US For-Profit, Nonprofit, and Public Medical Actors in Indonesia's E-Health Space: Contesting Information Authority Through Multiplicity[1]

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ABSTRACT

With an emphasis on health organizations as strategic communicators, this study examines Indonesia's digital health information ecosystem and how authority and reliability are built within it. It considers digital health platforms as hybrid fields where public, commercial, and transnational actors compete to produce and legitimate knowledge using the theories of editorialization, organizational communication, and computer-mediated communication. One hundred randomly chosen health articles from five platforms were examined. Twenty items were selected from each platform. To evaluate the provenance of each component, we looked over its references (e.g., geographic, for-profit/nonprofit, scientific/medical significance). We then investigated how organizational and regional source features influence digital information environments by monitoring the frequency with which these sources appear across platforms. The results demonstrate that algorithmic visibility, networked circulation, and digital traces—rather than just institutional credibility—shape authority. Additionally, it reveals conflicts between visibility, trust, and informational rigor in digital health communication by showing that authority does not always equate to reliability.

Keywords: digital health; information authority; information credibility; organizational communication; e-health literacy.

Research on health communication examines the roles performed by human and mediated communication in delivering health care and promoting health (Kreps, 2011). In order to better comprehend the complexities of communication and information problems in health and to develop strategies promoting communication for health, we search for health information in Indonesia and investigate its aspects, content, and dissemination. Searching for health information is one of the many contexts in which health communication occurs. This last is at the core of the relationship between the patient and the provider, the creation of awareness campaigns, the promotion and dissemination of the health image, and the management of the relationship with regard to the

accessibility of medical care.

The world of e-health can be divided into two main categories: on the one hand, there are businesses that provide health information to the general public (disease descriptions, helpful tips, addresses, etc.); on the other hand, there are tools that enable remote consultations, video conferences, drug purchases, etc. Two crucial issues are brought up by the change in patient-provider communication: the information's authority and reliability. First, the Internet changed the definition of authority and the hierarchy. Who is in charge of public and individual health and who has access to health information? Consequently, trust in authority should always be accompanied by the ability and willingness to question and criticise that authority. Second, because it impacts people's lives, health information is delicate, liable, and requires careful handling. As a result, one of the main requirements for confirming its use is its scientific component. It is crucial to note that the adjective "digital" in this context must be regarded as a qualification of time or period. We can discuss contemporary space, digital space, and modern space. The goal of this study is to comprehend the structure of the Indonesian e-health space and the role that information authority and reliability play in this framework. The first step in comprehending the types of authority that influence digital space's urbanism and the mechanisms for determining what information is reliable is to comprehend its structure and layers. Authority is based on a space's structure. Authority gives information or content credibility, which increases its weight. Access to knowledge is only one aspect of authority; another is the potential to establish the legitimacy and dependability of that knowledge.

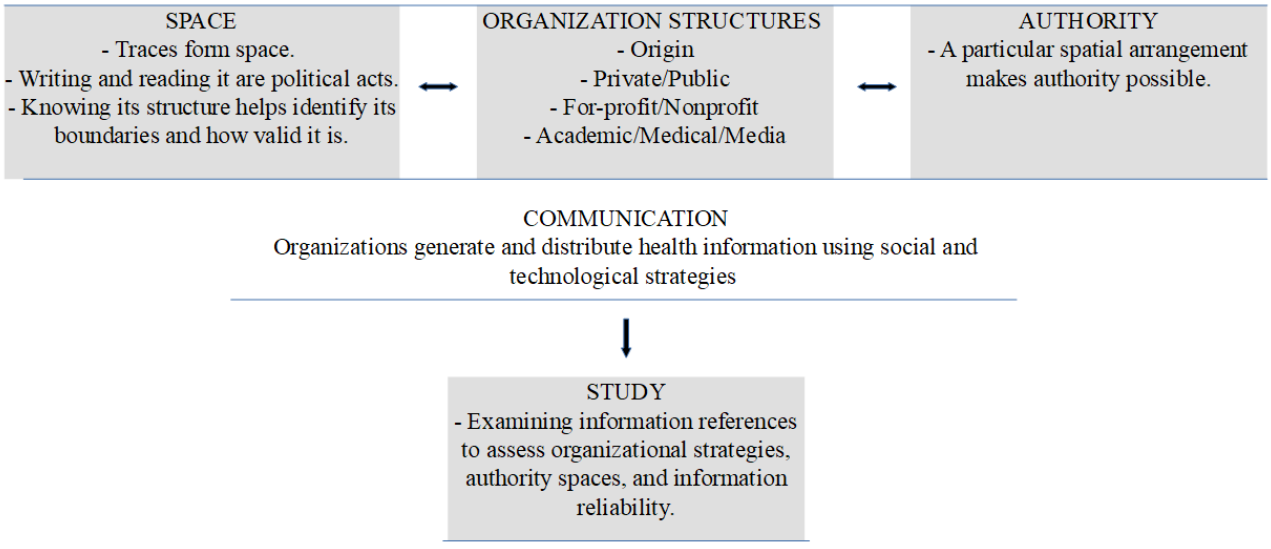
Health information, its sources, and the organizational structures behind it

The structure of space shapes authority, which is never absolute. In order to examine communication from a spatial perspective, Marcello Vitali-Rosati and his associates from Canada and France created the "editorialization theory" (2018). Digital health platforms can be viewed as settings in which legitimacy and trust are actively formed, drawing on organizational and computer-mediated

communication theories as well as Vitali-Rosati's theory that authority depends on spatial organization. Their authority is reinforced through organizational reputation and algorithmic strategies, especially by aligning themselves with internationally recognized medical institutions. In this sense, authority is socially and technologically constructed rather than simply given. The analysis of health information, its sources, and organizational structures that underpin it is the primary emphasis of our work. Organizational traits reflect various communication tactics, and the digital culture is not neutral. Therefore, our main concern is how authority is established in the Indonesian health digital environment through organizational strategies and information references, and how this impacts the reliability and usefulness of the information. We consider the spatial dimension that characterizes e-health information coming from various nations, organizations, and environments. Our goal is to comprehend how these elements impact the credibility of information itself as well as the authority in the e-health space.

