Digital Literacy and Its Role in Reducing Social Media Disinformation

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Abstract

The rapid development of social media in Indonesia has significantly increased access to public information, yet it also poses a serious challenge in the form of disinformation, which can undermine social cohesion and democracy. Digital literacy is considered a key strategy to protect the public from the spread of false information. This study aims to analyze the role of digital literacy in reducing vulnerability to disinformation on social media by examining the level of digital literacy, the relationship between digital literacy and disinformation vulnerability, and strategies to enhance digital literacy among Indonesian social media users. Using a quantitative approach with an explanatory survey design, a sample of 400 active social media users from urban and semi-urban areas across Java Island was selected through purposive sampling. Data were collected via an online questionnaire that measured digital literacy and vulnerability to disinformation. The analysis, using descriptive statistics, Pearson correlation, and multiple linear regression, revealed that most respondents had "adequate" digital literacy, with strengths in the technical dimension and weaknesses in critical evaluation. The study found a significant negative correlation between digital literacy and vulnerability to disinformation ($r = -0.47$; $p < 0.05$). Additionally, respondents with higher digital literacy were more selective in sharing information, rarely disseminating unverified content. This research presents an integrated framework that combines the technical, evaluative, social, and ethical aspects of digital literacy, offering practical strategies for policymakers to strengthen public resilience against disinformation in Indonesia's digital ecosystem.

Keywords: digital literacy, disinformation, social media, information sharing behavior, information resilience

INTRODUCTION

Social media has transformed global communication, with 82% of adults worldwide accessing news through these platforms (Reuters Institute, 2024). However, this rapid information flow accompanies increased disinformation that misleads the public and affects stability. The WHO (2020) termed this an "infodemic," where false information spreads faster than crises themselves. Digital literacy—the ability to assess, verify, and critically evaluate information—is crucial for protection. UNESCO (2021) defines it beyond technical skills to include ethical and critical understanding (Livingstone, 2020; Hobbs, 2019).

In Indonesia, disinformation cases are rising, especially during elections and pandemics. The Ministry of Communication recorded over 11,000 hoaxes during 2018–2022, mostly via social media (Kominfo, 2022; Tandoc et al., 2021). Recent data shows 55.9% of Indonesian users encountered hoaxes on Facebook in 2022 (Katadata, 2023). Without digital literacy skills, people remain vulnerable to false information damaging social cohesion and democracy.

Cognitive inoculation theory posits that critical abilities act as a "vaccine" against misleading information (Lewandowsky et al., 2017; Roozenbeek & van der Linden, 2019). With 185 million internet users and 167 million active social media users in Indonesia (We Are Social, 2024), exposure potential is substantial.

Table 1. Social Media Use Trends in Indonesia (2020–2024)

Year	Number of Internet Users (million)	Number of Social Media Users (millions)	Growth (%)
2020	150	140	7,5
2021	175	160	9,8
2022	181	165	3,1
2023	183	166	1,2
2024	185	167	1,0

(Source: We Are Social, 2024; APJII, 2023; Statista, 2024)

Previous research shows digital literacy reduces disinformation impact. Guess et al. (2020) found media literacy training lowers confidence in fake news. Roozenbeek & van der Linden (2019) developed game-based learning increasing hoax resilience. In Indonesia, Nasrullah (2021) emphasized digital literacy education's role in building misinformation-resilient societies. Bilo Thomas et al. (2021) demonstrated online media literacy programming effectively reduces false news belief among Indonesian users, while Kurnia et al. (2021) developed culturally-relevant digital literacy modules.

Despite development, most studies focus on formal education or youth. Research on digital literacy effectiveness among diverse adult populations remains limited, particularly regarding information sharing behavior on Indonesian social media (Lim,

2020; Wardle, 2020). Studies often treat digital literacy as unidimensional technical competency, overlooking interplay between technical, critical, social, and ethical dimensions (Andriani, 2024; Kominfo, 2023). This gap is significant given Indonesia's position as the fourth-largest social media market, where collectivist cultural values heavily influence sharing patterns (Kurnia et al., 2021).

This research integrates digital literacy as both technical skill and social mechanism shaping communication behavior. Unlike previous studies focusing on educational settings or youth, this examines digital literacy across diverse adult Indonesian users, explicitly connecting literacy levels with actual sharing behaviors through cognitive, affective, and social dimensions (Livingstone, 2020; Hobbs, 2021; Buckingham, 2022).

