. The direct effect of IA on SB is 0.631, and the direct effect of IA on HB is 0.524. Hence information adoption in social media has a positive effect on the sharing behavior and health behavior of healthcare campaigns.

The hypotheses prove that social media are vital for creating and sharing information during the crisis which is in line with previous research (Femenia-Serra et al., 2021; Luo et al., 2021; Riaz et al., 2020). This is in line with the social marketing purpose of changing the behavior of society. Also, the bottom line of a social marketing campaign is 'behavior change' (Kumar et al., 2021). We can draw the conclusion that the main purpose of social marketing on Instagram platforms bring about social change and ultimately social transformation, which means the campaign using this platform brings positive responses and is considered a successful program.

The finding of the study indicates the discursive layer, technological layer, and social layer as precursors are positively related to customer information adoption in social media that leads to sharing behavior and healthcare habits. These points extend to social marketing expanding its scope beyond a personal change in health care habits and behaviors as an objective of a health campaign as well as its results, impact on personal health care practices, and eventual dissemination of health information to others within the network, community, or society.

Shortly, using the Communicative Ecology Theory (CET) framework, we found interesting results such as influencing the points of view and behavior towards content and external factors from information received from social media, this is in line with previous similar research that social media can have an impact on how people perceive and portray current events and potential futures, as well as how closely they follow preventive behavior (Liu et al., 2021). The finding is also consistent with earlier studies examining how people seek out and distribute information during epidemics in 2017 by Sharma et al., (Mahmood et al., 2021). Social media supports virality and information sharing on health, as well is suited to express people's points of view and opinions on specific health issues because of the capabilities that platforms provide, Even more, with the impact of the sudden and catastrophic COVID-19 epidemic, more research is being conducted.

Theoretical and Practical Implications

The implications of the study enriching the body of knowledge on social marketing, particularly in the area of health information, by assessing the potential factors influencing health behavior on social media platforms. This study adds to the theory and practice of using social media in information dissemination and virality by providing significant empirical data to support the findings. As an update/novelty to add literature related to variables in health information on social media. While most past research examines the role of information-sharing motives, understanding fake news-sharing behavior, and exploring instant news-sharing (Apuke & Omar, 2021; Islam et al., 2020). Which important to develop (health) marketing communication in social marketing with different ways to influence behaviors that benefit people and communities for better welfare of society.

Moreover, this study contributes several significant theoretical ideas. First, the study adds to the literature on social marketing / public marketing in the context of social media in Indonesia, which the study related has not been discussed in depth. Especially in stimuli variables, we find the precursors, Communicative Ecology Theory (CET) was added to enrich the environmental factor of stimuli variables and enrich literature in the social marketing sector. Communicative Ecology Theory (CET) was brought to the literature in the field of social marketing, specifically to enhance the aspect of stimulation variables.

In practical contribution, the research findings also provide involvement for those working in the healthcare sector by helping organizations, companies, institutions, and governments plan public/social marketing using digital platforms, especially Instagram. This study also provides additional precursors of health knowledge management for practitioner health knowledge in social media platforms of health education.

Furthermore, the study also helps to understand what kind of platform and content need to be considered in a 'social marketing' campaign for the future. Second, it also helps institutions/campaigns to consider content quality, platform trust, and social influence as the predictors of the most influential enablers of social media users regarding healthcare information knowledge. The research gives a beneficial for broad overview of practical examples in healthcare campaigns to understand society and target audiences.

Conclusion

Based on our literature review and examination from the previous section, we are able to summarize the severe research questions of this study. First, the potential precursors in this study we found by exploring stimulus variables. We found 3 precursors driving the virality of health information sharing and user behavior for health care behaviors by exploring the literature review of Communicative Ecology Theory in viral marketing, which is supported by literature review from previous research regarding health communication in social media and hypothesis supported by a statistical equation based on data. Regarding the CET framework explored as precursors of user behaviors in social marketing, they refer to three layers each layer refers to the content of the communication, technology characteristics, and social interaction activities.

Second, in general, the precursor as a driving factor in the form of communication ecology theory has a positive influence on the adoption of information and user behavior on health content in social marketing. This is shown from the results of the path analysis which shows that there is a direct effect between the related variables. These path analysis coefficients show how strongly and in what direction the model's variables are related to one another. Third, the predictors have been taken into account during the development and implementation of social marketing in Indonesia, an individual using social media adopt the information or knowledge from social media platforms, increasing their health awareness, particularly about self-protective actions. According to the findings, social media users in particular learned about protective behaviors like frequently washing hands, using masks when going outside, and caring about physical distance as a result of health campaigns that were conducted there.

Limitations and Future Research

Even though this research contributes both managerially and theoretically, some limitations can still be improved for future research. This study's limit on the effect of precursors on social media specifically in health campaigns information behaviors to be more specific in Instagram considered as an example of a social media network. Future studies might be conducted to investigate information behaviors on other social media. Another limitation of this study is that the study focuses on government campaigns in health, which could be extended in another context regarding social marketing issues such as environmental issues, climate change, and wellness for future research. In addition, the authors selected participants limited from Indonesia through social media. Thus, even though the findings might not be simply extended to other developing countries, this research can therefore be used as a starting point for learning about the application of social marketing.

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