Figure 1

Diagram Showing How Essential Terminology Are Defined And How Research Is Articulated Across Different Fields



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A review of the literature on health information in Southeast Asia and some research limitations

Numerous studies conducted in Southeast Asia have demonstrated how institutions, technology, and trust in information influence digital health communication. To cite a few examples, in a 2024 Journal of Medical Internet Research article, Yi et al. from Singapore, the United States, Australia, Canada, and India discuss digital health innovations throughout South and Southeast Asia, stressing that adoption depends not only on the tool itself but also on local partnerships, ongoing evaluation, and the quality/risks of automated information in real-world care settings. For their part, Hnin Nu Nu Lwin and scholars from Mahidol University in Thailand published an article on "E-Health Research in Southeast Asia: A Bibliometric Review" in the Sustainability Journal in 2023. The article highlights emerging themes like social networks, mobile apps, pandemic-related communication, and chronic disease follow-up. They also emphasize that ethical issues, data security, and technological acceptance must be taken into consideration for e-health development to be effective, and that communication should be positioned as a component of system design and governance rather than just outreach. The National Academies of Sciences, Engineering, and Medicine provide a third illustration. The purpose of a 2022 report titled "Addressing Inaccurate and Misleading Information About Biological Threats Through Scientific Collaboration and Communication in Southeast Asia" is to combat false biological information about health in Southeast Asia by establishing reliable scientific communication networks. The report treats communication strategy as an organizational and authority-building process, connecting reliability to who is trusted, how messages are validated, and how regional cultural/structural factors affect uptake. Developing a reliable network of experts and knowing how to discern scientific information continue to be major challenges. Additionally, educating and building a cooperation between local scientists, legislators, and other non-scientific stakeholders remain a vital challenge to disprove misleading information and evaluate health data to validate and implement it. As a result, our research adds a spatial dimension

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to information and communication sciences by challenging digital environments and the construction of authority capable of verifying health information through the concept of editorialization. The number of articles gathered from five digital health platforms and the particular methodology we selected for examining and evaluating health information references from an organizational and geographic perspective are just two of the limitations that limit our work on the digital health space in Indonesia. Furthermore, challenging the notion of authority in digital settings is still one of many crucial factors that should be taken into account in subsequent studies.

THEORETICAL FRAMEWORK

Space: collection of dynamics in a specific setting

We can compare the Internet to a battery. It is a set of layers stacked on top of each other. It has its infrastructure, its architecture, its space. It has a foundation made up mainly of pipes. It transports data across distances. There are many different types of lines of varying length and complexity. Everything we do in the pile depends on the correct functioning of these tubes. At the top of the stack is where the software, websites and applications live.

"Editorialization" refers to the collection of both individual and group interactions with digital environments, which include cultural and technological components that impact content as well as develop and organize digital spaces. Reality is the outcome of a continuous and open process. According to the Foucauldian school, "space" refers to a certain dynamic set of interactions between objects. In "Des espaces autres" (1984), Michel Foucault explains how space was defined variously throughout history. It was called a localization in the Middle Ages, an extension in the Renaissance, and a site (emplacement in French) in the present day.

Digital space has its own types of authority. In the digital realm, authorities validate a procedure rather than specific information. Because of the inherent multiplicity of digital objects, the

concept of originality is gradually vanishing, which is connected to the processual nature of digital authorities. Therefore, authority in this situation is proportionate to activity. This scheme will increase the authority aspect the more information is published, consumed, and handled in processes such as clicking, reading, copying, pasting, sending, etc., and is cited in fragments and circulated from one environment to another.

Health: Psychological, intellectual, spiritual and environmental aspects

Health is defined as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity" in the preamble to the World Health Organization's constitution. It is a multidimensional notion that encompasses both the environment and people. Four aspects of health are classified by Hunter, Marshall, Corcoran, and Leeder (2013): Psychological/emotional; intellectual/cognitive; spiritual; and environmental.

Since the introduction of digital technology, health has established a presence on the Internet, with data and tools moving between websites, apps, and platforms. According to Aurélie Gisbert (2019) e-health is defined as “the use of the Internet and new technologies to communicate information about health and health services. It appears to be a powerful tool for providing health information to populations with a low level of health literacy, in an easy-to-access form”. The degree of a population's health is determined by its capacity to adjust to and then regulate its natural environment through management strategies and, consequently, spatial planning. Depending on how "health" is defined, the health/space (local authorities) dialectic takes on different forms.

Authority: from the etymological origin to the Internet

The right or ability to issue orders, render judgments, or impose regulations is referred to as authority. It may belong to a person, organization, or group. It is implied by authority that people acknowledge and accept the validity of the directives or choices made. Access to knowledge is only one aspect of authority; another is the potential for this knowledge to be legitimate and trustworthy.

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An object gains legitimacy and reliability when it is enhanced by an authority. Hannah Arendt argues that persuasion, which assumes equality and operates through an augmentation process, is incompatible with authority, which demands obedience. We don't have to or argue with an authority figure to trust them. So how can an authority give content or information more credibility?

Communication and Organizational Roots of Authority in Digital Health

Because the Indonesian e-health ecosystem under investigation is essentially shaped by organizational actors competing to establish legitimacy, authority, and trust within digital environments, Organizational Communication Theory is crucial to this manuscript. The platforms under analysis are organizations that strategically produce and disseminate medical knowledge through communication processes; they are not passive channels of information transfer. As a result, authority in digital health settings should be viewed as communicatively and organizationally generated. The Communicative Constitution of Organization (CCO) approach, developed by scholars such as François Cooren, Robert D. McPhee, and James R. Taylor, sees organizations as constituted through communication. Discourse, texts, interactions, routines, and communication practices all help produce organizational identity, legitimacy, authority, and power.

