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FEAR OF MISSING OUT AND INFORMATION AVOIDANCE IN THE SOCIAL MEDIA INFORMATION FLOW IN THE ERA OF INFORMATION SOCIETY: A SYSTEMATIC REVIEW

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Abstract: In the current information society era, the role of social media is not only as a communication platform but also as the main source of information flow for billions of users around the world. The increased use of social media in the information society era encourages the massive dissemination of information, thus creating an abundant and continuous flow of information (Information Flow). This condition encourages the emergence of two often contradictory behavioral tendencies: fear of missing out (FoMO) and information avoidance. This study uses the Systematic Literature Review (SLR) methodology to explore the process of information flow on social media affecting the formation of FoMO and Information Avoidance behaviors in the context of the information society. Based on a review that has been conducted on 21 kinds of literature, it is shown that the flow of information encourages users to always be connected and avoid missing important information. The large volume of information creates challenges social media users feel, such as stress and fatigue over information overload. As a result, social media users' responses tend to avoid information as a coping mechanism to reduce cognitive and emotional burdens. Examined using Frank Webster's characteristics of the information society, these two phenomena reflect a complex relationship and influence the mental well-being of users in the information society era.

Keywords: Information Flow, Information Society, FoMO, Information Avoidance

INTRODUCTION

In today's information society era, the role of social media is not only a communication platform for billions of users worldwide, but also as a catalyst for an increasingly massive information flow. According to Frank Webster in *Theories of the Information Society*, modern society is characterized by the dominance of theoretical knowledge and information as drivers of social change that manifest itself in five aspects: technological, economic, occupational, spatial, and cultural (Webster, 2006). Ever-evolving digital technologies facilitate the rapid and seamless production, distribution, and consumption of information that encourages people to engage in a global network of economic, cultural, and scientific information exchange. The abundant flow of information through social media not only creates global connectivity but also gives rise to psychological phenomena such as Fear of Missing Out (FoMO) and Information Avoidance. FoMO appears in response to the anxiety of being left behind from information or social activities, while Information Avoidance is a form of avoidance due to the saturation of information flows. These two phenomena are interrelated and created as a consequence of the dynamics of information flows that continue to increase in today's networked society.

The concept of a network society introduced by Manuel Castells in his work "The Rise of the Network Society" It is one of the important theories in understanding social structure in the information society era. Castells describes the network society as a social

structure based on information and communication networks supported by digital technology. This technology drives global connections and rapid distribution of information, transforming work, communication, and overall human life patterns (Miconi, 2023). This concept develops Daniel Bell's idea that the information society is a society where information is widespread and can be accessed by anyone with information technology as the driving force (Duff, 2023).

Research data report published by We Are Social in January 2024 revealed that the number of active social media users had surpassed 5 billion, equivalent to 62.3% of the global population, this figure had increased by 266 million or 5.6% of users compared to the previous year. The report also explained that the average user of social media platforms like TikTok and YouTube had a record of high usage time with an average of 28 to 34 hours per month. The trend of social media usage such as Facebook, Twitter (now X), and LinkedIn also experienced exponential user growth, with an estimated 10,000 billion users by 2005 (Jayaram et al., 2020). Through social media, which encourages information to spread instantly and massively, it creates a flow of information (Information Flow) which is abundant and continues to flow endlessly. This encouraged not only easier access to information but also presented challenges in selecting relevant information due to the information overload that users must navigate.

In the information society, the flow of information is not only formed from passive distribution but is also created, processed, and reutilized by the community through the aid of digital technology. This process creates a continuously evolving digital culture. Information has become a primary commodity, with flow patterns heavily influenced by global digital networks. Technological developments have transformed the way information is collected, processed, and disseminated. These changes had simultaneously raised new challenges in information regulation and privacy (Iacovitti, 2022). In addition, social media literacy plays an important role in directing the flow of information in a digital society, where user engagement in digital networks determines how information is received and (Kalorth et al., 2020). Through global communications infrastructure, the rapid, real-time dissemination of information worldwide is driven by the dynamic flow of information in today's digital era.

The presence of information technology, in addition to encouraging the acceleration of information flow, also reshapes social and cultural structures through technology-based production, consumption, and experience processes. Castells emphasized that this network integrates technology, power, and culture in dynamic interactions that encourage the interconnectedness of various social actors to form new patterns in global communication and collaboration. In this context, the network society becomes a framework for understanding how digital structures shape individual and collective roles in social spaces (Zhen et al., 2020). The characteristics of this network community condition encourage users to stay connected and stay updated with the latest updates, which can exacerbate feelings of Fear of Missing Out (FoMO). On the other hand, the excessive information flow also causes mental fatigue so that users tend to avoid information that is perceived as excessive or irrelevant.

Fear of Missing Out (FoMO) has become a psychological phenomenon increasingly visible in the information society, particularly with the rise in social media use. FoMO encourages individuals to constantly access the latest information to avoid feeling left behind from experiences that are considered important. FoMO influences excessive social media use behaviors, including increased engagement in online activities such as commenting and sharing content, which often leads to anxiety and productivity disruption (Alutaybi et al., 2020). Additionally, FoMO is associated with a tendency to post more frequent content that indicates social status as a way of addressing the fear of missing out on important information or opportunities (Xi et al., 2022). In an information society, instant and abundant access to information has a positive and negative impact on the behavior and well-being of social media users. Users are challenged to balance the need to stay informed with the need to protect themselves from information overload.

On the other hand, Information Avoidance emerges as a user's response to fatigue due to information overload on social media. This high level of information fatigue can trigger information-avoidance behaviors, including ignoring or filtering out certain content to protect the user's psychological well-being (Zhou & Xie, 2024). The interaction between FoMO drive to stay connected and the tendency Information Avoidance to maintain a balance indicates complex behavioral conflicts among social media users. Understanding the interaction between FoMO and Information Avoidance in the context of information flow is crucial in creating healthier information management strategies in the digital era so that users can access information wisely without feeling burdened. Based on the background presented, this study aims to (1) identify the characteristics of information flow on social media that contribute to the emergence of Fear of Missing Out (FoMO) and Information Avoidance; (2) analyze the relationship between information flow, FoMO, and Information Avoidance based on the findings of previous studies; and (3) explain these findings within the framework of the characteristics of the information society according to Frank Webster. This study provides an understanding of the process of information flow on social media affecting the formation of FoMO and Information Avoidance behaviors and its implications for user behavior in the era of information society.

METHODOLOGY

This section describes the research steps used to examine the relationship between Fear of Missing Out (FoMO), Information Avoidance, and information flows on social media in the context of an information society. This study uses the methodology Systematic Literature Review (SLR) to identify, assess, and synthesize evidence related to Fear of Missing Out and Information Avoidance in the Flow of Information on social media in the Era of the Information Society. Systematic literature review is a form of secondary study that is systematically designed to identify, analyze, and interpret all evidence relevant to the research question (Barbara, 2007). In this study, the author chose systematic literature review to study the behavior of Fear of Missing Out and Information Avoidance in information flow by systematically evaluating all available evidence and ensuring that the research findings are based on relevant data. To clarify the flow of the research, this section is organized into several subsections, namely Eligibility Criteria, Search Strategy, Screening and Data Extraction, and Quality Appraisal.

Eligibility Criteria

In determining *eligibility criteria*, the author developed several exclusion criteria used in the literature *screening* stage, ranging from *title and abstract screening* to full text screening. The authors excluded literature outside the context of social media and did not focus on FoMO or *Information Avoidance*. Furthermore, literature discussing FoMO or Information Avoidance without addressing information flow was also excluded from this review.

In determining eligibility criteria, the researcher determined the inclusion and exclusion criteria used at the title and abstract screening stage to *full-text screening* as stated in Table 1 and Table 2. These criteria were compiled to ensure that the reviewed studies were relevant to the research focus, namely the relationship between information flow on social media and Fear of Missing Out (FoMO) and Information Avoidance.

Table 1: Exclusion Criteria

Criteria	Explanation
Outside the context of social media	A study that does not focus on social media as the main platform in discussing information flow related to FoMO and <i>Information Avoidance</i> .
Not focusing on FoMO or Information Avoidance	Studies that do not discuss in depth the concept of Fear of Missing Out or Information Avoidance.
FoMO and Information Avoidance without Information Flow	Studies that only discuss FoMO or Information Avoidance without connecting it to the flow of information on social media.

Table 2: Inclusion Criteria

Criteria	Explanation
Discussing FoMO and/or Information Avoidance	The study explicitly discusses Fear of Missing Out (FoMO), Information Avoidance, or both as the main focus of the analysis.
Being in the context of social media	The study places social media as the main space for information flow, such as Instagram, TikTok, X, Facebook, YouTube, or similar platforms.
Relate to the flow of information	Studies that do not discuss in depth the concept of Fear of Missing Out or Information Avoidance.
Scientific articles published in 2021–2024	The study is a scientific article published in the range of 2021 to 2024 to be in accordance with the latest developments in the issue.
Full-text available	Articles can be accessed in full so that it allows for comprehensive content review at the full-text screening stage.

Search Strategy

The author conducted a structured search of the scientific literature using the Scopus, ScienceDirect, Jstor, and Emerald databases. In conducting the literature search, the author focused exclusively on literature containing the terms "Fear of Missing Out" and "Social Media," as well as "Information Avoidance" and "Social Media" in the title, abstract, and keywords. The search strings are shown in Table 3.

Table 3: Research Search String

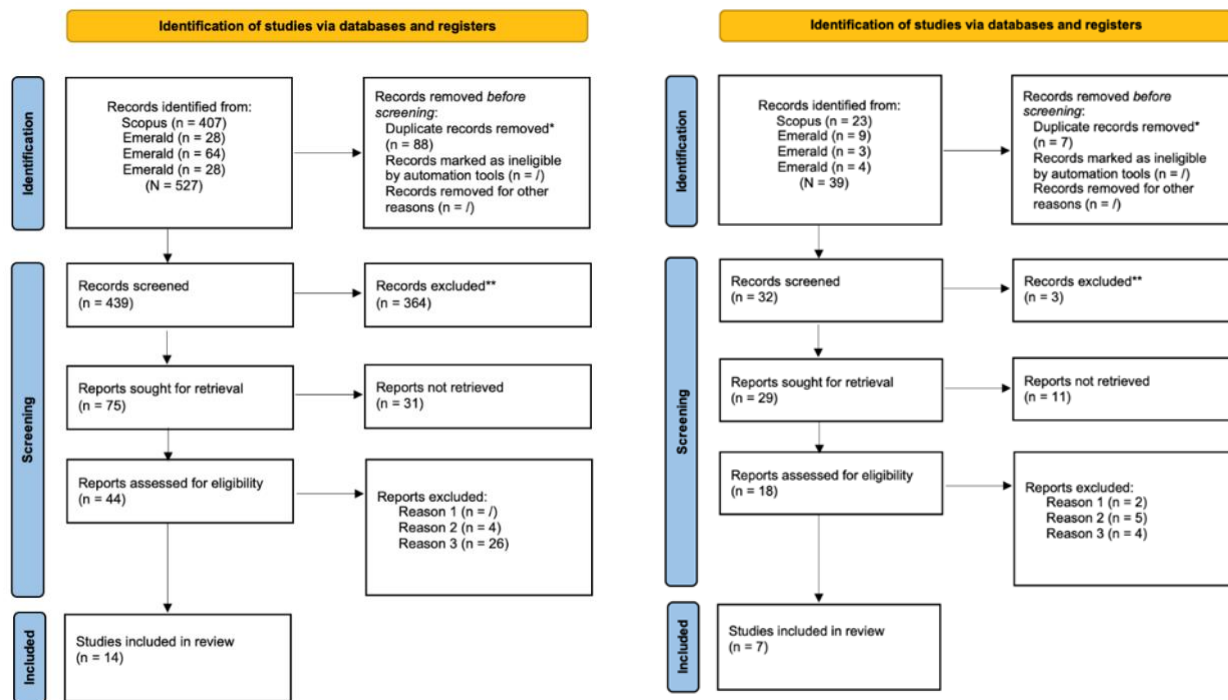
Topic	Search String
FoMO	("fear of missing out" OR FoMO) AND ("social media" OR "social networking sites")
Information Avoidance	("information avoidance" OR "information avoid*") AND ("social media" OR "social networking sites")

The truncation symbol (*) is used to reach variations of terms, especially in the word 'avoidance'. The Boolean AND and OR operators are used to broaden and refine search results. The researchers limited the results to articles published in the range of 2021 to 2024 through the publication year filter feature available in each database. . This restriction aims to ensure that the literature obtained and reviewed in this study represents the most recent studies relevant to the current dynamics of the research topic. In addition, the Boolean operator (AND) and truncation symbols. The initial search was conducted on November 16, 2024 and yielded 566 articles.