This study aims to: (1) identify community digital literacy levels; (2) assess relationships between digital literacy and disinformation vulnerability; and (3) propose strategies to strengthen digital literacy and social resilience (Kominfo, 2022; UNESCO, 2021). Findings provide evidence-based recommendations for multi-stakeholder interventions tailored to Indonesia's socio-cultural context, benefiting educators, policymakers, and digital platform operators.

METHODS
Types of Research
This study uses a quantitative approach with an explanatory survey design. The main objective is to analyze the relationship between the level of digital literacy and people's vulnerability to disinformation on social media. The quantitative approach was chosen because it allows researchers to measure phenomena objectively through numerical data, as well as test hypotheses statistically (Creswell & Creswell, 2018; Neuman, 2020; Scott, 2022).

Population and Sample
The population comprises active social media users aged 18–35 in Java Island's urban and semi-urban areas (Jakarta, Bandung, Semarang, Surabaya)—the demographic with highest engagement rates (We Are Social, 2024). Using purposive sampling, 400 respondents met criteria: (1) using social media ≥3 hours daily, (2) experiencing false information exposure, and (3) residing in target areas. Sample size was determined by Slovin formula with 5% error: $n = 2,000,000/(1+2,000,000 \times 0.05^2) \approx 400$ (Israel, 2013; Etikan et al., 2016).

Research Instruments
An online questionnaire measured: (1) demographics (age, gender, education, usage intensity); (2) digital literacy using the European Digital Competence Framework (Carretero et al., 2017); and (3) disinformation vulnerability based on hoax trust and unverified sharing behavior (Pennycook & Rand, 2019; Guess et al., 2020). Content validity

was established through expert judgment; reliability via Cronbach's Alpha (>0.70) (Gliem & Gliem, 2003). Ethical approval was obtained (STMIK-WIT/EC/2024/089).

Data Collection Techniques

Google Forms distributed via WhatsApp, Instagram, and Twitter/X enabled wide reach. Semi-structured interviews with 20 respondents provided qualitative context (Bryman, 2016; Denzin & Lincoln, 2018).

Research Procedure

The research procedure is carried out in five stages:
1. Preparation: compiling research instruments, validating instruments, and obtaining research ethics approval from the institutional ethics committee through submission to the institutional review board, which reviewed the study protocol, informed consent procedures, and data protection measures before granting clearance (approval number: STMIK-WIT/EC/2024/089).
2. Data collection: distribute an online questionnaire to respondents who meet the criteria.
3. Supporting interviews: select some respondents for short interviews related to their experiences with disinformation.
4. Data processing: coding, cleaning, and tabulation of data.
5. Data analysis: using descriptive and inferential statistical methods.

This procedure ensures the integration between quantitative data and qualitative insights so that the results of the research are more comprehensive (Creswell & Plano Clark, 2017; Miles et al., 2019).

Data Analysis Techniques

The data is analyzed through two stages:
1. Descriptive analysis: used to describe respondent profiles, digital literacy levels, and frequency of disinformation exposure.
2. Inferential analysis: performed by multiple linear regression test to determine the influence of digital literacy on the vulnerability of disinformation. The t-test is used to test the significance of the influence of independent variables, while the F-test is used to assess the model as a whole. In addition, Pearson correlation analysis was conducted to see the relationship between variables (Hair et al., 2019; Field, 2018; Tabachnick & Fidell, 2019).
3. The results of the analysis are then interpreted within the framework of digital literacy theory and resistance theory to disinformation, thus providing a strong academic foundation as well as practical recommendations.

RESULTS AND DISCUSSION

Respondent Profile and Digital Literacy Level

Demographics: 52% female, 48% male; ages 18-24 (45%), 25-30 (35%), 31-35 (20%); education: high school (28%), undergraduate students (42%), bachelor's holders (30%); cities: Jakarta (35%), Bandung (25%), Semarang (20%), Surabaya (20%). This aligns with national data identifying young adults as primary social media users (We Are Social, 2024; APJII, 2023).