In the framework of this article, Indonesian e-health platforms operate within a digital platform ecosystem as communicative organizations. Citation patterns, expert representation, hyperlink structures, institutional branding, algorithmic visibility, and purposeful affiliation with internationally renowned medical organizations all contribute to the ongoing production of their authority. As a result, communication serves as the social construction and maintenance mechanism for organizational authority. Additionally, Strategic Organizational Communication Theory offers a useful analytical perspective. In order to establish credibility, reputation, and stakeholder confidence, digital health organizations carefully manage communication. Expert discourse, search engine optimization, platform interaction, reiterating authoritative references, scientific branding, and

algorithmic amplification are some of the ways that authority is built. The manuscript highlights a fundamental tension between authority and reliability, which makes this viewpoint particularly crucial. Despite uncertain informational rigor, commercial health organizations may acquire great visibility and perceived legitimacy, which can be explained by organizational communication theory. Regardless of whether their scientific quality is greater, organizations with more robust communicative infrastructures and digital visibility often dominate public attention. Therefore, the article argues that authority in digital health is increasingly built on communicative power rather than just institutional expertise. In platformized health communication systems, visibility becomes a type of organizational and symbolic capital.

According to the Computer-mediated communication (CMC) theory, digital technologies reshape how information is produced, circulated, and legitimized, shifting authority from institutional gatekeeping to algorithmic visibility and networked interaction. In CMC settings, platform structures, search engines, recommendations, links, and engagement metrics shape the visibility of health information and users' perceptions of legitimacy.

Authority and reliability: the dispute in the e-health domain

Trust in health authority can emerge from specific spatial arrangements, such as a country's education system, while space also functions as a symbolic setting for everyday practice and discourse. In digital space, authority becomes even more processual and collective, shaped by writing, human-machine collaboration, and material traces rather than by experts alone.

Activity is another aspect of authority. A user gains more authority the more active they are. The authority of platforms is likewise subject to these principles. Activity determines visibility, which in turn creates authority. A platform is regarded as more dependable the more active it is. A piece of content becomes more visible and authoritative the more times it is cited. This implies that a truth-based model cannot be used to understand authority. The content does not necessarily reflect reality.

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Crossing authority and reliability in the health domain is problematic because not all information fragments that possess authority are necessarily reliable [Figure 1].

Health information: reliability and scientific validation?

According to Roger Pierce (2008) “reliability is, literally, the extent to which we can rely on the source of the data and, therefore, the data itself. Reliable data is dependable, trustworthy, unfailing, sure, authentic, genuine, reputable. Consistency is the main measure of reliability.”

Defining what is a reliable information is a challenge for all and an important mission for many institutions and organisations that aim to promote good practices to guide populations to deal with information to improve their health. The Public Health Information Service in France (Santé.fr) states on its "Health information standard" page that "it is important to know where to find reliable and up-to-date information in order to make good decisions about our own health or that of our loved ones." According to the service, content that is indexed on its website needs to fulfil the following requirements:

(1) Transparency: Visible and traceable sources of information; Possible access to funding sources and declarations of links of interest; Answers to users' questions and comments

(2) Independence: Absence of advertising and promotion of advice/products/health care; Establishment of governance and an editorial charter; Protection of user data.

(3) Relevance: Correspondence of responses provided to user requests; Offer of decision-making support tools for users; Taking user feedback into account to improve the site.

METHODOLOGY

We use a hybrid methodology grounded in digital methods, combining qualitative and quantitative approaches to study online socio-cultural phenomena. Following Millerand, Myles, and Proulx, internet components such as hyperlinks, websites, and search engines are treated as key sources for generating emic categories that help interpret online practices. Five of twelve Indonesian

e-health platforms that were mapped in 2022 and published in a scientific journal in 2024[3] are the ones we have selected.

Figure 2

The Five Indonesian E-Platforms Studied in This Research.

Platform	Structure	Goals	History	Website
1. HALODOC	It is a profit-making business. Owned by PT Medika Komunika Teknologi, which is a subsidiary of PT Kalbe Farma Tbk, an Indonesian pharmaceutical, healthcare, and nutrition company.	• Online doctor consultations. • Drug purchase. • Lab test scheduling. • Health information access. • Vaccination services.	Founded in Jakarta in 2016. It collaborates with a number of organizations, including hospitals, clinics, pharmacies, research institutes, investors, and the Indonesian Ministry of Health.	https://www.halodoc.com/
2. KLIKDOKTER	It is a profit-making business. It has been owned and run since 2016 by PT Medika Komunika Teknologi, a division of PT Kalbe Farma Tbk, an Indonesian pharmaceutical, healthcare, and nutrition company. Its website includes a link to a local professional and user, along with an approximate cost for the consultation, at the conclusion of each article and in its ARTICLE rubric. There are some of its articles without citations.	• Online health information. • Medication delivery. Hospital reservations. • Medical consultations.	Founded in 2008. It works with various companies, including pharmaceutical.	https://www.klikdokter.com/
3. ALODOKTER	It is a profit-making business. It works with insurance companies, pharmacies, and healthcare providers. Its website initiates a conversation with users at the conclusion of each article.	• Online medical consultations. • Doctor appointments. • Medication purchases. • Health information access	Founded in 2014.	https://www.alodokter.com/
4. DOKTERSEHAT	It is a profit-making business. It is run by PT Media Kesehatan Indonesia.	• Appointment scheduling. • Hospital and physician directories. • Health articles. • Health calculators for health monitoring.	Founded in 2016.	https://dokter sehat.com/
5. HELLO SEHAT	It is a profit-making business. The articles on the website are reviewed by Indonesian health professionals, whose names are displayed above.	• Health articles. • Health calculators. • Doctor consultations. • Scheduling doctor. • Hospital appointments. • Medication delivery. • Health screenings. Immunizations, and user-shared forums.	Founded in 2016 and is a part of the Hello Health Group, a Singaporean start-up founded in 2015.	https://hellosehat.com/

[3] Kartikawangi D., Saba Ayon H. (2024). The map of healthtech in Indonesia as database for future research. *Jurnal Komunikasi Ikatan Sarjana Komunikasi Indonesia*, Vol. 9, N° 1, ISSN (Print) 2548-8740, ISSN (Online) 2503-0795, p. 35-46.