Screening and Data Extraction

The literature screening process is divided into two stages. In the first stage, the author downloaded bibliographic data from all searched literature and assessed the titles and abstracts based on exclusion criteria. In the second stage, literature that met the eligibility criteria in the first stage would go through a full text screening process. The author reads the entire text and assesses the literature according to the predetermined exclusion criteria. Each step of the selection process is documented using the PRISMA flowchart to illustrate the number of articles selected at each stage and the reasons for exclusion. The use of PRISMA diagrams provides a clear, transparent and structured explanation of the identification, selection and inclusion of studies, which ultimately increases the credibility and benefits of the study (Page et al., 2021). Literature that meets the eligibility criteria is then reviewed in more depth to ensure that the authors comprehensively understand the content of the literature and are extracted according to the formulation of the research problem.

Figure 1: PRISMA Diagram Review Results for "Fear of Missing Out" dan "Social Media"; "Information Avoidance" and "Social Media" Note: This diagram is adapted from Page et al. (2021)



*Seleksi duplikasi dilakukan secara otomatis melalui fitur deteksi duplikasi Rayyan (Rayyan.ai).
**Seluruh proses screening dilakukan secara manual.

*Seleksi duplikasi dilakukan secara otomatis melalui fitur deteksi duplikasi Rayyan (Rayyan.ai).
**Seluruh proses screening dilakukan secara manual.

The researchers' searches across several databases, using two different topics and keywords, yielded a total of 566 literatures. As shown in Figure 1, search results related to the topic of *Fear of Missing Out* (FoMO) yielded 527 literatures. Of the total retrieved literature, Rayyan.ai automatically detected 88 duplicates. After reviewing the automatically detected duplicates, the researchers removed the duplicates. 439 literatures were continued to the title and abstract screening stage. During this stage, 364 literatures that did not meet the inclusion criteria predetermined through the *eligibility criteria* were manually eliminated. Of the 75 literatures that passed the initial *screening* stage, 31 of them were not accessible to the authors. Furthermore, 44 literature literatures underwent the *full text screening stage* based on the

exclusion criteria and those that have been determined. As a result, after reviewing 44 literature titles, 14 literature titles met the inclusion criteria and were selected for review in this study.

The process of identification and selection of literature by topic *Information Avoidance* can be seen in Figure 2, where the search results from several databases yielded 39 scientific papers. Based on these results, 7 duplicates were automatically detected by the Rayyan.ai duplication detection feature, which is subsequently reviewed and removed by the author. A total of 32 papers then underwent title and abstract screening, with three papers eliminated for not meeting the established inclusion criteria. Of the 32 papers that passed the screening stage, 11 were eliminated due to the researcher's limited access. The 18 papers that passed the first screening stage and were accessible then underwent full-text screening. As a result, 7 papers met the established *eligibility criteria* can be further reviewed in this study.

Quality Appraisal

To assess the methodological quality of the studies included in this review, the study used the Mixed Methods Appraisal Tool (MMAT) (Nha Hong et al., 2018). This instrument was chosen because it allows the assessment of the quality of articles with different methodological designs using criteria tailored to the type of study of each study type. In this study, the articles reviewed consisted of 18 quantitative studies and 3 qualitative studies.

As presented in Table 4, the assessment process began with two MMAT screening questions, namely S1 and S2. The S1 criterion was used to assess whether the study had a clear research question or objective, while S2 was used to assess whether the data collected were adequate to answer the research question. All articles included in this review met the two initial screening criteria. Furthermore, for the qualitative study, the assessment was conducted using criteria 1.1–1.5. Criteria 1.1 assessed the suitability of the qualitative approach with the research question, 1.2 assessed the adequacy of the data collection method, 1.3 assessed the extent to which the findings were actually derived from the data, 1.4 assessed whether the interpretation of the results was supported by the data, and 1.5 assessed the coherence between the data source, data collection process, analysis, and interpretation. Meanwhile, for the descriptive quantitative study, the assessment was carried out using criteria 4.1–4.5. Criteria 4.1 assessed the relevance of the sampling strategy, 4.2 assessed the representativeness of the sample, 4.3 assessed the accuracy of the instrument or measurement method, 4.4 assessed the low risk of nonresponse bias, and 4.5 assessed the suitability of the statistical analysis used.

In general, the results of the *quality appraisal* showed that most of the studies reviewed had a good methodological quality. Most quantitative studies demonstrated clear research objectives, adequate data, appropriate measurement instruments, and analytical techniques relevant to the research design. However, there were still some limitations, especially in terms of sample representation and reporting on the risk of *nonresponse bias*. This limitation was especially apparent in a number of survey studies that used *convenience sampling* or online samples based on *self-selection*, so generalization of results needs to be done carefully. The qualitative studies in this review also generally show good quality. Existing studies show the compatibility between the research objectives, the qualitative approach used, and the selected data collection techniques. In addition, the relationship between the data, the analysis process, and the interpretation of the results is generally quite coherent. However, in one of the qualitative studies, the direct relationship between raw data and the interpretation of results was not explained as clearly as the other two studies, so the assessment of either criterion was carried out more carefully.

Overall, the results of the MMAT assessment show that the evidence base used in this review is adequate to support the synthesis of findings. However, the interpretation of the results still needs to take into account variations in quality between studies, especially related

to the representativeness of the sample in quantitative research and the depth of reporting of the relationship between data and interpretation in qualitative research.

Table 4: Mixed Method Appraisal Tool (MMAT) assessment of study quality

No	First Author, Year	All Studies		Qualitative Studies					Quantitative Studies				
		S1	S2	1.1	1.2	1.3	1.4	1.5	4.1	4.2	4.3	4.4	4.5
1	Rajan, 2021	Y	Y						Y	N	Y	C	Y
2	Brailovskaia, 2024	Y	Y						Y	C	Y	C	Y
3	Qin, 2024	Y	Y						Y	C	Y	C	Y
4	Dharejo, 2024	Y	Y						Y	C	Y	C	Y
5	Hattingh, 2022	Y	Y						Y	C	Y	C	Y
6	Bakioğlu, 2022	Y	Y						Y	C	Y	C	Y
7	Moore, 2021	Y	Y						Y	C	Y	C	Y
8	Gioia, 2021	Y	Y						Y	C	Y	C	Y
9	Tandon, 2021	Y	Y						Y	C	Y	C	Y
10	Li, 2022	Y	Y						Y	C	Y	C	Y
11	Scheinfeld, 2022	Y	Y						Y	C	Y	C	Y
12	Al-Furaih, 2021	Y	Y						Y	C	Y	C	Y
13	Putri, 2023	Y	Y						Y	N	Y	C	Y
14	Xie, 2024	Y	Y						Y	C	Y	C	Y
15	Zheng, 2024	Y	Y	Y	Y	Y	Y	Y					
16	Kumalasari, 2023	Y	Y						Y	C	Y	C	Y
17	Xia, 2024	Y	Y						Y	C	Y	C	Y
18	Yin, 2023	Y	Y	Y	Y	Y	C	Y					
19	Jia, 2024	Y	Y	Y	Y	Y	Y	Y					
20	Kainat, 2021	Y	Y						Y	C	Y	C	Y
21	Soroya, 2021	Y	Y						Y	N	Y	C	Y

Note: Y = Yes; N = No; C = Can't tell.

LITERATURE REVIEW

The literature review section explains the conceptual foundation that form the basis of this research analysis. The theoretical description in this section explains the main concepts used, as well as clarifies the relationships between concepts in the research. In particular, this section discusses the information society as a major context of research, the characteristics of information flows on social media, the concept of Fear of Missing Out (FoMO), and the concept of Information Avoidance as a user's response to the rapid exposure to digital information.

Information Society

The concept of an information society refers to the transformation of modern social structures characterized by the increasing role of information, knowledge, and communication technology as the main elements in social life (Issa et al., 2025; Nath, 2017). In the framework

of a post-industrial society, theoretical knowledge, the service sector, and information management become central to social and economic change. This thinking then developed through various perspectives, one of which was put forward by Frank Webster who identified the five main dimensions of the information society, namely technological, economic, occupational, spatial, and cultural aspects (Bell, 1973; Webster, 2006).

According to Webster (2006), modern society is characterized by the dominance of information technology, the increasing value of information-based economy, the development of information processing-oriented work, the increasingly blurred space boundaries in information distribution, and the increasing role of information in daily cultural practices. In this context, social media can be seen as a concrete manifestation of an information society. Social media not only functions as a means of communication, but also as a space for the production, distribution, exchange, and consumption of information in a sustainable manner. Its existence reflects how information has become an integral part of the social practices of modern society.

Information Flow on Social Media

Information flow refers to the process of moving, disseminating, and exchanging information between individuals and groups through a communication medium (Dewi et al., 2024). In the digital era, social media accelerates this process because it encourages the production, distribution, and consumption of information to take place quickly, widely, and sustainably (Fauzan et al., 2025). In contrast to conventional media which tends to be one-way, social media presents a two-way and even multi-directional communication pattern so that users not only play the role of receivers, but also as producers and distributors of information (Nasution & Hidayat, 2025). In this context, the flow of information on social media is one of the main characteristics of the information society, when information occupies a central position in shaping social, economic, and political interactions in society (Faidlatul Habibah & Irwansyah, 2021). The characteristics of information flow on social media include speed, volume, continuity, and interactivity. Information is continuously updated through various features such as feeds, stories, reposts, comments, notifications, and algorithm-based recommendations. This condition places users in near-continuous exposure to information.

On the one hand, this condition expands connectivity, facilitates access to information and supports productivity and collaboration, including when social media is used by organizations as a means of knowledge sharing (Bhimani et al., 2019; Kalorth et al., 2020). However, on the other hand, the high intensity and volume of information has the potential to create a cognitive burden, as individuals are required to constantly filter, evaluate, and select relevant information (Oren-Loberman et al., 2024).

