Communication as a Complex System: Modeling the Feedback Dynamics of Trust and Credibility

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Abstract

This study examines how credibility, trust, and bias interact within complex communication systems that shape public understanding of scientific information. It addresses two questions: 1. What are the primary factors that influence the public's comprehension of scientific findings? 2. How do the factors influencing public understanding of climate change science interact within a complex system? A scoping literature review synthesized disparate communication models from media studies, science communication, psychology, and information science to identify a shared set of system variables. The identified variables were organized into source-, message-, channel-, and receiver-related factors and used to develop a causal loop diagram showing how credibility, trust, and information processing co-evolve through reinforcing and balancing feedback. The resulting diagram illustrates two major loops: one centered on trust in information sources, which can foster social cohesion or accelerate truth decay, and another linking individual trust dynamics to broader patterns of polarization and unity. By clarifying how well-established constructs interact to produce dynamic communication outcomes, the framework is useful for scholars developing integrative theory and for policymakers and practitioners designing interventions in misinformation-prone environments. The CLD also provides a foundation for future system dynamics modeling to examine how interventions in transparency, media literacy, or platform governance may influence public trust over time.

1 Introduction

In today's media environment, communication is both pervasive and fragile (Coopman, 2009). Understanding how people seek and evaluate information is crucial for countering misinformation and enhancing public comprehension. The research on information and communication reveals several prominent models that attempt to explain how individuals seek, process, and evaluate information. A key area of focus in the literature is the assessment of credibility, with various frameworks proposed to understand how individuals determine the believability of sources and information.

One such model offers a unifying framework for credibility assessment that encompasses construct, heuristics, and interaction levels within a contextual backdrop (Wathen and Burkell, 2001). The construct level represents an individual's overarching understanding of what constitutes credibility (Wathen and Burkell, 2001). The heuristics level involves general rules of thumb or cognitive shortcuts that users apply when making credibility judgments across various situations, such as relying on the reputation of a source (Wathen and Burkell, 2001; Hilligoss and Rieh, 2007). The interaction level pertains to immediate evaluations based on specific cues from the information itself (content) and the source (peripheral cues) encountered during evaluation (Wathen and Burkell, 2001). The context includes social, relational, and dynamic elements, frames, and influences on how these credibility judgments are made (Wathen and Burkell, 2001).

Another perspective suggests a staged approach to online credibility evaluation, where users first assess the medium, then the source, and finally the message. Users might first be deterred by a poorly designed website (medium) before even considering the author (source) or the content itself (message). However, factors such as high personal relevance or the need for cognition can motivate users to persevere despite negative peripheral cues and engage with the information more deeply (Wathen and Burkell, 2001).

Furthermore, the 3S model highlights the roles of source experience, surface features, and semantics in trust judgments (Lucassen and Schraagen, 2011). This model suggests that users rely on their past experiences with a source, the visual or func-

tional aspects of a platform, or the literal meaning of the information when forming trust perceptions. When motivation to evaluate is low, users might rely on heuristic evaluations. Still, with higher motivation and sufficient ability (information skills), they are more likely to engage in systematic evaluation of the content (Lucassen and Schraagen, 2011).

Beyond credibility, the Risk Information Seeking and Processing (RISP) model attempts to explain how individuals seek and process information related to risks (Griffin et al., 1999; Yang et al., 2014). This model posits that information sufficiency, perceived information-gathering capacity, and relevant channel beliefs are influenced by factors such as affective responses to risk (e.g., worry), subjective norms regarding knowledge, perceived hazard characteristics, and individual characteristics (Griffin et al., 1999). For example, worrying about a risk can increase the perceived need for information. The RISP model suggests that individuals seek information until their perceived knowledge reaches a sufficiency threshold, at which point they feel capable of coping with the risk (Griffin et al., 1999). A meta-analysis of the RISP model supports its utility in predicting risk information seeking and systematic processing, with current knowledge and informational subjective norms accounting for a significant portion of the variance. A reduced version of the RISP model focusing on these two variables might be applicable in broader communication settings beyond risk (Yang et al., 2014).

In the realm of communication more broadly, a medium-centered model emphasizes the intermediate stage of communication and its vital qualities (Elleström, 2018). This perspective argues that the inherent characteristics of media products significantly influence the transfer of cognitive import from the creator to the perceiver. Factors such as the producer's mastery of the medium and the pre-semiotic and semiotic traits of the media product are crucial in shaping the outcome of communication. The model acknowledges that the perceiver's mind, shaped by prior knowledge, experiences, beliefs, and cultural context, also plays a vital role in interpreting the mediated message.