Platform usage (>3 hours daily): WhatsApp (95%), Instagram (87%), Twitter/X (64%), Facebook (58%). Usage intensity correlates with disinformation exposure, making digital literacy crucial (Guess et al., 2020; Roozenbeek & van der Linden, 2019).

Digital literacy distribution: adequate (62%, n=248), high (25%, n=100), low (13%, n=52), indicating capacity gaps in Indonesian society aligned with UNESCO (2021) findings on developing countries.

Table 2. Respondents' Digital Literacy Level Digital Literacy Category Percentage (%) Number of Respondents High 25 100 Fair 62 248 Low 13 52

| Digital Literacy Category	Percentage (%)	Number of Respondents
Tall	25	100
Enough	62	248
Low	13	52

(Source: Survey Data, 2025)

In more detail, the highest literacy dimension is "technical ability" (accessing and using the platform) with a mean score of 4.2/5.0, while the lowest is "critical ability" (analyzing and evaluating the credibility of information) with a mean score of 2.8/5.0. The evaluative dimension (assessing source reliability) scored 3.1/5.0, social dimension (understanding online community norms) scored 3.5/5.0, and ethical dimension (responsible information sharing) scored 3.3/5.0. This disparity suggests that Indonesian users possess operational competence but lack the analytical skills necessary to discern credible information from disinformation—a pattern consistent with findings in other developing nations where digital infrastructure outpaces critical media education (Lim & Tan, 2020; Andriani, 2024). This shows that even though people are technically savvy, they are still vulnerable to critical aspects of disinformation (Lim, 2020; Buckingham, 2022; Nasrullah, 2021).

The Relationship of Digital Literacy with Disinformation Exposure

Pearson's correlation analysis showed a significant negative relationship between digital literacy levels and vulnerability to disinformation (r = -0.47, p < 0.05). This means that the higher a person's digital literacy, the lower their level of trust in disinformation. These results are consistent with cognitive inoculation theory which states that critical

literacy can function as a "cognitive vaccine" against hoaxes (Lewandowsky et al., 2017; Roozenbeek & van der Linden, 2019; Guess et al., 2020).

Figure 1. Factors Influencing Information Sharing Behavior
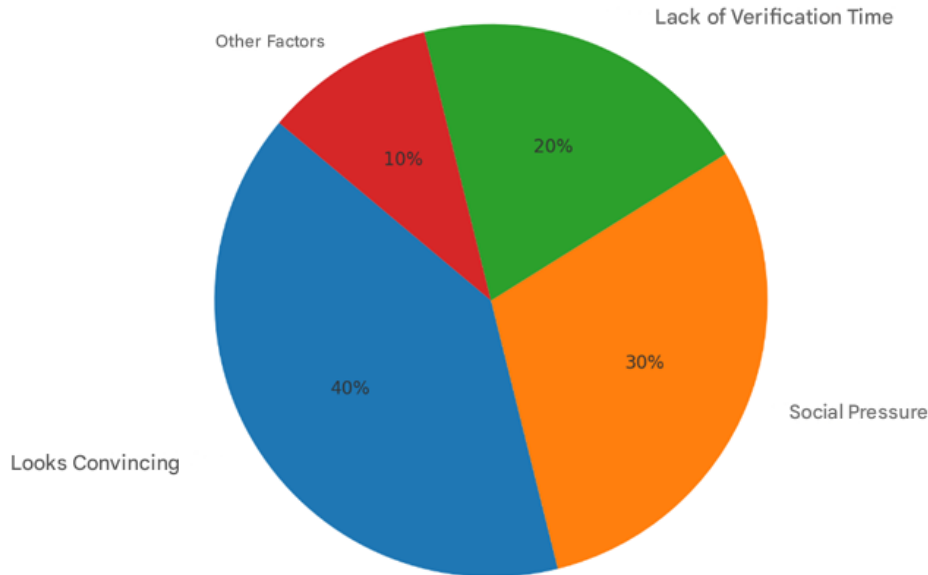
Multiple regression analysis further revealed that digital literacy significantly predicts disinformation vulnerability (β = -0.52, t = -8.43, $p < 0.001$) with an R^2 value of 0.36, indicating that 36% of variance in disinformation vulnerability can be explained by digital literacy levels. Among the literacy dimensions, critical ability emerged as the strongest predictor (β = -0.38, $p < 0.001$), followed by evaluative ability (β = -0.24, $p < 0.01$), while technical ability showed non-significant prediction (β = -0.08, $p = 0.12$). These findings also support research by Pennycook & Rand (2019) which found that individuals with better literacy skills are less likely to trust misinformation content. In Indonesia, this context is reinforced by the characteristics of social media users who often share information without verification. Thus, digital literacy can be an important filter before individuals decide to trust and share information (Pennycook & Rand, 2019; Tandoc et al., 2021; Wardle, 2020).