In the information society, the flow of information is considered to affect the formation of social behavior and the psychological condition of users. The high intensity of information exposure can trigger a variety of responses, both adaptive and maladaptive, including the urge to stay connected and the tendency to avoid information perceived as overwhelming (Dai et al., 2020; Kővári, 2023).

Fear of Missing Out (FoMO)

Fear of Missing Out (FoMO) is a psychological condition characterized by an individual's concern that others are gaining valuable experience, information, or opportunities, while they are being left behind (Littman-Ovadia & Russo-Netzer, 2024). In the context of social media, FoMO drives individuals to continuously monitor updates, activities, and social interactions to avoid feeling left behind (Fitri et al., 2024). In this regard, FoMO reflects the need to maintain social connectedness and access to information. Social media provides an

environment conducive to the emergence of FoMO. Features such as instant notifications, indicators of the number of likes and comments, temporary content such as stories, and an algorithmic recommendation system encourage users to constantly access the latest information. This condition gives rise to the perception that delays in accessing social media can lead to the loss of important information, social experiences, and emerging trends. As a result, FoMO is often associated with compulsive social media use behavior, increased duration of use, and dependence on digital information flows (Yunarti, 2024). Theoretically, FoMO can be understood as a consequence of the characteristics of the information society that prioritizes connectivity and novelty of information. In a situation where information moves quickly and is constantly updated, individuals are encouraged to stay engaged in the flow of information so that the information flow not only serves as a source of knowledge but also creates a sense of urgency to stay connected.

Information Avoidance

Information Avoidance refers to the behavior of individuals who intentionally avoid, delay, filter, or limit exposure to certain information that is considered uncomfortable, irrelevant, or emotionally or cognitively burdensome (Bai et al., 2025; Sweeny et al., 2010). In the context of social media, this behavior can be manifested through various actions, such as ignoring certain content, reducing the intensity of use, unfollowing certain accounts, muting notifications, or even temporarily withdrawing from digital platforms (Dai et al., 2020). This behavior is generally understood as a response to information overload, which is a condition when the amount of information received exceeds the individual's capacity to process it effectively (Shahrzadi et al., 2024). Excessive exposure to information can cause mental fatigue, stress, confusion, and difficulty in determining relevant information. In such situations, Information Avoidance serves as a coping mechanism to maintain psychological balance and reduce stress due to excessive exposure to information (Jaaniste et al., 2025). In the framework of the information society, the phenomenon of Information Avoidance shows that the ease of access to information is not always directly proportional to the increase in information consumption. On the contrary, the abundance of information can actually encourage individuals to restrict or select the information consumed. In this case, Information Avoidance represents a paradox in the information society, where the greater the availability of information, the higher the tendency of individuals to avoid some of that information.

FINDINGS

This section presents the results of the synthesis of studies that have passed the selection and quality assessment stages. The findings of the study were compiled to show the main patterns that emerged from the literature related to the relationship between information flow, FoMO, and Information Avoidance on social media. To make the results more systematic, this section is divided into several subsections, namely the characteristics of the reviewed study, the dynamics of information flow and user response, the characteristics of information flow in FoMO and Information Avoidance, and the implications of the findings in the context of the information society.

Based on the results of the literature review, the authors compiled a table to extract relevant content from each study. The table presents bibliographic information (title, author, year of publication), study summary, statements or statements about *Fear of Missing Out* and *Information Avoidance* in the flow of information on social media. Table 5 contains the

characteristics of the literature collected related to FoMO and Table 6 contains the characteristics of the collected literature related to Information Avoidance included in the review.

Table 5: Study characteristics of FoMO included in the review

No	Title	First Author	Year of Publication	Short Summary	Questions, Statement, and Arguments about FoMO in Information Flow
1	Are You Hooked to the 'Gram'? Exploring the Correlation between Loneliness, the Fear of Missing Out, and Instagram Usage among Young Indians	Benson Rajan	2021	Research on the relationship between Instagram users, loneliness, and Fear of Missing Out (FoMO) among Indian youth shows that the more time spent interacting with Instagram, the higher the level of FoMO and loneliness experienced.	Highlighting the constant flow of visual information on social media Instagram and causing a person to see other people's lives that seem more interesting and satisfying consistently. This triggers an anxious feeling of missing out on the experience, which is exacerbated by the sheer amount of information that keeps flowing.
2	From Fear of Missing Out (FoMO) to addictive social media use: The role of social media flow and mindfulness	Julia Brailovskaia	2024	This study examines the relationship between FoMO, social media streams and addictive social media users. The results revealed that FoMO is related to social media flows and contributes to the addictive behavior of social media users.	FoMO is described as an early trigger, which causes a constant flow of social media use to present a large flow of information so that individuals feel afraid of missing out on important information or fun experiences shared by others. Because the sheer volume of information ends up making it difficult for individuals to sort out relevant information.
3	Too much social media? Unveiling the effects of determinants in social media fatigue	Can Qin	2024	This study explores the causative factors and impacts of social media fatigue, identifying factors such as compulsive social media use, Fear of Missing Out, and Information Overload as major contributors. Highlighting negative impacts, including social anxiety and lurking behavior, and emphasizing the importance of managing social media design to reduce burnout.	Stating that amidst the flow of social media information, where information is generated and disseminated quickly, Fear of Missing Out (FoMO) and the abundance of information on social media encourage users to over-engage. As a result, social media fatigue arises and interferes with users' ability to process content and ultimately leads users to behaviors such as abandonment, avoidance, and withdrawal.
4	No More or More Fear of Missing Out? Social Media Uses and Fatigue among Youngsters	Nasrullah Dharejo	2024	This study investigated the relationship between social media use, Fear of Missing Out (FoMO), and social media fatigue among young Pakistanis. Highlighting that the use of social media directly	Social media use was identified as driving the emergence of Fear of Missing Out as individuals sought to stay up-to-date and connected in a virtual network. The study highlights that FoMO, influenced by social media use, encourages users to over-engage and receive excessive exposure to information from the flow of

				increases FOMO and burnout.	information, which ultimately contributes to social media fatigue.
5	Factors mediating social media-induced Fear of Missing Out (FoMO) and social media fatigue: A comparative study among Instagram and Snapchat users	Marie Hattingh	2022	Investigate how Fear of Missing Out (FoMO) affects social media fatigue with Information Overload, communication overload, and online subjective well-being and compulsive social media use as mediators.	Stating that FoMO encourages increased information flow by encouraging continuous engagement with social media platforms, resulting in Information Overload as users struggle to process excessive volumes of content. Ultimately, users will experience social media fatigue by overloading users' cognitive capacity and lowering their online subjective well-being (OSWB).
6	Adaptation and validation of the Online-Fear of Missing Out Inventory into Turkish and the association with social media addiction, smartphone addiction, and life satisfaction	Fuad Bakioglu	2022	This study examined the relationship between online FoMO, social media addiction, smartphone addiction, and life satisfaction.	The dependence on social media and smartphones due to FoMO causes individuals to be constantly exposed to information that flows endlessly. This phenomenon reinforces the unbalanced flow of information, in which a person tries to stay "connected" so as not to lose other people's information. Dependence on the intense flow of information (through social media and smartphones) has the potential to create an emotional imbalance and decrease life satisfaction. FoMO accelerates the consumption of information that is often irrelevant or excessive, reinforcing the negative link between the uncontrolled flow of information and mental health.
7	Fear of Missing Out and Personality as Predictors of Social Networking Sites Usage: The Instagram Case	Kelly Moore	2021	This study explores FoMO's behavior and personality characteristics influencing Instagram use, including social media addiction and user behavioral engagement.	Stating that FoMO is concerned with increasing the use of Instagram to follow more accounts and build higher engagement with social information streams.
8	The Effects of the Fear of Missing Out on People's Social Networking Sites Use During the COVID-19 Pandemic: The Mediating Role of Online Relational Closeness and Individuals' Online Communication Attitude	Francesca Gioia	2021	This study explores the role of Fear of Missing Out (FoMO) in influencing problematic SNS use (PSNSU) during the COVID-19 pandemic. This study highlights that FoMO reinforces online communication attitudes such as self-disclosure and social relationships, which in turn leads to PSNSU.	Stating that FoMO's behavior strengthens online communication attitudes and increases dependence on the flow of information, especially through the use of social media to maintain social relationships during physical restrictions during the COVID-19 era as a coping mechanism that ultimately triggers PSNSU.

9	Dark consequences of social media-induced Fear of Missing Out (FoMO): Social media stalking, comparisons, and fatigue	Anushree Tandon	2021	This study explores how FoMO triggers negative behaviors such as stalking on social media, social comparisons, and fatigue and its effects.	FoMO causes an increase in social comparisons which leads to information exhaustion. Stalking is also a compensation route to satisfy social needs due to FoMO. Over-engagement with this flow of information creates a negative feedback loop that exacerbates social media users' burnout and anxiety.
10	A network analysis approach to the relationship between Fear of Missing Out (FoMO), smartphone addiction, and social networking site use among a sample of Chinese university students	Li Li	2022	This study explores the relationship between FoMO, smartphone addiction, and SNS use intensity in Chinese college students by using a network analysis approach to	Stating that the rapid growth of the internet has increased the flow of communication and information. FoMO triggers anxiety to always be online and involved in the flow of existing information. This encourages individuals to use SNS compulsively and triggers smartphone addiction.
11	How Social Media, FoMO, and Isolation Influence Our Perceptions of Others Who "Break the Rules"	Emily Scheinfeld	2022	This study explores the relationship between FoMO, social isolation, and perceptions of other people's behavior on social media during the COVID-19 pandemic.	Stating that FoMO strengthens attachment to the flow of social information, especially during the isolation period. This can change an individual's perception of social behavior and norms.
12	Fear of Missing Out (FoMO) among undergraduate students in relation to attention distraction and learning disengagement in lectures	Suad A. A. Al-Furaih	2021	This study explores the impact of FoMO on attention disorders and learning engagement in students.	FoMO encourages students to continue using smartphones during lectures so as not to miss out on information, even if this negatively impacts their attention and engagement in learning. Through this study, it was found that the excessive flow of information through smartphones worsens students' attention, creating cognitive barriers that reduce their learning effectiveness.
13	Fear of Missing Out (FOMO) and Instagram Social Media Addiction Among Early Adulthood	Uli Anisa Ghea Putri	2023	This study explores the relationship between FoMO and Instagram addiction in early adult individuals.	It was stated that FoMO triggers compulsive behavior in the use of Instagram features such as Stories and Feeds which causes social media addiction. This creates a constant flow of information that creates a negative feedback cycle that exacerbates social media addiction in individuals with high levels of FoMO.
14	Dealing With Unnecessary: The Mediation Role of Social Overload on Fear of Missing Out	Xin Zhou Xie	2024	This study examines the role of social overload mediation in the relationship between	Stating that FoMO increases social overload which then triggers social media fatigue. In individuals with interdependent self-construal, the relationship between FoMO and social overload was stronger. The excessive

and Social Media
Fatigue

FoMO and social media
fatigue.

flow of information and managed by individuals with high FoMO, increases the social burden and ultimately fuels social media fatigue, especially in the context of the COVID-19 pandemic.