Conversely, the deficit model has historically framed public understanding of science as a gap in knowledge that needs to be filled (Trench, 2008; Lewenstein, 2009). This model assumes that providing the public with more scientific information will automatically lead to greater acceptance of scientific findings (Trench, 2008; Lewenstein, 2009). However, this approach has been criticized for oversimplifying the relationship between scientific knowledge and public attitudes, often overlooking social, cultural, and emotional factors. More recent approaches emphasize public engagement and recognize the need for interactive and deliberative communication that goes beyond simply transmitting information (Lewenstein, 2009). In response to the challenges posed by online misinformation, the disinformation and misinformation triangle by Rubin (2019) identifies falsifications, susceptible information consumers lacking media literacy, and poorly regulated social media platforms as key interacting factors contributing to its spread (Rubin, 2019). Interventions such as automation, education (information literacy), and regulation are proposed to address this "epidemic". Information literacy, the ability to critically analyze and evaluate information, is crucial for navigating the contemporary media environment and assessing online credibility (Rubin, 2019).

Across these models, several common themes and factors emerge as influential. Credibility is consistently recognized as a multidimensional construct involving trustworthiness, expertise, dynamism, and competence. The characteristics of the source (e.g., reputation, credentials, behavioral integrity), the message (e.g., accuracy, comprehensiveness, language intensity), and the medium (e.g., design, functionality) are all identified as significant factors impacting these models and their outcomes (Holmes and Parker, 2016; Rieh and Danielson, 2007; Hilligoss and Rieh, 2007). For example, source credibility can serve as a peripheral cue that influences attitude change (Hilligoss and Rieh, 2007). Information completeness, which allows for verification, can also enhance credibility judgments (Hilligoss and Rieh, 2007; Griffin et al., 1999).

User-related factors such as domain expertise and information skills also play a crucial role in evaluating information, with novices potentially relying more on surface features and source cues, while experts are more likely to assess content accuracy (Tseng and Fogg, 1999; Lucassen and Schraagen, 2011; Wathen and Burkell, 2001). The context and situation in which information seeking and processing occur, including user involvement and task, are also recognized as essential influences on these models (Hilligoss and Rieh, 2007; Metzger et al., 2003; Rieh and Danielson, 2007). Further-

more, affective responses like worry and anger can significantly influence information processing and sufficiency thresholds (Griffin et al., 1999). Subjective norms, or the perceived expectations of others, also play a role in information-seeking behavior (Griffin et al., 1999; Yang et al., 2014).

However, the literature also reveals several research gaps. While various models of credibility and information processing exist, there is a need for a better understanding of how individuals transfer credibility assessment strategies across different information domains and media types. Research suggests that credibility assessments can occur at multiple levels (e.g., articles, websites, types of websites) and that credibility can be transferred both vertically and horizontally across media. However, the specific mechanisms and conditions under which such transfer occurs require further investigation. The interplay among the different levels of credibility assessment (construct, heuristics, and interaction) within unifying frameworks requires further empirical examination to understand how these levels influence one another in real-world information-evaluation scenarios. In the context of the web, some dimensions of credibility, such as dynamism and attractiveness, remain relatively underexplored compared to expertise and trustworthiness. Furthermore, the process by which users initially orient towards a specific source or piece of information for credibility assessment online is not well understood. Factors affecting the prominence of certain elements when evaluating credibility, such as user involvement and experience, have been identified, but the initial selection of information for scrutiny remains a gap.

The paradoxical effect of encouraging online search to evaluate news, which leads to increased belief in misinformation, highlights a critical gap in understanding how search engine results influence perceptions of credibility, especially given the prevalence of low-quality information in search results related to misinformation (Aslett et al., 2023). Research suggests that when individuals search online for misinformation, they are more likely to encounter lower-quality information than when searching for true news, and this exposure can increase their belief in false content (Aslett et al., 2023). This finding underscores the need for a more nuanced understanding of the impact of search-based media literacy interventions. Finally, there is an ongoing need to develop more effective approaches to public communication of science that

move beyond the limitations of the deficit model and to better understand the role of social factors, such as socially adaptive belief, in shaping information acceptance (Lewenstein, 2009; Williams, 2020). Social incentives can influence belief formation through various mechanisms, including information avoidance and adjusting evidential standards (Williams, 2020). Understanding these psychological processes is crucial for effective communication strategies. These identified gaps directly relate to the core challenge of understanding how individuals navigate and evaluate information in complex and evolving information environments.