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The five platforms under investigation are private businesses with headquarters in Indonesia that offer a variety of digital health services via their apps and websites. Digital traces were collected from one hundred randomly selected articles on a range of health-related themes published across the five platforms. Maintaining traces of each article's URL was one of the primary needs to stop the data from being altered. Health information reliability and authority traits were the two factors taken into account. We can better understand how space is generated, whether it is public or not, and whether digital authorities are private or public when we consider the authority in the digital space. Twenty items were selected from each platform, and their references were cataloged and analyzed to identify each source's provenance, including geographic, authoritative, scientific, and medical relevance. We examine source patterns across platforms to assess how organizational and geographic features influence digital environments and information reliability.

Figure 3

An Illustration of The Head of an Article from the Halodoc Platform Published in Indonesia.

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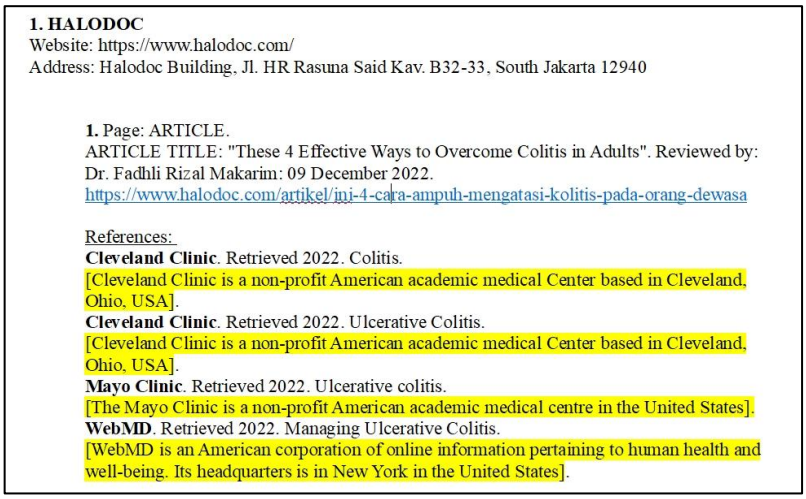
This is an illustration of the head of an article from the HALODOC platform that was published in Indonesia. It includes the title, the reviewer's name, and the publication date. Figure 4

illustrates our method for collecting references from each article, including the platform name, URL, author, publication date, title, and reference list. We also recorded the geographic origin of each reference.

Figure 4

Method For Collecting References from the Source Articles



Regarding the reliability of the sources, and in order to be able to analyze the sources of information collected, we constructed a three-layered evaluation grid depending on the nature of organization and the attributes of authority. The first component is "Trustworthy," which indicates that the source is likely to offer fair and accurate information since it has reliable writers, adheres to strict guidelines, provides evidence, and is consistent over time (with corrections if errors are detected). It is equivalent to the online scholarly and scientific articles that the digital environment represents. A biased source is its opposite. The second is "Evidence-based," which denotes that the data is supported by credible study findings. It corresponds to public and nonprofit organizations. The opposite is an unfounded source. "Transparent" comes in third. In order for others to verify or assess it, the source must provide a comprehensive explanation of how it obtained its information, including its techniques, data, assumptions, funding, any conflicts of interest, and limits. Both

private and nonprofit organizations fall under this category. The opposite is an unclear source.

FINDINGS

The American references appear first in the HALODOC initial platform [see Table 1 and References list 1 below], followed by Indonesia, the UK, India, Switzerland, and Australia.

Table 1

The Number of References Cited In The 20 Articles of the HALODOC Platform and Their Classification and References List 1.

Health platform	Number of references	Percentage of references from 20 articles across HALODOC
HALODOC	59 references	USA: 80%. Indonesia: 8%. UK: 5%. India: 3%. Switzerland: 2%. Australia: 2%.
HALODOC – List and number of references across 20 articles		
Cited 9 times: Healthline.		
Cited 7 times: Cleveland Clinic.		
Cited 4 times: Mayo Clinic; CNN Indonesia; WebMD.		
Cited 3 times: MedlinePlus.		
Cited 2 times: Medical News Today; Rare Diseases; I Cliniq; NIH.		
Cited 1 time: WHO; Stanford Children Hospital; Detik Health; Live strong; BMJ Sexual and reproductive health; Health; John Hopkins Medicine; Education Guidance and Counseling Development Journal; Classic fm; What to expect; University of Rochester Medical center; Hepatitis B Foundation; Very Well Health; MSD Manuals; Harvard health publishing; Penn Medicine; American Cancer Society; Testing.com; News Medical; Rare Diseases.		

Healthline, a for-profit organization, comes in first, followed by Cleveland Clinic, a private, nonprofit academic medical center. CNN Indonesia, a for-profit national news channel and digital news portal, and the Mayo Clinic, a private academic medical center and WebMD, an online for-profit health information platform, all of which are Americans, share third place.

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In the KLIKDOKTER second platform, American references rank top [see Table 2 and References list 2 below]. The UK ranks second, followed by Indonesia, Switzerland, and the Digital Environment, as well as Canada, Egypt, Australia, Vietnam, and India. Cleveland Clinic is on the top. In the second place comes the Centers for Disease Control and Prevention (CDC), which is a federal organization under the Department of Health and Human Services in the United States. The third place is shared between the Mayo clinic; the British National health service, publicly funded; and Healthline.

Table 2:

The Number of References Cited In the 20 Articles Of The KLIKDOKTER Platform and Their Classification, and Reference List 2

Health platform	Number of references	Percentage of references from 20 articles across KLIKDOKTER
KLIKDOKTER	51 references	USA: 64%. UK: 12%. Indonesia: 6%. Switzerland: 4%. Digital Environment: 4%. Canada: 2%. Egypt: 2%. Australia: 2%. Vietnam: 2%. India: 2%.
KLIKDOKTER – List and number of references across 20 articles		
Cited 5 times: Cleveland Clinic.		
Cited 4 times: Centers for Disease control and prevention.		
Cited 3 times: Mayo Clinic; National Health Service; Healthline.		
Cited 2 times: Food and Drug administration.		
Cited 1 time: Biochemical Pharmacology; Antioxidants; BPOM certificate; BMC Cancer; Prima Medicine; Very Well Health; Healthy Children; National Institute of Diabetes and Digestive and Kidney Disease; World Journal of Diabetes retrieved 2022; Lane regional medical center; Advancing foot and ankle medicine and surgery; Evidence-based complementary and alternative medicine; Seminars in Plastic surgery; Cell Host& microbe; The Conversation; Immunize British Columbia; UPMC Heart and Vascular Institute; Harvard Health Publishing; Annals of Epidemiology (Digital Environment); Heart UK; Johns Hopkins Medicine; National Field Archery Association; Better Help; Psychology Today; BMC Public health (Digital Environment); WHO; WebMD; Department of Food Crops and Horticulture Province South Kalimantan; Vinmec International Hospital; Ministry of Health of the Republic of Indonesia; British Nutrition Foundation.		

