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The Role of Information Literacy in Mitigating the Spread of Hoaxes on Social Media

Erni Kurniasih[1], **Ninis Agustini Damayani**[2], **& Feliza Zubair**[3]

[1,2,3]Universitas Padjajaran, Indonesia
Correspondence email: erni22003@mail.unpad.ac.id

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ABSTRACT

The rapid proliferation of hoaxes on social media presents a significant societal challenge due to their potentially severe impacts. It is widely accepted that information literacy protects society from hoaxes. Recognizing the protective role of information literacy against hoaxes, this study investigates the influence of information literacy on the ability to identify hoaxes and the intention to share them via social media. Employing a quantitative research methodology, the study utilized a survey through Google Forms. The questionnaire was disseminated via social media to a purposive sample of 100 active social media users in Indonesia, ensuring a diverse representation across various age groups and educational backgrounds. The findings indicate that individuals with higher levels of information literacy demonstrate a greater capacity to identify hoaxes accurately and exhibit a diminished propensity to share them. These results highlight the critical importance of information literacy in combating the spread of hoaxes on social media. The study provides valuable insights for policymakers and educators in developing strategies to enhance information literacy within the community.

Keywords: Information literacy; hoax; social media; digital literacy; misinformation

1. INTRODUCTION

The Internet is essential in communication, information-seeking, and decision-making (Kozyreva et al., 2020). It has also shifted traditional reading and writing to digital communication (Bahlamar & Abadi, 2023). However, it frequently functions as a conduit for disseminating hoaxes (Vosoughi et al., 2018). Hoaxes, intended to mislead by giving fake facts, can provide the impression of truth despite warnings regarding misinformation (Pennycook et al., 2020). Vosoughi et al. (2018) show how hoaxes can impact public perception and individual decisions. Hoaxes that spread through the Internet show the "post-truth" era phenomenon Lewandowsky et al., 2017). It spreads via "cascades" on social media (Friggeri et al., 2014; According to Rubin (2019), it is an epidemic resulting from digital socio-technological advancements. Therefore, identifying hoaxes on social networks is essential. Shu et al. (2017) propose data mining research to address this issue.

Hoaxes spread through various channels, but social media is the most dominant (Allcott & Gentzkow, 2017; Humprecht, 2019; D. Lazer et al., 2018; Shu et al., 2017; Tandoc et al., 2017; Wardle & Derakhshan, 2017). The speed and reach of social media allow hoaxes to spread quickly (Vosoughi et al., 2018). In Indonesia, as of January 2023, there were 167 million active social media users, or about 60.4% of the population (Kemp, 2022). Facebook and WhatsApp are the primary hoax dissemination platforms (Tapsell, 2018). According to data announced by the Ministry of Communication and Information of the Republic of Indonesia, from August 2018 to March 31, 2023, 11,357 hoax issues were identified and verified (Husna, 2023). Sharing or engaging with false information on social networks frequently causes the spread of false information (Buchanan, 2020). Studies show that hoaxes spread faster and more widely than facts due to their attention-grabbing nature (Lazer et al., 2018). People often share incorrect information focusing on factors other than accuracy (Hariri et al., 2019).

The rapid and widespread dissemination of hoaxes threatens information integrity and public behavior (Arechar et al., 2023). Hoaxes can be harmful in various social, financial, psychological, political, health, and technological aspects (Arechar et al., 2023; Narwal, 2018; Patra et al., 2023). Educational surveys note students' and adults' difficulty identifying valid sources (Auberry, 2018; Musgrove et al., 2018). Repetition increases the perceived truthfulness of misinformation, reinforcing false beliefs and influencing decision-making (Fazio et al., 2019).

The library profession's response to misinformation dissemination emphasizes core values and services as efforts to combat hoaxes (Sullivan, 2019). Social media technologies and algorithms can determine the type of content displayed for hoax identification (Gillespie, 2020), such as ensemble methods and Support Vector Machines (SVMs) (Gravanis et al., 2019), the FakeNewsNet (Shu et al., 2020), and hybrid deep learning models (Nasir et al., 2021). Nevertheless, several methods still have unclear effectiveness (Gillespie, 2020). Allen et al. (2024) highlight the importance of fact-checking, Zhang & Ghorbani (2020) emphasize human-technology collaboration, and others emphasize the necessity of media literacy education (Clayton et al., 2020; Lazer et al., 2017; Mihailidis & Viotty, 2017).