These gaps underscore the need for a more integrated perspective on how credibility, trust, and information processing interact within contemporary information environments. Such environments are shaped by continual feedback among individuals, media systems, and social structures, making communication a dynamic and adaptive process rather than a linear transmission of information. Understanding public comprehension, therefore, requires an approach that accounts for the interdependent and evolving relationships among sources, messages, channels, and receivers. This study contributes to that need by synthesizing existing scholarly frameworks into a system-oriented conceptualization of communication that emphasizes how these elements shape one another over time

2 Objective

This study aims to identify and categorize key factors influencing public understanding of scientific findings, to quantify their interactions through a systems map, and to highlight feedback loops that shape public comprehension and misconceptions.

3 Research Question

1. What are the primary factors that influence the public's comprehension of scientific findings?

2. How do the factors influencing public understanding of climate change science interact within a complex system?

4 Method

A scoping literature review was conducted to identify theoretical and empirical models of communication and credibility relevant to public understanding of science (Arksey and O'Malley, 2005). The review examined literature across multiple domains
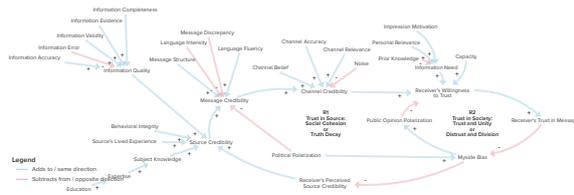
Figure 1: Causal Loop Diagram of communication and credibility dynamics.

such as media studies, science communication, psychology, and information science, to capture a comprehensive range of constructs that explain how individuals evaluate and trust information. Variables were initially extracted as free factors based on their theoretical relevance and frequency in the literature. These factors were then inductively categorized into four primary components of communication: source, message, channel, and receiver. The direction and polarity of causal relationships between variables were derived from a combination of empirical evidence and theoretical reasoning reported in the reviewed studies, with priority given to empirically supported associations.

The identified variables and their interrelationships were translated into a causal loop diagram (CLD) using Kumu.io, a systems mapping and visualization platform (Kumu, 2025). The CLD development followed a structured and iterative process that involved defining the system boundary, clustering related variables, linking directional relationships, and identifying reinforcing and balancing feedback loops (Tomoaia-Cotisel et al., 2017; Yearworth and White, 2013). Variables and linkages were refined until a coherent structure emerged that captured the recursive interactions among credibility, trust, and public comprehension.

The resulting CLD functions as a qualitative systems model that illustrates the interdependencies and feedback structures influencing public understanding of scientific communication. This conceptual model provides a foundation for future quantitative system dynamics modeling, enabling simulation and analysis of how changes in source credibility, message quality, or audience trust might influence the overall stability of the information ecosystem.

5 Results and Discussion

Figure 1 presents the Causal Loop Diagram of communication and credibility dynamics (Link To CLD).

This study examines the key factors that shape communication and its reception across four components: the source, message, medium, and receiver. Credibility serves as the foundation of this process, underpinning trust in the information conveyed and guiding the evaluation of the source, message, and channel. For the receiver, credibility influences both the willingness to trust and the acceptance of the message. These components form an interconnected system in which credibility simultaneously shapes and is shaped by the dynamics of communication. The following sections provide a detailed description of each component, as represented in the causal loop diagram (CLD) in Figure 1.

5.1 Components of the Communication System

5.1.1 Source Credibility

Source credibility examines the impact of personal (or organizational) characteristics such as expertise or trustworthiness on the "believability" of the delivered message. It significantly influences message reception(Wathen and Burkell, 2001; Tseng and Fogg, 1999; Hocevar et al., 2017), and has these components:

Behavioral Integrity: The capability of keeping one's words aligned with their actions, keeping promises and living by professed values, seamlessly. It means being seen as living by your word. Thus, behavioral integrity has two key elements: (a) word and action alignment and (b) keeping promises and living by one's articulated values. (Huberts, 2018; Hall et al., 2001; Jamieson et al., 2019; Holmes and Parker, 2016).

Source's Lived Experience: The expertise held by laypeople due to their experience with the subject of communication (Lewenstein, 2003).

Subject Knowledge: Facts, information and skills acquired by source on a particular subject due to education or experience.