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The American references appear first in the ALODOKTER third platform [see Table 3 and References list 3 below]. The Digital Environment is ranked second, followed by the UK, Australia, and Indonesia, and then China, Singapore, and New Zealand.

The Digital Environment takes the top spot in the references list (see References list 3 below). American references become first-rate when they are put together. Multiple groups share the American organisations. Healthline ranks first, followed by the Mayo Clinic, WebMD, and Cleveland Clinic. In terms of the digital environment, we see various academic publications mentioned in this platform's articles as sources for a wide range of health-related information, scientific development, and awareness.

Table 3

The Number of References Cited in the 20 Articles of the ALODOKTER Platform and Their Classification and References list 3.

Health platform	Number of references	Percentage of references from 20 articles across ALODOKTER
ALODOKTER	228 references	USA: 70%. Digital Environment: 19%. UK: 6.5%. Australia: 2.1%. Indonesia: 1.3%. New Zealand: 0.4%. China: 0.4%. Singapore: 0.4%.
ALODOKTER – List and number of references across 20 articles		
Cited 43 times: Digital environment.		
Cited 34 times: Healthline.		
Cited 24 times: Mayo Clinic.		
Cited 23 times: WebMD.		
Cited 12 times: Cleveland Clinic.		
Cited 11 times: National Health Service UK.		
Cited 8 times: National Institute of Health; Verywell Health.		
Cited 7 times: American Heart Association.		
Cited 5 times: MedlinePlus.		
Cited 4 times: Everyday Health; NCBI.		
Cited 3 times: Medscape; U.S. Department of Agriculture; Harvard Medical School.		
Cited 2 times: Health Direct Australia; National Institute of Diabetes and Digestive and Kidney Diseases; National Kidney Foundation; Johns Hopkins Medicine; American Academy of Paediatrics; Kidshealth Nemours; Centers for disease control and prevention; Government of Australia; Verywell fit.		
Cited 1 time: Government of the Hong Kong Special administrative region; MedicineNet; Kementrian Kesehatan Republik Indonesia; Drugs.com; Patient Info; Ikatan Dokter Anak Indonesia; Patient; American Association of Neurological Surgeons; American College of Cardiology; American Stroke Association; Stroke Association UK; Health Hub; Kids Health; Kementerian Kesehatan Republik Indonesia; Fusco, F. The Bump; Metland, D. Baby Centre UK; Heart United Kingdom; School of Medicine at Mount Sinai.		

In the DOKTERSEHAT fourth platform [see Table 4 and References list 4 below], the American references come first. The UK comes second, then India and Portugal, and finally the Digital Environment, Indonesia, Australia and New Zealand. Healthline takes the first place. It is followed by the Mayo Clinic, WebMD, the Centers for Disease Control and Prevention, and the British National Health Service. Medical News Today, a for-profit American organisation, is in third position.

Table 4:

The Number of References Cited In The 20 Articles of The DOKTERSEHAT Platform and Their Classification, and References List 4.

Health platform	Number of references	Percentage of references from 20 articles across DOKTERSEHAT
DOKTERSEHAT	78 references	USA: 59%. UK: 31%. India: 3%. Portugal: 3%. Digital Environment: 1%. Indonesia: 1%. Australia: 1%. New Zealand: 1%.
DOKTERSEHAT – List and number of references across 20 articles		
Cited 8 times: Healthline.		
Cited 7 times: Mayo clinic; WebMD; CDC.Gov; National Health Service.		
Cited 6 times: Medical news today.		
Cited 3 times: Cleveland clinic.		
Cited 2 times: Medlineplus.gov; Tuasaude.com.		
Cited 1 time: American pregnancy; Everyday health; Endocrine web; Link.springer.com; Diabetes.org.uk; The diabetes council; Sugarfit; Desai dental; Stpirnadental.com; Calhoundds.com; Insider.com; Dentamedica.us; Dentisthopeisland.com.au; Crest.com; Brushinonbelmont.com; Yourhormones.info; Emedicine.medscape.com; Digital Environment; Bens natural health; Alz.org; Perio.org; Practo.com; Medlineplus.gov; Hopkins Medicine; Acog.org; Ucsfhealth; NCBI.nim.nih.gov; Kedokteran.unila.ac.id; Very well family.		

In the HELLO SEHAT fifth platform [see Table 5 and References list 5 below], the American references rank first. Second is the Digital Environment, followed by the UK, Australia, and India. If

we do not count the American references collectively, the Digital Environment ranks highest on the list. The Mayo Clinic, the Cleveland Clinic, and Medline Plus (issued by the National Library of Medicine, an American government institution) are at the top of the list. They are followed by worldwide scientific journals that produce and disseminate health information, which we see as representing the new digital environment that is evolving in the digital space.