Table 6: Characteristics of the study on Information Avoidance included in the review

No	Title	First Author	Year of Publication	Short Summary	Questions, Statement, and Arguments about IA in Information Flow
1	To Access or Not to Access Influencing Factors for Government Microblogging Information Seeking and Avoidance among Chinese Generation Z	Yu Zheng	2024	Explores the factors influencing information-seeking and avoidance behavior in government microblogging among China's Generation Z.	Highlight the complexity of the factors that drive <i>Information Avoidance</i> in the flow of information, such as heuristic factors (e.g., attention-grabbing titles and repetitive content) and systematic factors (e.g., complicated terminology and selective ignorance). This study shows that excessive or overly complicated information can overwhelm users, leading to mental fatigue and information abandonment.
2	Investigating the Role of SNS Design on Covid-19 <i>Information Avoidance</i> : The Perspectives of the Stimulus-Organism-Response Theory	Rahmania Kumala-sari	2023	This study investigated the role of SNS design in COVID-19 information avoidance. Highlighting the impact of information overload, anxiety, and excessive features on users' decisions to avoid information, emphasizing the need for a user-centric SNS design to mitigate these negative effects.	Stating that <i>Information Overload</i> and anxiety directly affect the emotional state of users, which ultimately encourages them to practice <i>Information Avoidance</i> because they feel overwhelmed. The study also highlights that poorly designed SNS features, such as excessive complexity or irrelevant updates, can overwhelm users and worsen <i>Information Avoidance behavior</i> .
3	The impact of <i>Information Overload</i> on the <i>Information Avoidance</i> of medical staff: The moderating and mediating roles of job performance and time pressure	Chun Xia	2024	This study explores the impact of <i>Information Overload</i> on social media on information avoidance behavior among medical staff, highlighting time pressure as an intermediate factor and job performance as a moderator.	Highlights that <i>Information Overload</i> significantly leads to <i>Information Avoidance</i> among medical staff, with time pressures acting as mediators and job performance moderating those relationships. High-performing medical staff are particularly vulnerable to avoiding social media information due to excessive information load, while low-performing staff experience a lower impact.
4	Study on <i>Information Avoidance</i> Behaviour in WeChat	Xianbin Yin	2023	This study investigated information avoidance behavior on the social media platform WeChat in China using in-depth interviews with 26 informants. Data analysis using basic theory revealed five main factors	Highlighting WeChat users who adopt the heavy information avoidance on the platform. In the flow of information, it is explained that there are several driving aspects such as <i>Information Overload</i> and irrelevance information, negative emotional factors such as anxiety, dislike, and

				that affect behavior such as environmental factors (excess information, low quality), personal factors (privacy, perceived costs), technical factors (user skills), negative emotions (anxiety, dislike, and saturation), and information use behavior itself. The results revealed that among the five factors there is a causal relationship that is in line with the Stimulus-Organism-Response theory, highlighting the complexity of this behavior and its implications for the development of social media platforms.	boredom, as well as technical factors such as lack of skills in using features on WeChat.
5	Generation Z's Health Information Avoidance Behavior: Insights From Focus Group Discussions	Chenjin Jia	2024	This study examines Generation Z's health information avoidance behavior, highlighting sociocultural, cognitive, and emotional factors such as group identity, information overload, and anxiety.	Stating that <i>Information Avoidance</i> in Generation Z is influenced by factors such as <i>Information Overload</i> , unreliable sources of information, and social norms that prevent them from paying attention to health content. Highlight that high and low levels of risk perception can affect avoidance. The results of the study also state that emotional states due to excessive information or conflicting information often led to avoidance as their way of coping with it.
6	User Information Satisfaction Among Female Refugees and Immigrants as Assessed by The Level of Information Literacy on Social Media	Khadijah Kainat	2021	This article highlights information user satisfaction among refugee and immigrant women in Finland and Sweden during Covid-19. With a structural equation model and 232 respondent data, it can be found that excess information on social media has an impact on information fatigue, which in turn affects information avoidance behavior. Information literacy can help avoid information overload and create convenience so that it has a positive impact on user satisfaction.	There is information avoidance (IA) in the context of information flows experienced by refugees and migrant women in Sweden and Finland. The exploding flow of information overwhelms individuals and eventually feels tired. This study revealed that there is an excess of information that causes information fatigue and eventually information avoidance behavior (IA). There was a discussion about how the amount and quality of information on social media—which is influenced by contextual variables such as the COVID-19 pandemic—as well as how individuals perceive information and how they are happy with the information affects user behavior and satisfaction. This shows the complexity of information flows in the

					context of the social integration of refugees and immigrants.
7	From information seeking to <i>Information Avoidance</i> : Understanding the health information behavior during a global health crisis	Saira Hanif Soroya	2021	This study explores the relationship between information seeking and information avoidance during COVID-19, using the Stimulus-Organism-Response (SOR) framework. Highlighting that information overload and anxiety triggered by social media exposure leads to information avoidance and emphasizing the need for a balanced dissemination of information during crises.	Highlighting that <i>Information Avoidance</i> increases significantly due to <i>Information Overload</i> and anxiety, which is driven by excessive exposure to social media. Individuals with higher exposure to social media are more likely to experience <i>Information Overload</i> and information anxiety, which significantly affects their cognitive and emotional state. In contrast, traditional sources such as print, mass media, and official websites are preferred for their credibility, thus helping to reduce <i>Information Avoidance</i> behavior.

Dynamics of Information Flow and User Response on Social Media

Based on the results of *the systematic literature review* (SLR) that had been conducted, it was found that the flow of information played an important role in shaping the user experience on social media and triggering FoMo. The volume of information and the speed of information dissemination on social media were the main catalysts that trigger FoMO in users. In addition, the design of social media, such as the features provided, instant notifications, algorithms that drive continuous user engagement.

All the literature reviewed in this study indicated that the characteristics of information flow on social media, characterized by large volumes of information and rapid dissemination intensity, contribute to encouraging users to be constantly involved in the flow of information by accessing existing information. Social media that constantly presented a large amount of information made individuals feel afraid of missing out on important information and missing out on experiences or moments shared by others on social media (Brailovskaia & Margraf, 2024; Rajan et al., 2022). Feelings of fear of missing out (FoMO) were identified as driving compulsive social media use to stay connected in social networks (*social network*), even triggering dependence on social media (Al-Furaih & Al-Awidi, 2021; Bakioğlu et al., 2022; Gioia et al., 2021; Li et al., 2022; Qin et al., 2024; Scheinfeld & Voorhees, 2022). On the other hand, compulsive social media use had also been identified as the cause of FoMO, where individuals were encouraged to stay engaged to get the latest information (Dharejo et al., 2024). This phenomenon showed how the dynamics of information flow in social media could shape user behavior in responding to their social and cognitive needs.

Social media design has had an important role in shaping user behavior, including triggering feelings *Fear of Missing Out*. Based on findings obtained from a literature review, features within social media platforms can drive user engagement, which can ultimately trigger feelings of FoMO. For example, on the Instagram platform, which is a visual-based social media, the features and algorithms that Instagram significantly influence user behavior. Instagram Feed and Story allow users to share photos and videos while receiving feedback such as likes and comments, fostering a sense of validation and social interaction. These features often trigger or exacerbate feelings of FoMO, as users feel compelled to stay connected and keep up with other people's activities (Moore & Craciun, 2021; Putri et al., 2023; Rajan et al., 2022). Social media algorithms, such as Instagram, are also strategically designed to manage the flow of information, where this not only leads to compulsive use of the platform, but also encourages *Fear of Missing Out* (FoMO) among consumers (Rajan et al., 2022).

Findings from the literature review showed that *Fear of Missing Out* (FoMO), which encourages users to engage constantly for fear of missing out on experience and information, contributes to *Information Overload*, *social overload*, *communication overload* and *social media fatigue* in social media. Individuals who experience FoMO were encouraged to get excessively involved in *platform* social media and receive exposure to excess information from the existing information flow (*Information Overload*), which ultimately put a strain on their cognitive capacity and increased to *social media fatigue* (Dharejo et al., 2024; Hattingh et al., 2022; Qin et al., 2024; Xie et al., 2024). In addition, excessive information reception (*Information Overload*) also made it difficult for individuals to identify and selected relevant information (Brailovskaia & Margraf, 2024). Excessive levels of information consumption, with often questionable relevance, can reinforce the link between the uncontrolled flow of information through FoMO and the decline in an individual's mental and emotional health (Bakioğlu et al., 2022). In addition to being caused by *Information Overload*, *social media fatigue* was also influenced by the social comparisons that result from FoMO, where individuals were constantly encouraged to engage on social media platforms and compare their lives, achievements, or appearances to content shared by others (Rajan et al., 2022; Tandon et al., 2021). Overall, these findings show how FoMO creates complex challenges for users in maintaining a balance between engagement in virtual networking and emotional well-being.

The concept of media always follows the dynamics of human civilization which has now entered the era of the information society (Aoyama & Castells, 2002). With the rapid development of the Internet, social media platforms have become an inseparable part of people's lives. Social media is a place for the dissemination of information and creates an increased flow of information so that complex dynamics are formed. The most basic use of social media can be demonstrated when users conduct continuous searches and process the information they obtain (Yin et al., 2020). The information obtained from the search will be actively consumed to meet their needs, one of which is such as the demands of tasks and work and even other impulses such as defensive motivation (Zheng, 2024).

The widening volume of information makes social media users often experience an excess of information that exceeds their ability and capacity to absorb and adapt (Soroya et al., 2021). This phenomenon is contained in research conducted by Jia & Li (2024) who found that Generation Z was exposed to a much larger volume of information than they needed so that there was concern about the relevance and credibility of information. This excess of information can also have an impact on information anxiety which will cause social media users to tend to avoid information (Kumalasari & Priharsari, 2023). This is in line with the opinion Kainat et al. (2021), that most people seek information that matches their interests, needs, or attitudes, and deliberately avoid that information if it does not fit their point of view, either consciously or unconsciously.

Information avoidance behavior can be driven by psychological factors and social factors. Psychological factors such as bad feelings (*Badmood*) which includes anxiety, irritability, and irritability to information; the mental state of the individual; confidence in knowledge and risk perception. Meanwhile, social factors include group norms, accessibility, credibility, social pressure, information quality, time pressure, and job performance. These factors interact with each other and produce user responses in the form of avoiding information on social media. Such as in high-performance social media users such as medical workers who are very prone to information avoidance behavior. They are more likely to feel that excessive information interferes with their primary tasks (Xia et al., 2024). So that with increased time pressure, information avoidance can also increase.

On the other hand, there are also users who experience social pressure to continue to be informed, which ultimately has an impact on information consumption. This also triggers information avoidance due to the occurrence of excess information (Kainat et al., 2021). As a

result, exposure to information to social media users will continue to be avoided. Savolainen (2007) gave an idea of information avoidance, which is when a person avoids negative information by filtering it out and withdrawing from their daily lives. So that this is in line with Soroya et al. (2021) which in the results of his research revealed that social media users today choose to be more selective and utilize information sources with high credibility to be able to reduce fatigue with excessive information.