- Expertise: The sources' capability to investigate and represent the problem based on underlying characteristics rather than only surface-level observation (Lucassen and Schraagen, 2011).

- Education: Participation in relevant training, such as schooling (Jenkins et al., 2020).

Information Quality: How well-written and interesting receivers perceive the message to be. It

can also be referred to as message content (Rieh and Danielson, 2007).

- Information Accuracy: Concurrence with verifiable facts. The absence of intentional falsehood, whether outright lies or half-truths (Lucassen and Schraagen, 2011).

- Information Error: Lack of concurrence with verifiable facts. The presence of inaccuracies or incorrect content within a message, such that the information fails to accurately reflect the truth or relevant facts (Bhagat et al., 2025).

- Information Validity: The relevance and appropriateness of information to the specific context in which it is being used (Pierce, 2008).

- Information Evidence: The proof offered to confirm the information conveyed in the message is accurate (Jamieson et al., 2019).

- Information Completeness: The perceived thoroughness of a message's inclusion of relevant facts (Rieh and Danielson, 2007).

5.1.2 Message Credibility

In addition to *Source Credibility*, the delivery of a message also affects its credibility (Wathen and Burkell, 2001). This *Message Credibility* involves the following aspects:

Message Structure: How information has been organized for communication (Metzger et al., 2003; Scheufele, 2014).

Language Intensity: A quality of language that indicates how much a speaker's attitude toward a concept differs from neutrality. Research finds that communicators who use more opinionated language, such as culturally loaded terms, in their messages are rated less credible than those who use less intense language (Metzger et al., 2003).

Message Discrepancy: The distance between the source's perceived position and the receiver's pre-message position. When it is low, credibility assessments are higher (Metzger et al., 2003).

Language Fluency: The way and form in which the message conforms to the receiver's grammatical, vocabulary and other linguistic norms. (Metzger et al., 2003).

5.1.3 Channel Credibility

Message Credibility, enhances the credibility of the message's communication medium, or channel.

Similar to its use in 'television channel', channel refers to media products such as websites, newspapers, scientific journals, etc., on which credibility claims are made. Individuals' habitual information processing strategies are influenced by their perceived images of such media (Scheufele, 2014). In addition to *Message Credibility*, *Channel Credibility* is enhanced by:

Channel Belief: The existing behavioral belief about the particular channel. Especially perceived trust in the channel and its accessibility impact whether individuals are more likely to engage in information-seeking behaviors (Yang et al., 2014).

Channel Accuracy: Perception of accuracy of information on the particular channel (Rieh and Danielson, 2007).

Channel Relevance: The appropriateness for communicating a particular message to a particular receiver (Rieh and Danielson, 2007; Scheufele, 2014).

Noise: Any factor that damages the physical transmission of information between source and receiver (Shannon, 1948).

5.1.4 Receiver-Related Factors

In addition to *Channel Credibility*, and the credibility of its messages and of their sources, message reception also depends on certain attributes of the one receiving it, the receiver. The *Receiver's Willingness to Trust* is enhanced by these sources of credibility. Beyond credibility, users also decide what to believe (Rieh and Danielson, 2007; Wathen and Burkell, 2001) using other personal attributes:

Information Need: This can also be called information seeking from the RISP model. The information-seeking process is iterative and depends mainly on the seeker's specific situation and the broader context (Kim et al., 2020).

- Prior Knowledge: Individuals assess their knowledge about the risk. They are more likely to seek additional information if they perceive their knowledge as insufficient. They might not seek further information if they believe they already know enough (Yang et al., 2014).

- Personal Relevance: The information need is perceived to be high (Yang et al., 2014).

- Impression Motivation: Impression motivation refers to one's desire to express attitudes

that help an individual meet his or her immediate social goals, such as getting along with others. Individuals' inclination to respond to social pressures or expectations that they should acquire sufficient information to deal with a risky situation. The reasoning is that individuals under greater normative influence from those who are important to them will be more likely to engage in information seeking and processing (Yang et al., 2014; Kim et al., 2020).

Capacity: Capacity refers to weighing various information options available to them. For instance, individuals with lower capacity will find it more challenging to select a reliable information source and identify the most valuable information to aid in their decision (Yang et al., 2014)

5.1.5 Receiver's Trust in Message

Receiver's trust in the message refers to the extent to which an individual believes that the communicated message is reliable and worthy of acceptance. It reflects the receiver's judgment about the truthfulness, integrity, and relevance of the message itself, such that the receiver is willing to accept the content as valid and act or think on it (Hanimann et al., 2023).