Conversely, information literacy competency (ILC) is crucial in countering this issue (UNESCO, 2023). Information literacy includes identifying needs, searching for relevant information, evaluating its credibility, organizing for future use, applying creatively and ethically, and sharing knowledge with others (Druick, 2016; Mudave, 2016; Secker, 2018). Information literacy skills are increasingly important, especially in navigating the complexities of scientific information and confronting hoaxes (Mercer et al., 2020). Optimizing information literacy skills can help individuals access information from accurate sources (Hasfera et al., 2020). ILC also can be used to identify and solve problems (UNESCO, 2023).

Information literacy has proven to help evaluate digital information more accurately (Addy, 2020). It has been significant in identifying fake news, including limiting the dissemination of false information regarding COVID-19 (Igbinovia et al., 2021; Jones-Jang et al., 2021; Kiernan, 2017). ILC spots fake news through its information verification skills (Khan & Idris, 2019). Studies by Maertens et al. (2020) highlight the effectiveness of media and information literacy interventions through the Bad News Game. Bryanov & Vziatysheva (2021) point out individual factors and interventions that can influence judgments about the credibility of fake news. Information literacy programs can help students improve their critical thinking skills by spotting hoaxes (El-Rayess et al., 2018; Guo & Huang, 2021; Jannana et al., 2021; Machete & Turpin, 2020). Rubin (2019) stresses the importance of working together across disciplines and profoundly understanding how hoaxes spread. Programs for information literacy that emphasize social media usage from a young age and its development are also advised (Alwreikat, 2021, 2022).

Based on the literature, while there are various studies on information literacy competence, it still needs to be made clear how specifically ILC affects individual behavior in identifying and sharing intentions of hoaxes on social media. This article explores the impact of implementing ILC as a strategy to recognize and prevent the dissemination of hoaxes on

social networks. This research identifies the extent to which ILC is effective in tackling hoaxes. The main objective is to measure the extent to which the level of ILC contributes to the ability of social media users to recognize hoaxes and avoid sharing them. This study is expected to provide a better understanding of the possibility of ILC as a preventive method for mitigating the detrimental effects of hoax dissemination on social media.

The researcher posits two hypotheses based on prior research as a foundational framework for this investigation. Firstly, it is hypothesized that social media users with a significant Information Literacy Competency (ILC) are better equipped to recognize hoaxes within social media environments. Secondly, it is proposed that individuals with a robust Information Literacy Competency (ILC) are more inclined to refrain from sharing hoaxes on their social media platforms. These hypotheses form the basis for exploring the relationship between information literacy and identifying and disseminating hoaxes on social media."

2. METHODS

This study employed a quantitative survey design to investigate the news consumption patterns of social media users. The survey was conducted via Google Forms and distributed through social media platforms from May 14, 2023, to June 13, 2023. The target demographic comprised active social media users, specifically focusing on individuals who actively seek news and information on platforms such as Facebook, Instagram, Twitter, and YouTube. A purposive sampling technique was utilized to select a diverse sample of 100 respondents, ensuring a broad representation of ages, educational backgrounds, and cultural perspectives. This diversity was intended to capture various experiences and viewpoints, enhancing the findings' generalizability (Table 1).

Table 1. Participants demographic

Category	Description	Count
Total Participants		100
Age Range	15 – 54 years	
Gender Distribution	Female	63
	Male	37
Social Media Usage	Facebook, Instagram, Twitter, and YouTube	57
	Facebook, Instagram, and YouTube	21
	Instagram and YouTube	7
	Facebook and Instagram	5
	Instagram and Twitter	6
	YouTube and Twitter	4
Education Background	High School Diploma or Bachelor's Degree	50
	High School Graduates	36
	Master's or Doctoral Qualifications	12
	Junior High School Graduates	2
Income Levels	Below IDR 500,000	29
	IDR 500,000 - Rp. 1,000,000	15
	IDR 1,000,000 - Rp. 5,000,000	32
	IDR 5,000,000 - Rp. 10,000,000	20
	Above IDR 10,000,000	4

The Information Literacy Competence (ILC) level was measured using seven questions selected from the Bojana et al. (2016) information literacy index. The ILC scale in this study consisted of multiple-choice questions with four answer options provided (one correct and three incorrect). The correct answer was coded 1, while all other incorrect answers were 0.