Characteristics of Information Flow in FoMO and Information Avoidance

In the era of information society which is characterized by the rapid development of technology and digital connectivity, the concept of *Information Flows* is one of the factors that shape individual and organizational behavior. In this regard, social media plays a significant role in increasing the dissemination and exchange of information, making information widely accessible without being limited by space and time (Masele, 2022). Social media encourages two-way communication that amplifies the flow of information by allowing users to not only passively receive information, but also actively contribute to the production and dissemination of information (Choraria, 2012). Danah Boyd (2010) explained that in the flow of information in *networked media* the individual is in a condition "*in-flow*". Individuals not only play the role of static consumers, but also become part of the flow of information, where they simultaneously consume, contribute, and redistribute existing information. The role of users in social media strengthens the existing flow of communication, increasing the volume, speed of dissemination, and diversity of diverse content. The findings of this literature review revealed that the flow of information on social media that has a rapid spread with a large volume plays a major trigger *Fear of Missing Out* (FoMO). This dynamic encourages user engagement by fostering a sense of urgency to stay connected and informed. The flow of information that exists encourages the fear of being left behind and fosters a sense of urgency among users to stay connected to continue to get information.

In addition, the literature reviewed highlights two different perspectives on the relationship between *Fear of Missing Out* (FoMO) and the use of social media. On the one hand, some studies have shown that FoMO acts as a psychological driver that encourages individuals to engage with social media platforms compulsively. Research conducted by Bakioğlu et al., (2022) Dan Qin et al. (2024) found that FoMO encourages individuals to try to stay connected and trigger addiction to *Smartphone* and social media. Similar things were also expressed Brailovskaia & Margraf (2024) dan Gioia et al. (2021) found that FoMO is an early trigger that strengthened individual involvement in communication *online* and increasing reliance on information flows, especially through the use of social media to maintain social relationships. Based on these findings, FoMO is seen as a trigger in excessive media consumption and dependence on social media platforms.

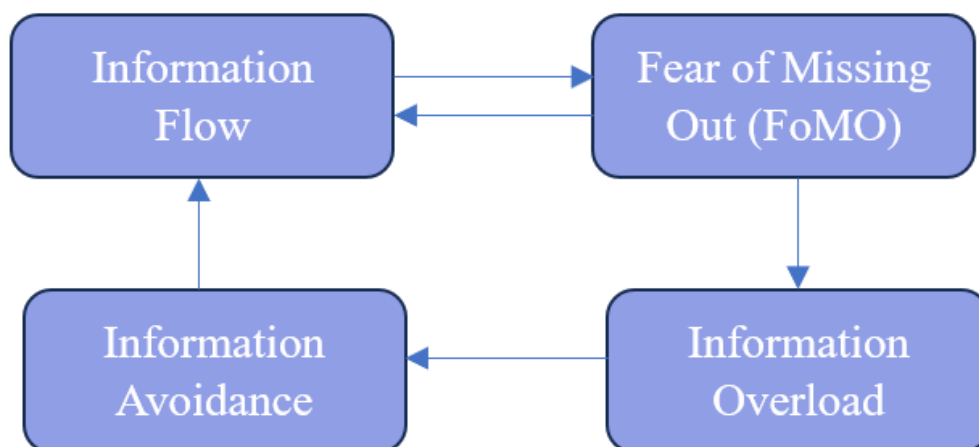
In contrast to the findings that FoMO is a trigger for addiction to social media, Dharejo et al. (2024) identifies social media as a driver of the emergence of FoMO, where exposure to the flow of information obtained from the compulsive use of social media encourages individuals to experience FoMO, where they attempt to stay engaged in virtual networks to get the latest information. This is in line with the findings Rajan et al. (2022) which stated that the design of social media, in this case Instagram as a visual-based media makes individuals feel afraid of losing experiences and moments shared by others and encourages them to always engage and follow the flow of existing information. These findings highlight that exposure to the flow of information on social media through compulsive behavior and social media design reinforces and/or initiates FoMO, where users feel compelled to follow the flow of information to avoid losing social experiences or important information.

FoMO and social media are not only identified as two-way relationships that trigger excessive consumption and use of social media but also contribute to negative behaviors in social media use, including *Information Overload*, Communication Overload (CO), Social Overload (SO), and social media fatigue. The amount of information spread in social media has given rise to various major phenomena that have an impact on its users. Especially with unlimited access, social media users are exposed to an excessive amount of information (Overload). Phenomenon *Information Overload* is described as a state when the amount of information available exceeds a person's ability to absorb and adapt (Soroya et al., 2021). As a result, social media users will be worried about the relevance, credibility of information, and also fatigue to process the information they get (Jia & Li, 2024).

Other impacts of *Information Overload* is a feeling of anxiety about information that will encourage social media users to tend to avoid existing information (Kumalasari & Priharsari, 2023). The phenomenon of information avoidance (*Information Avoidance*) is known as one of the *coping mechanism* and response to be able to protect themselves from various negative impacts caused by *Information Overload* and become the choice of various social media users, both from Generation Z to high-performance workers such as health workers (Xia et al., 2024). This is in line with the opinion Kainat et al. (2021) which states that most people seek information that matches their interests, needs, or attitudes, and deliberately avoid that information if it does not fit their point of view, either consciously or unconsciously. So that by applying the behavior *Information Avoidance* This way, social media users will limit what information they can actively consume.

The strategy of social media users at this time tends to choose to be more selective and utilize information sources with high credibility to be able to reduce fatigue with excessive information (Soroya et al., 2021). In addition, there are several steps that can be adopted by social media users to respond to excessive information, namely by avoiding directly and indirectly. Direct avoidance can be done by performing blocking actions, *unfollow*, silence, and report to accounts that provide information that is not needed. Meanwhile, indirect avoidance can be applied through reducing the time of online interaction and avoiding the use of direct media (Dai et al., 2020). So that the strategy implemented by users will also provide effective solutions to reduce anxiety, fatigue, and information uncertainty in daily life. The findings of this study are presented in Figure 2.

Figure 2: Research Finding Result Flowchart



From the *flowchart* of the findings that was presented, this study found that a constant flow of information causes the appearance of fear of missing out (FoMO). In this case, people tend to feel the need to keep up with information so as not to feel left behind. The sense of FoMO encourages individuals to consume too much information at once and encourages the creation of information flows. This can lead to *Information Overload* or saturation due to too much information that must be processed. When a person experiences *Information Overload*, the natural response that may occur is to avoid information completely (*Information Avoidance*). They tend to stay away from sources of information to reduce the mental burden. After avoiding information, a person may return to *the Information Flow* in a repetitive cycle, whether it is due to necessity or habit.

Implications of Users in the Information Society

The emergence of the FoMO phenomenon and *Information Avoidance* has significant implications as a result of the rapid and widespread dissemination of information on social media. The fear of missing out or missing important information on social media encourages individuals to engage compulsively in the flow of information. This is stated in a research article belonging to Rajan et al. (2022) and Brailovskaia & Margraf (2024) where social media design also strengthens user engagement, such as instant notifications and algorithms that encourage continuous content consumption. Furthermore, when users experience information overload (*Information Overload*), the user responds by avoiding information (*Information Avoidance*) to protect oneself from excessive cognitive and emotional stress (Kumalasari & Priharsari, 2023; Xia et al., 2024). The constant flow of information has a significant impact on the level of stress, anxiety and social fatigue, one of the impacts suggested by research Jia & Li (2024) where young user groups such as Generation Z tend to be more susceptible to intense information flows and often have difficulty distinguishing relevant information. On the contrary, in research Soroya et al. (2021) dan Yin et al. (2020), *Information Avoidance* appears as an adaptive response in managing the stress and cognitive burden created as a result of the rapid flow of information, where users selectively avoid irrelevant or excessive information to maintain their mental balance.

The FoMO phenomenon and *Information Avoidance* also has implications at the level of employment and organization. Research article Xia et al. (2024) suggested that high-performance workers, such as medical staff, faced great challenges in managing information overload due to time pressure and job demands, so they tend to adopt information avoidance to maintain their productivity. The need for good information literacy is also an implication of this phenomenon. Individuals need to sort out relevant information and manage the information received in a healthy manner. In the research article Soroya et al. (2021), information literacy is an important solution to reduce information fatigue, especially in vulnerable groups such as immigrants or refugee women. The implications that arise from both phenomena show that between FoMO and *Information Avoidance* shows a complex relationship of cause and effect with the flow of information.

Based on the literature review that had been conducted, these two phenomena can be attributed to the characteristics of the information society proposed by Frank Webster. Social media, which is the main platform for the rapid dissemination of information, is clear evidence of the impact of information technology dominance, this is in line with the first characteristic, namely **Technology**, that technology is the main driver in the life of the information society. Furthermore, the activities of organizations that share information with users and the support of collaboration for professional needs that are facilitated by the existence of social media show the role of social activities and possibly the economy as a characteristic of the information society, that social media is not only a means of communication but also an important

component of the dissemination of information in the **economic** and social context of the organization.

The next characteristic is **spatial**, that in the information society, technology has the ability to remove the limitations of space and time in the distribution and consumption of information. The speed and reach of this flow of information creates unlimited connectivity by physical space that makes social media one of the important components in supporting the information society. The dissemination of health-related information to public policies and rules during the COVID-19 pandemic could be accessed and shared quickly through digital platforms reflects the spatial characteristics of the information society, where technology can create interactions beyond geographical boundaries (Gath et al., 2025; Soroya et al., 2021; Xia et al., 2024). Finally, through the results of research conducted by Putri et al. (2023) and Rajan et al. (2022) who stated that the design of social media affects user habits, such as related to the consumption and sharing of information in a comprehensive manner, this shows that information has become central in the culture of modern society which means that there is a change in culture, this reflects the characteristics of the fifth information society, namely the **cultural aspect**.

In addition to the four characteristics that have been strongly identified, the **occupational dimension** within Webster's framework has not yet appeared dominant in the literature findings reviewed. The occupational dimension refers to changes in the structure of work and the increasing dominance of information-based work in the information society. In this study, this aspect has not been consistently present because most of the literature focuses more on the behavior of social media users in general, rather than on the transformation of information-based work structures or professions. However, some findings in groups of workers, such as medical personnel, suggest that excessive exposure to information in the context of work can contribute to *Information Avoidance* so that the occupational dimension has not been completely absent, but has not yet emerged as a major pattern in the results of this review.

From literature studies to analysis with Frank Webster's characteristics, it shows that both phenomena reflect 4 of the 5 characteristics of the information society, namely **Technology, Economy, Spatial, and Cultural**. This indicates that social media not only illustrates the dominance of information technology but also brings new challenges that need to be managed in social life. These findings also support the view that the current conditions have entered the era of the information society as described by Frank Webster.

CONCLUSION

Based on an analysis of 21 scientific articles, this study shows that social media forms a flow of information with large volumes, high speed, and constant exposure. This condition puts users in a dynamic information environment, but at the same time it has complex psychological and behavioral consequences. In this context, Fear of Missing Out (FoMO) arises when users are encouraged to stay connected so as not to lose information, experiences, or interactions that are considered important. On the other hand, excessive exposure to information also gives rise to information overload, which can then encourage users to carry out Information Avoidance as a coping mechanism to reduce cognitive burden and maintain emotional state. The findings of this study show that FoMO and Information Avoidance are not two stand-alone phenomena but are interrelated in the dynamics of social media information flows. The volume and speed of information dissemination, coupled with platform designs such as instant notifications, non-stop feeds, and algorithms that encourage engagement, contribute to the tendency to overuse social media. As a result, users can get caught in a cycle between

the need to keep up with the flow of information and the urge to stay away from information in order to protect themselves from mental exhaustion. Based on a review using Frank Webster's information society characteristics framework, the two phenomena reflect four of the five characteristics of the information society, namely technological, economic, spatial, and cultural. This shows that social media not only represents the dominance of information technology in the life of modern society but also shows how information has become an important part of social activities, the spread inter spaces, and the formation of digital culture. Thus, these findings support the view that today's society is increasingly strongly showing the characteristics of an information society as described by Frank Webster.