5.1.6 Myside Bias

Also called defense motivation, myside bias is one's desire to form and hold beliefs that are consistent with his or her material interests and fundamental values. It can contribute to issue polarization, insofar as individuals often become more extreme in their opinions after selectively processing the evidence on specific topics (Kim et al., 2020; Yang et al., 2014; Jost et al., 2022).

5.1.7 Receiver's Perceived Source Credibility

This accounts for the source's bias due to sex, ethnicity, religious affiliation, etc., which may affect its credibility. For example, a message from a Republican source may have less credibility for a Democrat receiver. Similarly, a scientific message from a female researcher has been shown to have less believability than one from a male researcher. (Eom et al., 2025; Lo Iacono and Dores Cruz, 2022)

5.1.8 Political Polarization

Political orientation and ideologies impact the dynamics of trust. Politicization refers to the degree to which politicians are mentioned in conjunction with the issue (Gauchat, 2012; Hart et al., 2020).

5.1.9 Public Opinion Polarization

Polarization occurs when individuals interpret ambiguous information through an ideological lens and their identity is tied to these interpretations (Hart et al., 2020; Baldassarri and Page, 2021; Kashima et al., 2021).

5.2 Feedback Dynamics in the Communication System

In complex systems, feedback loops describe the cyclical processes through which variables influence one another over time. Reinforcing loops amplify change in a system, leading either to virtuous cycles that strengthen desirable outcomes or to vicious cycles that intensify problems. In the context of communication and credibility, these loops capture how trust, bias, and polarization evolve dynamically within public discourse.

5.2.1 R1: Trust in Source – Social Cohesion or Truth Decay

The first reinforcing loop (R1) illustrates how trust in information sources can either consolidate social cohesion or accelerate truth decay. When receivers perceive a message as credible, they are more likely to process it systematically rather than rely on biased heuristics. Dual-process theories such as Petty and Cacioppo's Elaboration Likelihood Model (ELM) show that high source or message credibility increases motivation and ability to engage in deeper, balanced evaluation and reduces susceptibility to biases such as myside bias (Petty and Cacioppo, 1986). As biased resistance diminishes, the perceived credibility of the source strengthens, which in turn elevates the credibility attributed to both the message and the channel. Classic credibility research also supports this upward dynamic. Hovland and Weiss (1951) demonstrated that higher perceived source credibility leads to greater message acceptance, and Sternthal, Phillips, and Dholakia (1978) show that credibility consistently increases willingness to trust and endorse communicated information (Hovland and Weiss, 1951; Sternthal et al., 1978). As credibility across components rises, receivers become increasingly willing to trust, reinforcing their confidence in the message and stabilizing the communication system. This virtuous cycle promotes social cohesion and strengthens shared understanding. Conversely, when trust in messages erodes, individuals are more likely to rely on defensive biases and discount information that conflicts with their prior

attitudes. This heightened bias reduces perceived source credibility and weakens confidence in both message and channel quality. As credibility declines, willingness to trust diminishes, triggering a self-reinforcing downward spiral marked by misinformation, cynicism, and polarization. This pattern is frequently described as truth decay.

5.2.2 R2: Trust in Society – Trust and Unity or Distrust and Division

The second reinforcing loop (R2) operates at the societal level, linking individual trust dynamics to collective patterns of unity or division. High trust in messages encourages critical yet open engagement, which reduces myside bias and promotes a more balanced interpretation of differing viewpoints (Petty and Cacioppo, 1986; Hovland and Weiss, 1951). As biases decline, public opinion becomes less polarized, enabling a more constructive and unified discourse. Greater social harmony, in turn, enhances receivers' willingness to trust, thereby reinforcing message trust and sustaining a virtuous cycle of trust and unity.

In contrast, low trust in communication breeds skepticism and defensive information processing. Increased myside bias amplifies public opinion polarization, diminishing willingness to trust, and fragmenting social discourse. This vicious cycle perpetuates division and deepens distrust in both communicators and institutions, ultimately destabilizing the credibility ecosystem.

These reinforcing loops demonstrate how trust functions as both a cognitive and a social process. They reveal that credibility, bias, and polarization are not isolated variables but co-evolving forces that can lead societies toward either resilient information ecosystems or fragmented, distrustful environments.