Table 5

The Number Of References Cited In The 20 Articles of the HELLO SEHAT Platform and Their Classification and *References List 5.*

Health platform	Number of references	Percentage of references from 20 articles across HELLO SEHAT
HELLO SEHAT	132 references	USA: 70.4%. Digital Environment: 16%. UK: 9.0%. Australia: 2.2%. Indonesia: 2%. India: 0.7%.
HELLO SEHAT – List and number of references across 20 articles		
Cited 21 times: Digital environment.		
Cited 19 times: Mayo Clinic.		
Cited 9 times: Cleveland Clinic.		
Cited 6 times: MedlinePlus.		
Cited 5 times: National Health Service.		
Cited 3 times: American Cancer Society; National Sleep Foundation.		
Cited 2 times: National Institute of Diabetes and Digestive and Kidney Diseases; Harvard Health Publishing; Pregnancy Birth and Baby; American Academy of Allergy, Asthma & Immunology; Asthma and Allergy Foundation of America; Sleep.org; WebMD; National Kidney Foundation; UCLA Health; March of Dimes.		
Cited 1 time: Health.Harvard.edu; UrologyHealth.org; Raising Children Network; Columbia University; American Pregnancy Association; Office on Women's Health; Help Guide.org; St. Luke's Health; National Organization for Women; American Society of Plastic Surgeons; Kaiser Permanente; Royal College of Obstetricians and Gynaecologists; Ofmhealth.org; National Childbirth Trust; Nemours KidsHealth; Badan Pengawas Obat dan Makanan; Healthy Women; Medical News Today; North American Menopause Society; The Sun; National Center for Biotechnology Information; Genetic and Rare Diseases (GARD) Information Center; American Academy of Dermatology; Intermountain Healthcare; National Eczema Association; Gluten Intolerance Group; American College of Allergy; Peraturan Pedia Indonesia; Narayana Health; British thoracic society; Windsor University School of Medicine; American Lung Association; American Academy of Sleep Medicine; Asthma organisation; Oklahoma Otolaryngology Associates; British Lung Foundation; CORD; Johns Hopkins Hospital; BetterSleep.org; SleepAdvisor.org; Sleep Doctor; Spine Health; Verywell; Piedmont Hospital; University of Michigan health; Stanford Health Care.		

The results are shown in connection to four key indicators in the comparative summary table below: organizational structures, authority characteristics, dominant reference sources, and reliability

International Communication Association
Chula Chulalongkorn University
76TH ANNUAL ICA REGIONAL HUB THAILAND 2026
6–7 June 2026 • Bangkok • Chulalongkorn University
Where Thailand-Mekong-Asian Region Bridges Divides and Amplifies Voices

patterns. The most accurate platform might be the HELLOSEHAT platform. Its findings are supported by trustworthy and evidence-based sources. The ALODOKTER, which features trustworthy, biased, and transparent sources, is the second accurate platform. Regarding the third, transparent, evident-based, and unclear sources are grouped together by KLIKDOKTER. With biased, transparent, and evidence-based sources, DOKTERSEHAT is ranked fourth, and HALODOC is ranked fifth. This table shows that the more the organization and reference sources are from scientific, medical, or nonprofit settings, the more credible the information sources are and the more trustworthy the authority characteristics.

Table 6

An Overview Table That Contrasts the Five Platforms Based on Key Metrics

	HALODOC	KLIKDOKTER	ALODOKTER	DOKTERSEHAT	HELLO SEHAT
DOMINANT REFERENCE SOURCES	1. American sources 2. Indonesian source	1. American sources 2. British source	1. Digital environment 2. American sources	1. American sources 2. British source	1. American sources 2. Digital environment
AUTHORITY CHARACTERISTICS	1. Media; Academic Medical Center 2. Media	1. Academic Medical Center; National Public Health Agency 2. Publicly Funded Universal Healthcare System	1. Online Scientific Journal 2. Media; Academic Medical Center	1. Media; Academic Medical Center 2. Publicly Funded Universal Healthcare System	1. Academic Medical Center 2. Online Scientific Journal
ORGANIZATIONAL TYPES	1. Private/For-profit; Private/Nonprofit 2. Private/For-profit	1. Private/Nonprofit; Public/Nonprofit; Private/For-profit 2. Public/Nonprofit	1. Nonprofit scholarly organization 2. Private/For-profit; Private/Nonprofit	1. Private/For-profit; Private/Nonprofit 2. Public/Nonprofit	1. Private/Nonprofit 2. Nonprofit scholarly organization
RELIABILITY PATTERNS	1. Biased source; Transparent source 2. Biased source	1. Transparent source; Evidence-based source; Unclear source 2. Evidence-based source	1. Trustworthy source 2. Biased source; Transparent source	1. Biased source; Transparent source 2. Evidence-based source	1. Evidence-based source 2. Trustworthy source

DISCUSSION

Based on the collective outcomes of the five platforms, we can observe that the United States ranks first (68.7%) in the list of countries from which references are derived [Figure 2]. The Digital Environment, which displays the academic environment in our research context—which includes a variety of scientific journals published online by international organizations and authors—takes

second place (12.2%), indicating a significant difference between the first and second places. The US's strong health sector and worldwide influence are demonstrated by this percentage difference, which shows that American organizations create and distribute the majority of the health-related references used by the five platforms analyzed in Indonesia. The United Kingdom ranks third with 11%, combining the anglophone component of health information that is shared online, particularly in Indonesian digital space. With 3%, Indonesia is ranked fourth. However, it ranks first among Asian nations, demonstrating the continued significance of national sources and the complete existence of national territory in the health space structure.

Australia, Indonesia's neighbour, comes in fifth place with 2%, underscoring the significance of geographic proximity in information sharing. Following that, India ranks sixth with 1%, followed by Switzerland in seventh with 0.5%, New Zealand and Portugal with 0.3%, Singapore, Canada, Egypt, Vietnam, and China with 0.2%.

Table 7

The Number of References Cited By the 100 Articles and Their Classifications.

Total number of articles Total number of references	Total cited sources by nation	Percentage of references from 100 articles across five Indonesian health platforms
100 articles 548 references	USA: 378 times. Digital Environment: 68 times. UK: 60 times. Indonesia: 14 times. Australia: 11 times. India: 6 times. Switzerland: 3 times. New Zealand: 2 times. Portugal: 2 times. Singapore: 1 time. Canada: 1 time. Egypt: 1 time. Vietnam: 1 time. China: 1 time.	USA: 68.7%. Digital Environment: 12%. UK: 11%. Indonesia: 3%. Australia: 2%. India: 1%. Switzerland: 0.5%. New Zealand: 0.3%. Portugal: 0.3%. Singapore: 0.2%. Canada: 0.2%. Egypt: 0.2%. Vietnam: 0.2%. China: 0.2%.