The ability to identify hoaxes was measured by presenting ten pieces of information, a mix of hoaxes and facts, from various social media platforms (Jones-Jang et al., 2021)—a hoax example in Figure 1. There were two possible responses for each piece of information (hoax or fact). If the respondent chose "hoax" as the answer and the presented information was a hoax, then "hoax" was the correct response. Conversely, an incorrect answer was identified if the presented information and the respondent's choice did not match; for example, the information presented was a "fact," but the respondent chose a "hoax." The correct answer was coded as 1, and the incorrect answer was coded as 0.

Figure 1. A screenshot of one example of a hoax
Sources: https://bansosbpjskesehatanpusat.blogspot.com/ (in 2023)

The intention to share hoaxes was measured by presenting two hoaxes from various social media platforms, followed by the question, "Would you share the following information on social media?" with two response options: "Yes" and "No." A "no" response was coded as 1, and a "yes" response as 0.

The data collected from the survey was analyzed using statistical techniques. The statistical tests used were based on the data from the research variables. The hypothesis testing the impact of ILC (X) on the ability to identify hoaxes on social media (Y1) was conducted using simple regression, as the variable data were interval data. Because Y2 was a binary variable, logistic regression was used to test the hypothesis that ILC (X) would affect how many people shared hoaxes on social media (Y2).

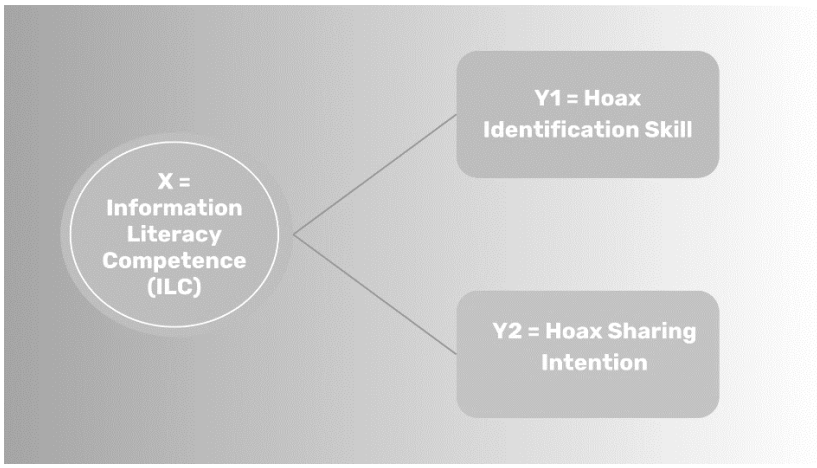

Figure 2. Research Model.
Sources: The authors' documentation (2023)

3. RESULTS AND DISCUSSION

Results

The statistical package for social sciences (SPSS) was used to complete the analysis of this study. The analysis is carried out by fulfilling several standard testing assumptions. The data normality test using a typical probability plot shows that the data distribution has a pattern that follows a diagonal line, indicating a normal distribution. The heteroscedasticity test using a scatterplot showed no evidence of heteroscedasticity in the regression model. Multicollinearity analysis confirms that the regression equation does not exhibit multicollinearity because the Variance Inflation Factor (VIF) value and tolerance value meet the specified limits, respectively VIF value=1.000 (p<10) and tolerance value=1.000 (p>0,10).

One hundred complete responses were received using the Google Forms survey questionnaire. The study involved a descriptive statistical analysis of Information Literacy Competence (ILC) among the participants. The average ILC score was 64.0010, with a standard deviation of 27.938. It suggested a generally high level of information literacy among the cohort. When recognizing hoaxes, the average score was an impressive 84.40, and the standard deviation here was 15.784, indicating a strong ability among the majority to discern such misinformation. The average hoax-sharing intention score was just 0.33, with a standard deviation of roughly 0.473, which revealed an intriguing aspect of the respondents' general reluctance to share hoaxes. We can see the results of the descriptive analysis based on variables in Table 2.