6 Illustrative Case Study

The communication dynamics we describe occur in many situations where trust in science is eroding, including healthcare, climate science, and information technology. These dynamics are illustrated through two illustrative examples: vaccine hesitancy among racial minorities and perceived risks of 5G technology. Although the original studies did not employ a causal loop diagram framework, applying this framework to their cases yields comparable observations and supports construct validity by revealing the feedback mechanisms driving trust dynamics in scientific communication.

6.1 Communication Dynamics in Vaccine Hesitancy

In Loop R1 (Trust in Source), historical experiences with healthcare discrimination have diminished perceived source credibility of medical institutions. This decreased credibility reduces trust in vaccine messaging, increasing defensive processing (myside bias). RAND research on COVID-19 vaccine hesitancy among Black Americans shows how this bias further undermines the perceived credibility of healthcare sources, completing a self-reinforcing cycle (Bogart et al., 2021). The skepticism of black respondents about government transparency regarding COVID-19 exemplifies this loop in action. However, this loop can operate positively: healthcare providers who acknowledge systemic racism before providing vaccine information can enhance message credibility, reduce defensive processing, strengthen perceived source credibility, and gradually rebuild trust.

In Loop R2 (Trust in Society), prevalent myside bias amplifies public opinion polarization around vaccines, diminishing willingness to trust health information. The RAND research further found that community-wide vaccine hesitancy emerges from this distrust, attributed to experiences of racism. Conversely, when healthcare providers (who are perceived as more credible than elected officials) effectively address concerns, they can strengthen trust in messaging, reduce biased processing, decrease polarization, and enhance community-wide trust. This demonstrates how credibility, bias, and polarization co-evolve toward either resilient information ecosystems or fragmented, distrustful environments.

6.2 Communication Dynamics in 5G Technology

Loop R1 (Trust in Source) operates similarly. As described in RAND research on 5G technology, limited transparency about government applications creates uncertainty about the credibility of sources (Eyerman et al., 2024). The absence of clear information about the intended uses of 5G reduces message and channel credibility. This diminishes receivers' willingness to trust, promoting defensive processing that further undermines perceived source credibility. When government transparency decreases, public trust erodes, biased processing increases, and perceived credibility further deteriorates. Conversely, the RAND study's

authors recommend proactively explaining government intentions regarding new technologies to trigger a virtuous cycle where transparency enhances message credibility, strengthens trust, reduces defensive processing, and reinforces source credibility.

Furthermore, in Loop R2 (Trust in Society), when people lack trusted information about 5G technologies, their decreased willingness to trust promotes myside bias, amplifying opinion polarization—evidenced by conspiracy theories that have occasionally escalated to extremism. This polarization further diminishes trust in government communications about 5G, completing a self-reinforcing cycle of distrust. However, research showing limited public engagement with conspiracy narratives suggests an opportunity: by emphasizing regulatory safeguards for data collection and monitoring evolving public perceptions, agencies can strengthen trust in messaging, reduce defensive processing, limit polarization, and enhance societal willingness to trust—creating conditions for successful technology implementation.

7 Conclusion

This study developed a conceptual framework to understand the complex dynamics that shape communication, credibility, and public trust in the contemporary information environment. By integrating insights from multiple communication and credibility models, the analysis identified how factors related to the source, message, channel, and receiver interact within a broader systemic context. Using a Causal Loop Diagram (CLD), the study visualized these interdependencies and demonstrated how feedback between trust, bias, and polarization produces reinforcing patterns that drive either cohesion or fragmentation.

The findings demonstrate that communication functions as an adaptive system rather than a linear exchange. Credibility acts as both a cause and a consequence of communication, continuously shaped by feedback between individuals and the social environment. Reinforcing loops, such as trust in the source and trust in society, reveal how small shifts in perception can magnify into collective trust or widespread skepticism.

This work provides a basis for translating qualitative CLD into a quantitative system dynamics model. Future research can utilize simulation and scenario-based analysis to investigate how interventions in transparency, media literacy, or policy regulation impact system stability over time. Modeling these interactions can help identify leverage points to improve public comprehension, reduce misinformation, and strengthen social trust.

Limitations

This study proposes a qualitative, systems-oriented conceptual framework derived from a scoping literature review rather than empirical data or computational experiments. Thus, the CLD reflects theoretically grounded relationships reported in the literature but does not quantify their strength or potential nonlinearity.

The review prioritizes well-established constructs in communication, credibility, and information processing, which may underrepresent emerging dynamics such as algorithmic mediation. While the framework is intended to be broadly applicable, its relevance may vary across sociotechnical contexts and different domains.

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