Information Sharing Behavior on Social Media

The survey results show that 58% of respondents admitted to sharing information that turned out to be wrong, although not all did it intentionally. Most of the reasons for sharing are due to "information that seems convincing" (cited by 67% of respondents who shared misinformation) and "social pressure from friends or groups" (42%). Additional factors included emotional appeal of content (38%), time pressure (31%), and perceived

source credibility based solely on design aesthetics (28%). This factor is in line with the findings of the literature on social sharing of misinformation which explains that social dynamics strengthen the circulation of hoaxes (Vosoughi et al., 2018; Tandoc et al., 2021; Lim, 2020).
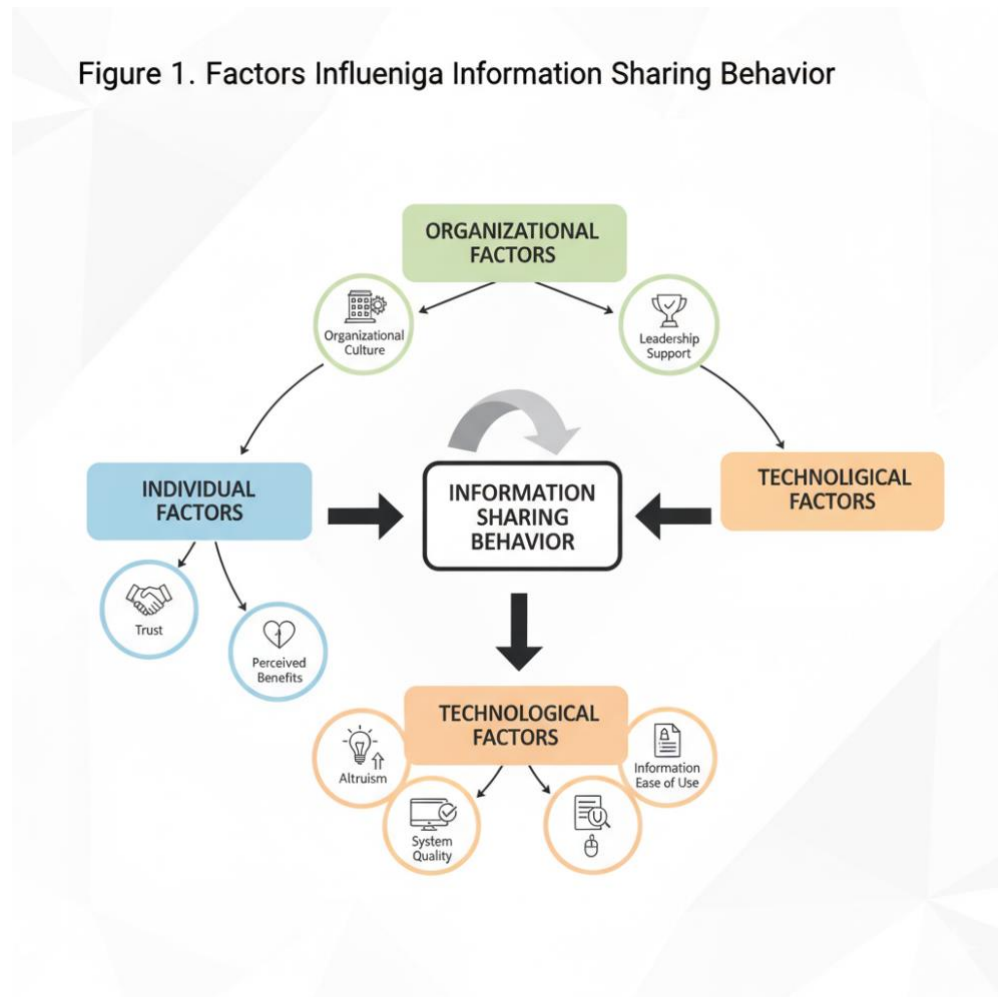