English-speaking, especially American, sources of health information predominate on Indonesian e-health platforms. The American organisations on the top are the Mayo Clinic, Healthline, Cleveland Clinic, WebMD, MedlinePlus, and the Centers for Disease Control and Prevention (CDC).

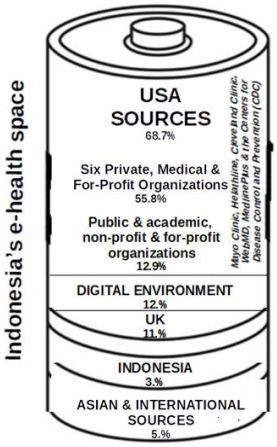
International Communication Association
Chula Chulalongkorn University
76TH ANNUAL ICA REGIONAL HUB THAILAND 2026
6–7 June 2026 • Bangkok • Chulalongkorn University
Where Thailand-Mekong-Asian Region Bridges Divides and Amplifies Voices

Public and private American organisations make up the recharged portion of the battery

If we were to draw a comparison between the Internet and a battery, as we did in our article, and try to use this comparison to explain the Indonesian e-health space, we would say that it is structured as follows: private companies (both medical and for-profit) make up the largest percentage, followed by public institutions, and a combination of both, with a smaller percentage, comes in third. The American private companies that create, disseminate, and confirm the health information are at the top of the pile. These organizations are specifically the Mayo Clinic, Healthline, Cleveland Clinic, WebMD, and MedlinePlus. Public and federal organizations as the Centers for Disease Control and Prevention (CDC) and the National Institutes of Health (NIH) come next [Figure 3]. The liberal character of the American system, which is founded on private initiative and the private economy, is reflected in the first result. Although they are present in the American healthcare system, government institutions are not as visible as private ones. This illustrates that digital authority is an organisational construct. Visibility acts as communication capital. Platform metrics have become a substitute for epistemic legitimacy. In the context of digital capitalism, health enterprises act as strategic communicators. Algorithmic systems influence public perceptions of medical skill.

Figure 3

The Indonesian e-health space occupied by sources from different countries.



Collectively, the six American platforms—Mayo Clinic, Healthline, Cleveland Clinic, WebMD, MedlinePlus, and the CDC—account for 55.8% of the American portion of the 378 cited references. The remaining American references are shared by public institutions, academic or university institutions, private non-profit or for-profit organizations, and others. Among the first four organizations, the Cleveland Clinic and the Mayo Clinic are non-profit. Collectively, they make up 24.6%. They are both academic medical institutions. This finding holds significance as it indicates that a big part of American sources originates from private medical academic institutions that establish a reliable authority on health-related matters.

As for the second and the fourth American sources classified on top, Healthline and WebMD, we see that both are for-profit organisations, especially digital media organizations specializing in digital content production and advertising. Both have 23.5% of the 378 cited references' American component. This result shows that for-profit organizations come in the second place in the American references classification after the academic medical institutions confirming the strong presence of the private for profit sector in the American economy and especially the health sector. It also demonstrates that digital media have big influence internationally and occupy an important position in a specific domain like health.

The *MedlinePlus* database, which is published by the *National Library of Medicine*, the *National Center for Biotechnology Information (NCBI)*, and the *National Institute of Diabetes and Digestive and Kidney Disease (NIDDKD)*, is compiled for the *National Institutes of Health (NIH)*. Of all American references, they make up 8.5%. Among American references, the *Centers for Disease Control and Prevention (CDC)* accounts for 3.4%. The Department of Health and Human Services is home to this federal organization in the United States. Together, the NIH and CDC account for 11.9% of all U.S. references. This section focuses on the U.S. public sector, specifically the federally funded U.S. Department of Health and Human Services (HHS).

The manuscript's findings show that Indonesian e-health platforms rely heavily on American medical references. This might be read as mimetic isomorphism, in which organizations resemble dominant international institutions in order to gain legitimacy, reduce ambiguity, and increase public trust. Indonesian platforms symbolize the transfer of legitimacy into their own communicative settings by mentioning globally authoritative medical institutions. In this setting, authority becomes more processual, relational, and digitally mediated. The prominence of American medical institutions and digital health enterprises in Indonesian e-health platforms demonstrates not only scientific impact, but also communication power created by networked exposure and algorithmic amplification.

The Digital Environment, which specifically refers to online scientific journals in this study, comes in second place with 12% of the 548 cited references., behind American references. It demonstrates the significance of scientific sources that generate and evaluate health-related data. These sources are reliable enough to be used and broadcast. In their respective fields, scientific journals are regarded as authoritative sources. Researchers, educators, and professionals from a variety of fields frequently use them as reliable information sources.

In the third place is the United Kingdom with 11% of the 548 cited references. The *National Health Service* (NHS) occupies 43.3% of the British portion of the 60 cited references. In the UK, The NHS is the publicly funded healthcare system. With 3% of the 548 cited references, Indonesia holds the fourth position, demonstrating both its existence and its high visibility among the Asian nations that generate health information. The findings indicate that public services provide the majority of Indonesia's health information: Eight of the 14 Indonesian references come from public services, and six from private organizations. Of the Indonesian references cited in the study, 57% contain information from the public sector. The *Republic of Indonesia's Ministry of Health*, the *Food and Drug Supervisory Agency*, the *Department of Food Crops and Horticulture in the Province of South Kalimantan*, and the *Faculty of Medicine at Universitas Lampung* in Bandar Lampung are

among the government organizations that provide it. The *Indonesian Pediatric Society* (Ikatan Dokter Anak Indonesia), a health news platform (*Detik Health*), and a media agency (*CNN Indonesia*) make up the 43% of private agencies.