Overall, this study found that the rapid flow of information on social media presents both opportunities and challenges. The ease of access and distribution of information does expand connectivity, but at the same time it also increases the risk of stress, information fatigue, and disruption of users' mental well-being. Therefore, managing the flow of information, increasing information literacy, and the ability of users to sort information effectively are important so that interactions with social media remain healthy and sustainable.

Research Limitations

This research has several limitations. First, the number of articles that met the final criteria was relatively limited, namely 14 articles for the FoMO topic and 7 articles for *the Information Avoidance topic*. This difference in number shows that the study of FoMO in the context of social media is still more developed than the study of Information Avoidance, so the synthesis produced is not completely balanced on both topics. Second, literature searches were only conducted on Scopus, ScienceDirect, JSTOR, and Emerald databases. This restriction has the potential to cause some relevant studies from other databases to be unnetted. Third, the restriction of the year of publication in 2021–2024 is carried out to maintain the relevance of contemporary issues, but on the other hand it can exclude early studies that are important in the development of the concepts of FoMO and Information Avoidance. Fourth, limited full-text access to a number of articles also affects the breadth of the review. In addition, this study only includes articles that can be accessed by researchers so that there is still a possibility of publication bias and document availability bias. So that further research can expand the database, publication time range, and examine certain user groups or work contexts so that the understanding of the relationship between information flow, FoMO, and Information Avoidance becomes more comprehensive.

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DIGITAL BROADCASTING AS A MEANS FOR EFFECTIVE CRISIS COMMUNICATION TOWARDS SUSTAINABLE DEVELOPMENT IN NIGERIA

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Abstract:

The conceptual paper titled “digital broadcasting as a means for effective crisis communication towards sustainable development in Nigeria” advances the need for adoption and utilisation of digital broadcasting channels/platforms to promote crisis communication in the 21st century. It is a qualitative study based on secondary data collection methods through desk review of existing literature and takes a base on the diffusion of innovation theory. The study identified platforms such as smart and latest digital television, computers, and other mobile devices, the Internet, social media, and live streaming platforms. The findings showed that digital broadcasting platform could enhance crisis communication for sustainable development in Nigeria, as demonstrated during the COVIDI-19 health crisis and other scenarios in the recent past. Finally, the study touched on the challenges and limitations faced in the use of digital broadcasting for effective crisis communication, and among many others, identified limited access to the platforms coupled with polarising nature of social media platforms as challenges. It concludes that crisis communication through digital broadcasting platforms may well be one of the best options in contemporary society to the ease-of-access to them. Part of the recommendations of the study is that the abundant opportunities offered by these broadcasting must be explored by stakeholders to advance crisis communication towards sustainable development in Nigeria.

Keywords: Digital Broadcasting, Crisis communication, Sustainable Development, Nigeria

INTRODUCTION

Digital broadcasting has become a technological innovation that altered the spectrum of radio and television broadcasting worldwide. Among the features of the new millennium is the prevalence of technologies. Emerging technologies have made further advancements by influencing all aspects of society. The broadcasting sector has frequently been steered by emerging technologies. As technology develops, so does broadcasting. Taking into account the crucial role of the media in any given society, digital technologies contribute to significant improvements in having the opportunity to access social amenities, social security, and useful information about crises and social self-efficacy for many people.

The emergence of the internet is plausibly the ultimate turning point in communication since the development of broadcasting. In the last few decades, advancements in technology has radically affected global interaction at a rapid pace, bearing digital broadcasting. The significant shift brought about by new technologies and how it changes the performance of media productions has continuously affected broadcast productions. Technological innovations have created modifications in broadcasting. These innovations have abridged the boundary of distance and time in the broadcast industry. Communication has become participatory, enhanced, autonomous, and the production and dissemination of broadcast contents has

become faster, easier and sophisticated. Ingram, McArthur & Vora (2022) aver that digital technology has continued to gather attention in international talks on global affluence and solidity. Communication among interest groups has experienced ideal transformation, thanks to the swift development of communication media technologies. Digital broadcasting is regarded as a vital sign of technological breakthrough with an excellent content quality and other important and useful benefits that accompanied it (Onyiaji & Okwumba, 2019).

Communicating crisis in Nigeria is a tedious task. Factors such as religion, ethnicity, politics and culture compound effective communication of crises. Culture, ethnicity and religion are often use as a criteria for taking critical decisions during emergencies in Nigeria even if the decisions are incorrect or inappropriate for the situation at hand. Culture and religion influence the values of members of the society and affects their behavior towards crisis communication (George, 2016). Effective crisis communication can be projected through digital broadcasting platforms. The role of broadcast media in crisis communication consist of circulating emergency notices or warnings, getting calls from the people concerned, assisting in emergency recovery and enlightening the general public (Ruggiero & Vos, 2014 cited in Te, 2021). Crisis communication takes the form of the symmetric model of communication. This implies that crisis communication is a two-way thing. An organisation speaks to the people and expects their feedback, thereby using the responses to take measures that will be beneficial to parties involved.

In line with this thought, Te (2021) observes that digital broadcasting enables instantaneous two-way communication influencing the understanding of crisis by allowing large quantity of information to get to international audience in a flash. It allows organisations and the people to come up with contents, evaluate possible crises and participate in immediate communication. Digital broadcasting facilitates teamwork through different phases of crisis. These covers preparatory stage, response, mitigation and recovery respectively. Taking advantage of decentralisation networks during crises, digital broadcasting surpasses traditional media by keeping line of communication open when traditional systems are ineffective, playing an important function in civic engagement and rebuilding confidence. Effective crises communication is essential to nip crisis in the bud.

Marsen (2020) notes that the more an organisation allow a crisis to linger without responding to it, the more it deteriorate among citizens and concern groups (Ndone & Park, 2022; Marsen 2020). It is important to always keep the public updated about the crisis. This is because, providing half information or no information at all leads to mistrust between citizens of a country and the government, individuals or organisations concern. It is worthy to note that when using digital broadcasting in crisis communication, the content of the message, the specific platform of conveying the message and the consistency of disseminating the message must be taken into consideration to ensure effective communication.

Digital technology has become a primary force and change agent in this era. It is changing economic systems, government, and community structures affecting almost all aspects of our daily lives. In addition, from 2015 different countries of the world have incorporated digital technology to speed up growth process seeking to achieve the Sustainable Development Goals (UNDP, 2024) Sustainable development is about man and man is both the subject and recipient of development. Sustainable development is people-centric. It pays attention to satisfying the needs and wants of all categories of people in the society. Sustainable development underscores an ambidextrous approach to social and economic growth. The growth is based on judicious resource utilisation and environmental fortification, making sure that particular needs are met without compromising the capability of future generations meeting and actualising their own needs. This involves a ceaseless long-term growth plan that make judicious use of the available natural resources at the same time protecting ecological systems (Phuong & Ibrahim, 2020).

Fundamentally, sustainable development has as its main feature, economic advancement that fulfills the growing needs of present day society while safeguarding resources for the generation to come. The aim of all sustainable development efforts is to create a flourishing, just, independent and enlightened society by building unbiased growth opportunities. Sustainable development focused on eradicating illiteracy through enhanced education, promoting cultural diversity and gender equality, rural development to lessen the pressures of urban migration and promoting public participation in decision-making processes. Communication is central to all developmental activities. Since the main aim of sustainable development is to get to the people, communication is the tool that can help in achieving that by providing useful information for the development process.

Through effective communication of sustainable development efforts, the people understands what they need and make efforts to change their lives. Digital broadcasting is one of the means that assist people to express themselves, let the world know about their lives and assist those at the helm of affairs to understand them. Information on digital broadcasting platforms is up-to-date and enables people to have access to news from every part of the world. With just a click, people can assess digital broadcasting messages at any given time.

The unending crisis in Nigeria calls for a lasting solution. Broadcasting is one aspect that can be used to achieve that. According to Ngozi and Nzan-Ayang (2023) broadcasting serves as the most effective means of communication, especially in areas where poverty and illiteracy are prevalent. Further than spreading messages, broadcasting performs the function of educating and entertaining the people. Poverty and a lag in development have been linked to crisis situations in different country (Egger et al., 2023). Media plays an important role in using communication to unify people in society towards sustainable growth and development.

In the era of digital media, fake news, disinformation, misinformation have polarised the media and information space. This also contributes to the reason behind the adoption of same platforms by the media to capture the users and provide them with authentic information. Same accounts for the reason digital media platforms such as social media are leveraged as strategic approach to crisis communication. Through effective and obligated dissemination of information, the media and other stakeholders can balance the undesirable influences of crisis and promote a more unified and knowledgeable society, eventually imparting to the resolution of crises in Nigeria. It is against this backdrop that this conceptual study advances the points on the use of digital broadcasting as a means for effective crisis communication towards sustainable development in Nigeria.

CONCEPTUAL REVIEW

The concepts of digital broadcasting, crisis communication and sustainable development are for review in this study. Digital broadcasting is a concept of significance in modern times. Oyedokun et al. (2022, p. 52) defined digital broadcasting as "the usage of digital technology in the transmission and reception of broadcasting services." Digital broadcasting contents offers more visible pictures and vibrant sound and avail media organisations and content producers the means to showcase their works, and audiences having access to diverse channels at their disposal. It is an enhanced method of conveying broadcast signals to the desired audience.

Crisis Communication simply refers to the collation, collection, analysis and distribution of messages required to curtail an established crisis or scenario. Crises are unforeseen and sudden incidents. Hence, communication about crisis must take place during and after a crisis. It is worthy to note that an organisation, government or any group handling emergencies must keep line of communication open after a crisis to avoid future occurrence

(Marsen, 2020; Upadhyay & Upadhyay, 2023). This will mean that there are serious efforts at defusing a crisis situation using different channels of open communication.

Sustainable development simply refers to living upright today for a better and prosperous tomorrow, by attending to current needs without jeopardising the chances of the generations to come, meeting their own needs (UNSDG, 2023). Communication for sustainable development entails helping, causing or inspiring public growth or transformation within a social system (Shaibu, 2022). These concepts are central to this study as it takes on the use of digital broadcasting as platforms advancing crisis communication towards sustainable development in Nigeria.

THEORETICAL FRAMEWORK

Diffusion of Innovation Theory sets the theoretical foundation for this study. Everett Rogers proposed this theory in 1962. The basic premise of the theory is that new ideas can only be spread through the media. According to the theory, diffusion is the means through which channels of communication spread a new idea among members of the society. Diffusion is an exceptional kind of communication with a focus on the dissemination of new information or idea. Innovation refers to a new idea, concept, product, output, or simply a new way of doing something. The theory clarifies how a new idea is spread and why the people accept it at different stages of analysis. It can be through mass communication channels or interpersonal communication channels (Asemah, 2011).

According to Asemah et al. (2017) the theory has four basic components, which consist of channels of communication, innovation (new idea), time and social systems. Diffusion of innovation disseminates information to members of a society based on outcomes. Crisis communication messages can be communicated through broadcast media based on the situation on ground. The theory pays close attention to the source of the message, the communication channel and the end receiver.