Table 2. Research variable descriptive test findings

Statistics		N	Valid = 100 Missing = 0			
	Variable		**Mean**	**Std. Deviation**	**Min**	**Max**
X	Information Literacy Competence (ILC) 1. The most reliable, verified, concise, and comprehensive description of an unknown specialized concept can be found in ..... 2. In which list have the information sources been correctly ordered from the least to the most formally established and verified? 3. Which data listed below are "raw" unprocessed data?		64.0010	27.938	14.30	100

	4. Compared to a search within the title and abstract, a full-text search in a database results in …….				
	5. Which statement on GMO (Genetically Modified Organisms) is not the author's personal opinion?				
	6. Mary Brown must create a password to access an information system. Which password is the most secure?				
	7. Our university subscribes to a journal with a pay-per-license agreement. What am I not allowed to do?				
Y1	Hoax Identification Skill Below are 10 pieces of information taken from various social media sources. Select "hoax" if the information presented is false information, and Select "fact" if the information presented is a fact	84.40	15.784	30	100
Y2	Hoax Sharing Intention Below are two pieces of information taken from various social media sources. Would you share the following information on social media?	0.33	0.473	0	1

A deeper analysis through crosstab studies revealed interesting correlations, as shown in Table 3. For instance, 46% of the survey participants had a high level of ILC, 36% medium, and 18% low. Regarding hoax identification, those with a high capacity accounted for 81%, medium capacity 15%, and low capacity 4%. This data suggests that a higher ILC is linked to better-identifying hoaxes.

Table 3. Crosstab test results for hoax identification

Crosstab			Hoax identification skill			Total
			Low	Medium	High	
ILC	Low	Count	3	6	9	18
		% within ILC	16.7%	33.3%	50.0%	100.0%
		% of Total	3.0%	6.0%	9.0%	18.0%
	Medium	Count	1	8	27	36
		% within ILC	2.8%	22.2%	75.0%	100.0%
		% of Total	1.0%	8.0%	27.0%	36.0%
	High	Count	0	1	45	46
		% within ILC	0.0%	2.2%	97.8%	100.0%
		% of Total	0.0%	1.0%	45.0%	46.0%
Total		Count	4	15	81	100
		% within ILC	4.0%	15.0%	81.0%	100.0%
		% of Total	4.0%	15.0%	81.0%	100.0%

The intention to share hoaxes was also scrutinized, as shown in Crosstab test results for hoax sharing intention in Table 4. Among those with high ILC, 87% showed no intention to share hoaxes, while 13% did. For those with a medium level of ILC, the figures were 56% (not sharing) and 44% (sharing). In the low ILC group, 39% did not intend to share hoaxes, while a concerning 61% did. This trend pointed to a clear connection: higher ILC levels typically correlate with a reduced propensity to share hoaxes.

Table 4. Crosstab test results for hoax sharing intention

Crosstab			Hoax sharing intention		Total
			No	Yes	
ILC	Low	Count	7	11	18
		% within ILC	38.9%	61.1%	100.0%
		% of Total	7.0%	11.0%	18.0%
	Medium	Count	20	16	36
		% within ILC	55.6%	44.4%	100.0%
		% of Total	20.0%	16.0%	36.0%
	High	Count	40	6	46
		% within ILC	87.0%	13.0%	100.0%
		% of Total	40.0%	6.0%	46.0%
Total		Count	67	33	100
		% within ILC	67.0%	33.0%	100.0%
		% of Total	67.0%	33.0%	100.0%

Testing the hypothesis on the impact of ILC (X) on the ability to identify hoaxes on social media (Y1) required a simple regression approach due to the interval nature of the data. This regression respected key assumptions like normal data distribution, the absence of heteroscedasticity, and no multicollinearity. The regression analysis in Table 5 shows a clear relationship: for every unit increase in ILC, the ability to identify hoaxes improved by 0.340. It indicates that the influence of ILC was significant, contributing 36.2% to the capacity for hoax identification. The regression model also shows that ILC significantly influences the skill to identify hoaxes, with a significance value (Sig.) $p < 0.000$. It shows that the regression formula is statistically valid in explaining variability in hoax identification. Following commonly used testing criteria, if the significance value is ($p < 0.05$), the predictor variable is considered to affect the dependent variable significantly. These findings support Hypothesis 1, that the higher the ILC, the higher the ability of social media users to identify hoaxes on social media.