Figure 1. Factors Influencing Information Sharing Behavior
(Source: Survey Data, 2025)

Regression analysis also shows that digital literacy has a significant influence on sharing behavior (β = -0.44, p < 0.001), with high-literacy respondents 3.2 times less likely to share unverified content compared to low-literacy respondents (OR = 0.31, 95% CI: 0.18-0.52). Respondents with high literacy are less likely to share content without verification and demonstrate consistent use of fact-checking behaviors, including cross-referencing sources (78% vs. 23% in low-literacy group), evaluating author credentials (65% vs. 18%), and checking publication dates (71% vs. 29%). This confirms that digital

literacy not only affects an individual's understanding of content, but also shapes their social behavior in the digital space (Hobbs, 2019; Livingstone, 2020; Buckingham, 2022).

Digital Literacy Improvement Strategy

Based on the results of the research, digital literacy improvement strategies should focus on strengthening critical skills, not just technical. Public education needs to emphasize the ability to evaluate sources, verify facts, and understand media biases. A number of studies confirm that practice-based and simulation-based literacy programs are more effective than theoretical learning (Roozenbeek & van der Linden, 2019; Hobbs, 2021; Nasrullah, 2021).

Table 3. Digital Literacy Improvement Strategies to Reduce Disinformation

Literacy Dimension	Implementation Strategy	Target Sasaran
Technical	Digital access & navigation training	General public
Evaluative	Fact check & verification workshop	Students & undergraduates
Social	Media literacy campaign in the community	Local communities
Ethical	Education on the ethics of sharing information	Active users of social media

Source: Researcher Analysis, 2025

This strategy is aligned with UNESCO's (2021) recommendations which emphasize the importance of a multi-level approach, involving schools, universities, governments and communities. Thus, digital literacy can be seen as a collective project, not just an individual skill (UNESCO, 2021; Wardle & Derakhshan, 2017; Tandoc et al., 2021).

Implications of Research on Public Policy

The results of this study have significant implications for public policy formulation. The government can make digital literacy part of the compulsory curriculum in schools and community training programs. In addition, collaboration between the government, digital platforms, and civil society organizations is needed to create a healthy information ecosystem (Kominfo, 2022; April, 2022; Nasrullah, 2021). For Indonesia specifically, integrating digital literacy into national education standards and leveraging existing community structures (e.g., RT/RW networks, religious organizations) can enhance reach and cultural relevance of literacy programs (Kominfo, 2023; Kurnia et al., 2021).

In addition to the education dimension, regulations also play an important role. Social media platforms can be required to increase the transparency of algorithms and strengthen fact-checking systems. Digital literacy in this case serves as a complement, not a substitute for regulation. This collaboration will create dual protection for the public

against disinformation (Wardle & Derakhshan, 2017; Guess et al., 2020; Lim, 2020).

Research Limitations

This study has several limitations that should be acknowledged. First, the cross-sectional design limits causal inferences about the relationship between digital literacy and disinformation vulnerability. Second, geographic scope limited to Java Island's urban centers may not represent rural or outer island populations. Third, self-reported measures of information sharing behavior may be subject to social desirability bias. Fourth, the study focuses primarily on Facebook and WhatsApp, potentially missing dynamics on emerging platforms like TikTok.

CONCLUSION

This study confirms digital literacy's crucial role in reducing disinformation vulnerability. Most respondents possess "adequate" literacy with technical skills (4.2/5.0) exceeding critical abilities (2.8/5.0). Analysis proves higher digital literacy correlates with lower disinformation trust and sharing ($r = -0.47$, $p < 0.05$; $\beta = -0.52$, $R^2 = 0.36$), aligning with cognitive inoculation theory. The study's novelty lies in its integrated approach bridging technical, evaluative, social, and ethical dimensions, demonstrating that effective resilience requires holistic competencies beyond technical proficiency, particularly in collectivist contexts.

Information sharing is influenced by both literacy abilities and social factors (peer pressure, verification time). Findings underscore need for comprehensive strategies implemented collaboratively between government, institutions, communities, and platforms. Future research should employ longitudinal designs, include rural populations, explore age-diverse interventions, and examine emerging platform vulnerabilities.

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