This theory is relevant to the study in the sense that, in the media world today, digital broadcasting has taken over analog broadcasting and almost every sphere of human endeavor is becoming digitised. Digital broadcasting has broad reach and provides vibrant channels of communication that enables the dissemination of messages during crisis with its real-time feature, the people are reached at the right time and that can help in curtailing or mitigating the effect of the crisis. Digital broadcasting can circulate messages about developmental projects and issues by creating awareness. In digital broadcasting context, the theory describes how technology can quickly spread important messages during emergencies enhancing interaction and management. More so, by improving communication technologies, digital broadcasting promotes development efforts through supporting economic growth, educational creativities and social unity thereby assisting targeted plans to encourage general recognition and use in Nigeria's developmental programmes.

Empirical Review

Similar studies have been conducted on crisis communication. A study conducted by Ehondor and Unakalamba (2021) sought to access public engagement and awareness creation by the NCDC through the use of social media for the purpose of crisis communication. This is study with focus on the management of health crisis through social media avenues. The study found that though there was low engagement during the period, social media was used to create awareness with people responding by adjusting based on the recommendations of the agency in respect to preventive measures.

Another study conducted by Onyeashie (2020) was focused on the use of crisis communication during the 2020 #EndSARS protest. The study found a higher level of social media use as citizens exchanged information through different platforms. A significant finding is that protesters used social media as aid to send ambulances, aids, relief materials, grant media talks, and secure bails for arrested protesters, and commence meetings (converged in different locations). Overall, social media became active tool for the purpose of communication during the protest and this is a unique part of the entire process.

The research gaps occasioned by these reviewed studies are by virtue on an aspect of digital broadcasting platforms and this study intends to bridge this gap. This study advance the position on the adoption of a number of digital broadcasting channels like live streaming, smart TV, computers, the Internet and more for the purpose of crisis communication in respect of the overall goal of attaining sustainable development in Nigeria.

Digital Broadcasting Platforms

The digital broadcasting concept is about the use of digital signals rather than analogue for broadcasting over bands of radio frequency (Elitaş, 2023). It is also the transmission of contents in audio and video formats over digital networks or platforms such as cable systems, the Internet, and satellite. In fact, creating digital content implies that there is a conversion from analogue signals to digital formats. This is to improve the signal and content accessibility, efficiency, and quality for broadcasting. These signals are transmitted over radio frequency but rely on dispersal modes and platforms for the audience to see their benefits. This brings us to the relevance of digital broadcasting platforms used in contemporary world for content distribution and dissemination.

The significance of digital broadcasting and their enabling platforms in our modern world has shown through as creators are able to deliver contents within record time and access almost simultaneous – boosted by the Information and Communication Technology (ICT) factor. Basic digital media are enhanced through the digital technologies considered as part of the ever-evolving new media world. It is important to state that audio, video text, images, and mixed media are the basic categorisations of digital media (Hilbert College, 2024). Mixed media as used in the foregoing could be multimedia (Singh, 2023).

The channels seen as digital broadcast are reputed to have sub-divided broadcasting services into: audio broadcasting, video broadcasting, and webcasting. Consequently, digital broadcasting is conceptualised as the transmission of audio, video, or contents in multimedia formats over digital networks or the Internet (Singh, 2023), and new platforms. These media are transformable and transformative; meaning they can be altered to produce their best versions distributable across modern technologies.

In a unique way, digital broadcasting platforms are able to store and also offer retrieval options to the users. Most significantly, they offer advantages over traditional broadcasting in areas of greater signal stability, higher audio-video quality, and transmission of additional data simultaneously with the content (Priyal, 2023). Some of these platforms are:

1. **Smart and Latest Digital Television:** Smart TVs are manufactured with the capacity to connect to the Internet and browse by default and this is in contrast with the traditional digital TV that do not have such. Digital TVs can access can however connect to the Internet through third-party devices. They are good channels of digital broadcasting that can be leveraged for crisis communication in Nigeria.
2. **Computers:** Through the adoption of digital technology, broadcasting outlets are able to transmit through many channels at any given spectrum width (Akpan, 2004). The computer

is central to all of these. With the computer, audience members are able to view the TV, listen to radio and the outlet focus on increase access points. This is a boost to crisis communication as contents for multiple access can be created with ease just as delivery to the audience is enhanced.

3. **Mobile Devices:** These also offer good and ease-of-access to digital broadcast contents and so they so categorised as "platforms/channels for digital broadcasting." Mobile devices such as the mobile phones, tablet computers and many others offer these accesses. They provide access to digital TV and streaming platforms and social media platforms. Therefore, crisis communication can be created to be transmitted to the digital devices of audience for the most impact. Nigerians in their large number use mobile phones and also have access to the Internet where they can be exposed to communication for crisis resolution. The number of smartphone users is put at between 25 and 40 million (Taylor, 2023).
4. **The Internet:** The Internet offers connectivity to users to access websites and pages of news outlets across different spectrums. The Internet enables the transmission of audio, video and even multimedia contents which include text to the audience. It is a nerve system for all other digital platforms as users may access contents with their digital devices and the computers. Crisis communication for sustainable development can also be disseminated across virtual spaces with the use of Internet.
5. **Social Media:** These are media types developed in the 21st century. They simplify connections, interaction and make information-dissemination and communication in the digital era convenient, fast, and easy. In fact, social media is nowadays accessed and use by many people to connect with family and friends and also leveraged by brands to connect with their audiences/publics (Singh, 2023). Over 5 billion people are said to use these platforms for different reasons (Chaffey, 2024). Therefore Facebook, X, Instagram, YouTube, TikTok can be adopted as platforms for digital broadcasting aimed at crisis communication in Nigeria.
6. **Live Streaming Platforms:** These include an aggregation of platforms that use the Internet to broadcast video in real-time and so such contents are not pre-recorded as events are streamed live. The innovations in media technology such as AI entertainment are said to be unique determinants in helping various websites to offer the live streaming options (Prakash, 2024). Platforms like Netflix, Sling TV, Fubo, Hulu, and Apple TV and so on were birthed with the innovations in ICT and new media technologies. Social media like Facebook, Instagram, YouTube and others have integrated the possibility to their range of services, and so we now have Facebook Live, Instagram, YouTube Live and many more. These platforms can be leveraged to disseminate information aimed at crisis communication in our world.

It is instructive to note that digital broadcasting platforms require the Internet for the most impact and reach. In fact, these digital platforms enhance broadcasting and the reach of the traditional broadcast organisations in our world (Priyal, 2023). They serve useful purposes in crisis communication capacity of broadcast outlets and also contribute to the bottom line in the range of efforts to ensure sustainable development. In Nigeria, these platforms are increasingly being used by creators to target people for a number of communication types; crisis, entertainment, and many more. Therefore, they are suitable for use in strategic efforts at

strategic communication by government, NGOs, Civil Societies and other stakeholders with the desire to advance crisis communication towards sustainable development.

Digital Broadcasting in Crisis Communication and Sustainable Development

There are a number of perspectives from which the effect of digital broadcasting on crisis communication and sustainable development can be piqued. For the purpose of this discourse, a focal attention shall be given to the positive effects. Since crisis communication is one of public relations essential strategies, it suffices to also note here that whatever it takes to navigate through a crisis situation can be given consideration. The human contemporary society is one filled with all manner of crises situations arising from artificial and natural causes.

However, before delving into the all-important effects that digital broadcasting has on crisis communication and sustainable development, it is important to once again touch on the meaning of crisis and the different kinds of crises that exist. The term “crisis” is usually applied to singularise a complex situation (Innerarity, 2022). This implies that the term is the singular of a plural form. This plural form is known as “crises” and may also imply that the magnitude, extent and even time may be reduced or limited. In this case, the events are time-delimited and may save humans many debates and also give indisputable and concrete indications about what ought to be done (Luhmann, as cited in Innerarity, 2022). Crisis exist when a conflict persists for too long defying easy solution (Orhero, 2020), e.g. the Niger Delta crisis.

In contemporary society, we have financial crisis (inflation, loss of revenue, bankruptcy, sudden change in market trends, loss of market etc.), technological crisis (software and hardware failure, industrial accidents etc.), personal crisis (unethical or illegal behaviour, bad press on account of conflict etc.), organisational crisis (crisis of deception, crisis of management misconduct, crisis of skewed management values etc.), natural crisis (natural disasters etc.), confrontational crisis (boycotts, strikes, sit-ins to block workplaces etc.), crisis of malice, and man-made disasters (Garcia et al., 2022). Crisis could be health and climate-related. These happen to be common in our time (Innerarity, 2022). In the digital era, the management of these crises situations has taken a new dimension.

Accordingly, digital broadcasting is considered as one of the numerous approaches to manage crises in our modern society. In Nigeria, digital platforms are known to be explored for the purpose of crisis communication – from public health and even organisational crisis management. During the COVID-19 pandemic, concerned authorities like the Nigeria Centre for Disease Control (NCDC) took advantage of the available platforms to advance crisis communication. According to Ehondor and Unakalamba (2021) the government agency adopted social media platforms for awareness creation though the engagement was low during the period.

Another case scenario of serious crisis communication situation in Nigeria was that of the removal of passenger from United Airline plane. According to (Aguale, 2024) timely communication and information dissemination also proved to be effective. The most significant factor in the 21st century that has changed the face of crisis communication is digital technology as it is useful for timely and effective response to crisis situation and enables a wider reach within record time. Prior to the digital communication era, timely information dissemination and response has always been considered – from the 2009 Domino's Pizza crisis of viral video showing unsanitary food, to that of Johnson and Johnson of 1982 with Tylenol capsule being laced with cyanide leading to loss of lives of persons.

As crisis is managed through digital broadcasting channels, Nigeria may well be on its way to greatness. The implication of the foregoing is that there will be sustainable development spurred by a friendly environment for doing business. The sustainability of the nation's development is not in doubt owing to the abundant human resources that can be encouraged to

share information the right way and also leverage on social media reach to ensure peaceful co-existence.

Strategies for Effective Crisis Communication and Sustainable Development in Nigeria

In human society, crisis will always emerge but the substance of the entire matter depends on resolving the crisis situations. In addition, it would also be about the strategies and tactics in place to mitigate such crises. Therefore, this section deals with the strategies for effective crisis communication and sustainable development in Nigeria. By strategies we mean the recommended tactics that can be activated to resolve a crisis situation. Different authors have raised critical and valid points as to the idea move that can be made to effectively deal with a crisis situation using communication in a bid to actualise sustainable development in the 21st century (Thompson, 2024; Virginia Commonwealth University, 2021; Waqar, 2023). With digital broadcasting, things even get better. Some of the strategies are stated hereunder:

1. Crisis communication plan: This is important to start with. The situation on ground may require a crisis communication plan that can better be executed with the use of digital broadcasting channels such as new media, social media, and the Internet.
2. Timely and quick communication with the public: Digital broadcasting channels such as social media; Facebook, X, Instagram are recognised as platforms that enable quick and timely delivery of information and execution of communication plans/efforts.
3. Utilisation of all communication channels: It is recommended that different types of communication channels be deployed. And in the digital media era, all forms should be utilised. This may include the use of digital web TV, digital radio, the social media platform; Facebook, X, Instagram, TikTok and many more to advance crisis communication efforts.
4. Adoption and use of social media as a crisis communication tool: This is similar to the point mentioned above. However, the difference is that it is about the use of social media platforms-only as crisis communication and management tool. Facebook, X, Instagram etc. may as well be useful.
5. Post-crisis evaluation and follow-up communication: Crisis communication must be evaluated as part of strategies to be better at communicating with people in crisis situations.
6. Critical information delivery: People must be made to think that they know what is happening and what may happen next, they are prepared equipped not to make hasty conclusions and generalisations and this will be a great asset in crisis communication and management.
7. Build trust in leadership: Communities enmeshed in crisis may sometimes experience a loss of control and that could also lead to a feeling of vulnerability. Delivery of competent, timely, and clear information can help build trust in crisis management leadership and allay fears caused by mutual distrust among people. Official communication especially in crisis communication and mediation may not be of great effect without trust, and so once a trust in leadership is established through communication, then crisis recovery plans may get the support of the public.