Calculability, visibility and distance made the authority

The e-health space is dynamic and ever-changing due to the interactions between its various components. The more e-health platforms use certain references, the more these references -with their characteristics including their geographical aspect- will be counted and have more visibility. This implies that the more users can access and see information from particular sources, the more space these sources will take up in the structures. The source has authority over the informational process rather than the information itself because of the references' calculability and visibility. Authority and activity are correlated in this way. A source's visibility and authority increase with the number of times it is cited, copied, and pasted. This does not imply that the data is trustworthy or credible. The content cannot be guaranteed by authority. Authority is used in the plural in the digital sphere. There isn't a singular authority. Pre-digital and native-digital authorities coexist in the digital realm as a result of the multiplicity. In the context of our study, authorities shape the reality of e-health in Indonesia. According to the study's findings, the distance is shorter for American references, Digital Environments, British sources, and Indonesian sources, and it increases for references from other countries. In the digital space, calculability is especially noticeable. More clicks and citations give some elements a higher ranking than others, such as American, Digital Environment, British, and Indonesian references. This should be interpreted as evidence of distance in digital space: objects closer are easier to reach than those farther away. Values are determined by space. With its unique features, the Indonesian e-health space suggests a particular set of values. Instead of coming from a vacuum, information is created by organizations with distinct characteristics, such as specific origins, profit or non-profit, public or private, and medical or non-medical. It is created and disseminated on

platforms with specific technical systems, and it is calculated and categorized using algorithms with unique rules and standards. To be able to comprehend how it can be used, we must comprehend the tools being used and their functions.

This backdrop leads us to the Networked Publics Theory (Boyd, 2010), which explains how digital information circulates via durable, searchable, scalable, and repeatable communication networks. Health information gains authority through repetition, circulation, and participation in interconnected digital contexts. As a result, digital authority is increasingly based on communicative exposure and platform-mediated legitimacy, rather than just factual credibility.

CONCLUSION

American medical and for-profit companies dominate the Indonesian e-health space. The Digital Environment, which represents open source scientific communities, comes in second, followed by British national institutions. Indonesia, which ranks higher when compared to other Asian nations, comes in at number four. The majority of Indonesian references are from public institutions, demonstrating the significance of this sector within the health domain. The list's queue consists of Asian and South-East Asian nations. The digital realm is not neutral. Like all spaces, it plays a role in the development of a specific set of values. According to the collective relationships between platforms, users, and techniques, these values are produced by new authorities in this field. American references occupy the main authority of this space and carry political weight because the hierarchy of spatial structures is also possible in digital space. However, this hierarchy is dynamic and subject to change based on the dynamics of information production, dissemination, and consumption. "Editorialization" is the term we use to describe the specific organization that is unique to the e-health space.

International Communication Association
Chula Chulalongkorn University
76TH ANNUAL ICA REGIONAL HUB THAILAND 2026
6–7 June 2026 • Bangkok • Chulalongkorn University
Where Thailand-Mekong-Asian Region
Bridges Divides and Amplifies Voices

Digital platforms do more than just disseminate information; they also control public access to knowledge and create trust hierarchies. The commercialization of digital health communication is one of the issues raised by our research. Commercial actors gain authority not because they are scientifically trustworthy, but rather because they have better communicative infrastructure, optimization capability, and digital visibility. Sources such as healthcare facilities, public health ministries, or health academicians can be trusted without establishing an authority. Understanding how digital space is formed and the stakes that are involved is a starting point towards opposing the overwhelming power of corporations and being able to build a public space where trusted authorities can exist. Regardless of the type of influence, understanding is also essential to contextualizing and restricting its legitimacy. Gaining an understanding of digital space enables one to recognize its authorities, challenge them, and occasionally oppose and reject them. In what ways, then, can trustworthy information be confirmed without the assistance of digital authorities? Since the e-health space is constantly changing, which affects the hierarchy of its authorities, we advise users to support the growth of digital health literacy with the aim of facilitating access to resources from experts, patient associations, or health organizations that provide high-quality information that is comprehensible, trustworthy, and useful. Digital health literacy in the general population and in particular within at-risk groups promotes the circulation of reliable health information and therefore reduce social inequalities in health. We propose a legitimating system based on two principles in order to challenge this structure model:

(1) Verifiability and;

(2) Multiplicity.

The ability to verify that information originates from a trustworthy source is known as verifiability. Instead of editors' opinions, experiences, or previously unpublished concepts or information, its content is based on previously published data. Practical verifiability is the degree to

which someone who comes across the reference can access the referenced material. For instance, if an ISBN is present but it refers to a book that is located thousands of kilometres away in a library, the information it supports is essentially unreliable for someone who does not have access to the supporting book. However, some trustworthy sources are difficult to find. The reliability of the information should be assessed by comparing its sources. Verifiability in this context refers to the process of comparing the information with other information. Information's credibility is not determined by its factuality but rather by its ability to be supported by references. Therefore, the ability to compare information with other information—rather than with the facts—is what verifiability is all about.

Second, because digital environments contain a multitude of information, the digital is characterized by its multiplicity. It is possible for an information fragment to be owned by multiple institutions, shared on multiple databases, and multiplied into several. The validation process is therefore required based on a number of authorities: a health article should not be restricted in its validation to the search engine or the platform that displays it, but rather to pre-digital health professionals who still have a part to play. Users should think about some factors to assess the information's reliability: Who is the writer? Does the author make money off of the clicks or popularity data? What are the author's objectives (product or service promotion; relationship to a company, political party, or organization)? What is the data's age? Is the date of the information stated? Was the website recently updated? Are the sources of the information cited? What views do other media outlets have? Does the information come from other sources or media? Is the information presented in the same way and with the same subtleties by other media outlets? Does the data present a fact, an opinion, or a testimony? This allows the user to access, comprehend, evaluate, and utilize health information.

In the future, it may be beneficial to increase the number of e-health platforms and references examined in Indonesia and develop a screening tool that evaluates health information quality based on a set of observable requirements. This tool allows a digital user to evaluate the reliability of e-health information and determine whether or not to utilize it in his planning and decision-making. Our findings enable us develop future comparative studies on e-health ecosystems in many nations, particularly in Southeast Asia, and investigate how users assess the reliability of different sources of health information.We aim to establish a connection between the academic realm and public health policy, along with digital health literacy initiatives, so that our efforts can contribute to a collaborative endeavor to enhance public health policies and academic research regarding the utilization of health information.

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