Table 5. Hypothesis test results (t-test)

Coefficients[a]					
	Unstandardized Coefficients		Standardized Coefficients		
Model	B	Std. Error	Beta	t	Sig.
1 (Constant)	62.648	3.181		19.694	.000
ILC	.340	.046	.602	7.455	.000
a. Dependent Variable: Hoax identification skill					

Another hypothesis examined the impact of ILC (X) on the intention to share hoaxes on social media (Y2), employing logistic regression due to the dichotomous nature of the dependent variable. The robustness of the logistic regression model was evident through the overall model assessment, the Hosmer and Lemeshow test, Nagelkerke's R Square, and the classification matrix. The logistic regression analysis results in Table 6 show that the ILC variable significantly influences the intention to share hoaxes on social media. The regression coefficient for ILC is -0.046 ($p<0.001$), indicating that every one-unit increase in ILC will reduce the log odds of hoax-sharing intention by 0.046. It indicates that the higher the respondent's ILC level, the lower their possibility of sharing hoaxes on social media. These findings confirm the hypothesis that ILC can influence the intention to share hoaxes on social media. In addition, the constant in the model shows that when the ILC value is zero, the log odds of hoax sharing intensity is around 2.001. The 95% confidence interval for Exp(B) of ILC is between 0.935 and 0.975, indicating that the decrease in the intensity of hoax sharing on social media ranges from

2.5% to 6.5% for every one-unit increase in ILC. Therefore, these results highlight the importance of increasing ILC to reduce the spread of hoaxes on social media.

Table 6. Results of logistic regression hypothesis testing

Variables in the Equation									
								95% C.I.for EXP(B)	
		B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Step 1[a]	ILC	-.046	.011	18.858	1	.000	.955	.935	.975
	Constant	2.001	.621	10.391	1	.001	7.394		
a. Variable(s) entered on step 1: ILC.									

In summary, this research offers critical insights into the dynamics of information literacy and its impact on social media behavior, particularly in relation to hoax recognition and sharing intentions. The data underscores the importance of enhancing ILC to combat the spread of misinformation and hoaxes in the digital age.

Discussion

This research unveils significant findings on the relationship between Information Literacy Competence (ILC) and the ability to identify and share hoaxes. The analysis indicates a positive correlation between the ability to identify hoaxes and the level of information literacy. Respondents with higher information literacy demonstrated a better capacity to identify hoaxes. This aligns with previous studies highlighting information literacy's pivotal role in helping individuals recognize and assess the credibility of information encountered, particularly on social media. These findings support the arguments by experts like Allen et al. (2024) and Musgrove et al. (2018), emphasizing the significance of information literacy in countering misinformation and hoaxes in the digital era. Additionally, the research shows that higher levels of information literacy correlate with a lower intention to share hoaxes. This reflects that information literacy influences how individuals identify information and choose to interact with it. Consequently, information literacy can be an effective strategy for reducing the dissemination of hoaxes on social networks. The interpretation of these results reaffirms the initial hypothesis that information literacy plays a critical role in addressing the issue of hoaxes on social networks, a phenomenon increasingly relevant in today's digital era, consistent with previous research by Kozyreva et al. (2020) and Vosoughi et al. (2018) highlighting the internet's role in communication and information dissemination.

The study also underscores the significance of information literacy in equipping individuals to critically evaluate information received and shared in a digital environment often filled with misleading or inaccurate information. The correlation between high ILC and better hoax identification ability supports Allen et al. (2024) emphasis on the importance of fact-checking. Consistent with Auberry (2018) and Musgrove et al. (2018), these results suggest that information literacy aids individuals in identifying valid sources and avoiding the spread of misinformation. This research reinforces the arguments by experts like Clayton et al. (2020) and Mihailidis & Viotty (2017) regarding the importance of media literacy education in confronting hoaxes. More robust educational and societal approaches to information literacy should be emphasized in academic contexts and everyday community life.

Using a quantitative survey design in this research gave a clearer picture of respondents' behavior and attitudes toward hoaxes. Statistical analysis provided robust empirical evidence about the correlation between information literacy and the ability to identify and share hoaxes. The study followed several basic assumptions that are needed for statistical validity. These included the fact that the data were normal and that there was no heteroscedasticity or multicollinearity. It made the results more reliable. This study goes a step further by showing

that information literacy not only aids in identifying hoaxes but also plays a vital role in reducing the spread of false information. Compared to previous studies, such as Pennycook et al. (2020), which found that individuals often share false information not due to an inability to identify its truthfulness but due to a lack of attention to accuracy when sharing, this study offers an additional perspective. It indicates that information literacy can enhance awareness and caution in sharing information, reducing the tendency to spread hoaxes.

The findings from this study also contribute to the existing body of literature that emphasizes the significance of information literacy in overcoming obstacles in the post-truth era (Lewandowsky et al. 2017). These findings lend credence to the contention that information literacy is an essential ability to acquire in today's culture to efficiently sort through and validate information encountered, particularly on social media platforms. These findings support our concept of information literacy and broaden our understanding of it. Furthermore, they provide a fresh viewpoint on how information literacy can impact individual behavior within social media, which is constantly changing and frequently complex.

This research introduces new aspects of the study of information literacy and its influence on spreading hoaxes on social media. The main contribution lies in the in-depth analysis of how information literacy levels affect individuals' ability to identify hoaxes and their behavior in sharing information on social media. Compared to previous studies that focused on one aspect—hoax identification or sharing intention—this research provides integrated insights encompassing both aspects. It offers a new holistic perspective on understanding the role of information literacy in the digital era, particularly in the context of social media use in Indonesia.

This study has some limitations. First, the research sample is limited to social media users in Indonesia, which may only partially represent social media users globally. Second, while effective in data collection, the quantitative survey methodology may have limitations in exploring the deeper nuances of individual behavior and motivations. Third, the relatively small sample size and purposive sampling method could affect the generalizability of findings.

Further research could address these limitations by using a broader and more diverse sample to increase the generalizability of the findings. Future studies could also utilize qualitative methodologies, such as in-depth interviews or case studies, to better understand how information literacy affects individual behavior in confronting hoaxes. Also, experimental or quasi-experimental studies that examine the direct effects of information literacy interventions could help us learn more about how well different teaching methods work to stop the spread of hoaxes.

Overall, this study demonstrates that information literacy is vital in helping individuals identify and reduce the spread of hoaxes. It emphasizes the need for more focused efforts in information literacy education and socialization in academic settings and the wider community. By enhancing awareness and skills in information literacy, society can be more effective in recognizing and avoiding the spread of false information, ultimately contributing to a healthier and more trustworthy information environment.

4. CONCLUSION

This research investigates the impact of information literacy on individuals' ability to identify hoaxes and their intention to share such information on social media. Using a quantitative survey approach and analyzing data from 100 respondents in Indonesia, the study successfully reveals that information literacy plays a significant role in both aspects. The results show that individuals with higher information literacy are more accurate in identifying hoaxes and less likely to share false information. These findings are crucial in the current context, where hoaxes and misinformation are increasingly prevalent on social media. Information literacy, encompassing skills to identify, evaluate, and effectively use information, emerges as

a vital tool in combating the spread of false information. This study empirically supports incorporating information literacy education into school curricula and lifelong learning programs. Besides its educational implications, these findings are also relevant for policymakers and social media practitioners. Highlighting information literacy in public policies and social media platform strategies can aid in reducing the spread of hoaxes. It also emphasizes the role of technology and algorithms in helping social media users be more critical of the information they receive.

This study also opens paths for further research. Focusing on Indonesia, the findings offer essential yet limited perspectives. Future studies could expand the geographical scope to see how cultural contexts and other demographic factors influence the relationship between information literacy and hoax-related behavior. Different methodological approaches, such as qualitative or experimental studies, could provide deeper insights into these dynamics. In summary, this research reaffirms the importance of information literacy in today's social media context. By strengthening information literacy skills across society, we can reduce the spread of hoaxes and promote a healthier, more responsible information environment. It is an individual challenge and a collective responsibility requiring cooperation among educators, policymakers, and the community.

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