8. Rumours and misconceptions countering: Factual information about a crisis must be provided to dispel rumours and prevent alternative truths from festering among the people who are directly affected by a crisis situation.
9. Clear and concise message design: An important element in the entire gamut involving crisis communication is the "message." The implication of this is that the message must be designed in such a way it has the most impact on the target audience. Avoid all forms of ambiguity. Extra-efforts must be made to communicate information they can easily understand through language use and appropriate channel of communication. A local community may relate well with information delivered by the town crier or through local radio with the use of their local dialect.
10. Customise communication for the target audience: Adapting to a specific audience is important in crisis communication in modern times. Therefore, the communication suitable for the group of target must be customised accordingly for the most effect.
11. Ensure communication is accessible: Provide access to all concerned to have greater percentage of access to the communication messages targeted at them in efforts at crisis communication and management.

The above demonstrate that there are indeed strategies that can be adopted and deployed to defuse a crisis situation. This is important to resolve crises situations towards sustainable development and growth of society. Orhero (2020) lends credence that society can develop which is a win-win situation when strategies are deployed to resolve crisis. Though certain crises may trigger self-awareness towards the push for change in society (Blankston, 2020; Jones et al., 2021; Murphy, 2024), a number of crisis situations lead to disruption of development in society, and so minimal crisis situation are recommended for society to have its sanity; a prerequisite for growth. Most significantly, a society with minimal crisis situation may develop faster than one that is crisis-ridden. Same applies to any human organisations; be it business, NGO, association, unions and many others.

Digital Broadcasting in Crisis Communication and Sustainable Development Effort: Challenges and Limitations

This study makes case for the use of digital broadcasting as tools for crisis communication towards sustainable development in Nigeria. However, there are some problems that may inhibit the full utilisation of platforms and channels of digital media to accomplish this task. Some of the challenges and limitations in the use of digital broadcasting in crisis communication and sustainable development as advanced here are:

1. Limited access to digital broadcasting services: This implies that Nigerians of different ages may have limited access to digital broadcasting services as a vast majority of the population cannot afford mobile and digital devices to see communication through platforms.
2. Audiences in the digital broadcasting media era happened to be diversified: The audience in this era is diversified and this may pose as challenge to the communicators in the case of crisis communication as they may need to take on the cumbersome task of creating specific content for specific target audiences. It is time-consuming and painstaking process.

3. Polarising nature of some channels of digital broadcasting: Social media has been described as being polarising. Disinformation, misinformation, mistrust, and fake news spread easily across different platforms as enabled by the people using the "share-option" created for convergence-of-use and the need for ease-of-information-dissemination. This functionality is abused posing serious challenges to digital broadcasting in crisis communication.
4. Knowledge gap: This is often displayed by both the young users and old ones. For the young users of platform, they show lack of knowledge of history and so can share anything they come across in the digital space. In the case of the older generation, some of them lack adequate information and knowledge of digital broadcasting platform available and many not take full advantage of them.
5. Lag in adoption of platforms of broadcasting in digital media era: There is a lag in the adoption of digital media on account of the assumption of the diffusion innovation theory that laggards usually adopt technology in the last phase. Consequently, a number of people in our time are laggards and may not really accept technology with which they can access messages specially-designed and targeted at them for the purpose of crisis resolution.
6. Lack of technical know-how: The lack of technical know-how may be from the both sides. Users of digital broadcasting and the news organisations and other stakeholders in crisis communication who may not have the wherewithal (financially and otherwise) to follow the trends in digital broadcasting technology.

CONCLUSION

The study concludes that the adoption of digital technologies may be one of the best options for crisis communication in the digital age and time. This is chiefly because a lot of persons so targeted by communication aimed at crisis resolutions are users of these platforms and it is appropriate that the same are used to disseminate information to them. In addition, these platforms create the possibility for the communicators to have a wide reach and timely communication due to the speed and ease-of-access offered by the numerous channels for digital broadcasting in our contemporary society.

RECOMMENDATION

This study recommends:

1. There is a need for stakeholders to educate and inform the people on the need to take advantage of the abundant communication opportunities available to them on basis of the digital technology evolution. Therefore, different forums must be organised to acquaint them with the necessities for digital platforms access such as computers, mobile phones and so on.
2. There should concerted efforts by concerned agencies of government, civil societies, and INGOs to continue to explore the abundant opportunities available to them through digital broadcasting to advance causes for action in respect of crisis communication and management in our society

3. The people, on their part, must now understand that there are serious problems created when content is shared across social media platforms without first verifying the source of information. In fact, such has the capacity to exacerbate already tense crises. And so users must be wary of using the share option on their social media pages.

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MEDIA REPRESENTATION OF HMPV AND THE COVID-19 VARIANT NB 1.8.1 IN INDONESIAN LOCAL NEWSPAPERS: A CRITICAL DISCOURSE ANALYSIS

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Abstract:

The media played a substantial role during the COVID-19 pandemic from 2019 to 2021. Intensive media coverage helped the public understand COVID-19. However, the situation was different when the HMPV virus and the COVID-19 variant NB 1.8.1 emerged. Using the critical discourse analysis (CDA) model developed by Teun A. van Dijk, this study examines how three Indonesian local newspapers, namely *Tribun Jabar*, *Tribun Yogyakarta*, and *Tribun Lombok*, represent the HMPV virus and the COVID-19 variant NB 1.8.1 in their news coverage. The analysis draws on ten news articles published between January and June 2025, selected because the three outlets belong to the same media group (Kompas Group) yet represent geographically distinct regions of western, central, and eastern Indonesia. This study finds that local media portray the government's strategy in managing the outbreaks, depict HMPV and the COVID-19 variant NB 1.8.1 as low-risk, and urge the public to remain vigilant, maintain healthy habits, and avoid panic.

Keywords: local media, representation, human metapneumovirus, COVID-19 variant NB 1.8.1.

INTRODUCTION

In late 2024, human metapneumovirus (HMPV) re-emerged as a prominent public health concern. It is a disease with flu-like symptoms and can cause lower respiratory tract infections such as pneumonia; individuals with a history of asthma may experience a relapse or worsening of their condition (Timdetik.Inet, 2025).

The HMPV virus was first discovered by scientists at the Erasmus Medical Center Rotterdam in 2001 and has recently regained public attention. WHO information indicates that the virus has spread in China (Zaenuddin, 2025), consistent with WHO's own classification of hMPV as generally mild but capable of causing serious illness in high-risk groups (World Health Organization, 2025). According to the Indonesian Ministry of Health (Kemenkes), HMPV is contagious but not particularly dangerous. In Indonesia, an increase in HMPV cases occurred in late 2024 and early 2025, which received extensive media coverage despite limited data (WHO, 2024a; Katadata.co.id, 2025).

Meanwhile, the COVID-19 variant NB 1.8.1 re-emerged in early 2025 and was reported to be spreading rapidly but not as deadly as previous COVID-19 variants. However, the mass media often presented it dramatically, using terms such as super-contagious variant, mysterious, and new threat (DetikHealth, 2025). This demonstrates the importance of

examining how viruses are constructed as social entities in media discourse, not simply as biomedical phenomena.

Although HMPV and the COVID-19 variant NB 1.8.1 are considered harmless, the world was shocked by COVID-19 from 2019 to 2021, an infectious disease originating from Wuhan, Hubei, China, which spread to 210 countries worldwide and raised international public health concerns. More than 13 million people were affected, with a mortality rate of 1.4 percent (Anwar et al., 2020). There is public concern about the presence of HMPV and the COVID-19 variant NB 1.8.1. This is where the media's role in disseminating accurate information about HMPV becomes essential, helping the public stay informed and rely on official sources.

Several studies have shown that both mass media and social media significantly influence public health protocol behavior. In the 2012 MERS outbreak, the media played a particularly significant role. Coupled with increasingly sophisticated media tools and easy internet access for the general public, public awareness of the importance of public health measures has increased rapidly, leading to their more effective implementation (Anwar et al., 2020). Studies of the role of social media in the 2012 MERS epidemic and the H7N9 epidemic in China have shown a stronger response in the H7N9 epidemic (Anwar et al., 2020).

Yan et al. (2016) found that public responses can change when they receive information from the media. Information from the media has the potential to influence disease control efforts. Media helps people take protective measures against disease. On the other hand, frequent media exposure can heighten public perception of a disease's severity, regardless of its actual risk (Young et al., 2008). This is some evidence that the media plays a crucial role in disease control efforts.

Furthermore, several studies have been conducted on the role of mass media in tackling COVID-19. One such study by Bridgman et al. (2020) found that mass media is the primary means of disseminating information about the risks associated with COVID-19. The media routinely helps raise public awareness of the importance of health protocols. Research by Vieten (2020) found that the media used specific framing, such as portraying the pandemic as a global health crisis or collective action, which influenced public opinion about the pandemic. According to research by Van Bavel et al. (2020), mass media plays a role in promoting compliance with public health policies, such as mask-wearing and vaccination. This study noted challenges in countering misinformation. Gozzi et al. (2020) supported the hypothesis that media coverage increased public attention to the pandemic, especially when infection cases peaked during the first wave. Zarocostas' (2020) research showed that mass media plays a crucial role in countering the spread of disinformation surrounding COVID-19, particularly on social media platforms. Ytre-Arne and Moe (2021) found that during the COVID-19 lockdown, people's news consumption patterns underwent significant changes, including doomscrolling (constantly searching for negative news that triggers anxiety), monitoring (regularly following the news to stay informed), and avoiding (avoiding news due to information fatigue or stress). COVID-19 is also widely discussed in memes, such as in Russia and China (Smirnova et al., 2021).

When HMPV and the COVID-19 variant NB 1.8.1 emerged, little to no research had focused on the role or contribution of mass media in conveying information about their symptoms, transmission, and preventive measures, which could otherwise increase public health awareness. Tsao et al. (2021) found that mainstream media during the pandemic triggered a collective public response but often focused too much on negative narratives, causing information fatigue and obscuring effective health prevention strategies. However, the media also played a positive role in reporting on COVID-19, as evidenced by Liu et al.'s (2021) study, which found that media coverage in China during January-February 2020 significantly reduced population mobility and cut the potential for approximately 394,000 new cases and 1.4

million close contacts. This study supports the effectiveness of contact tracing, with media coverage being a crucial driver.

This gap presents an opportunity for further research that could benefit the public, particularly local media, which are closer to the community and can therefore capture the phenomena around them. Joseph et al. (2022) found that although local media plays a crucial role in conveying risk information to the public, the volume and tone of COVID-19 coverage are not always evenly distributed and are influenced by political, audience, and geographic factors. Journalists reporting on the situation often face technical and physical constraints, media organizational structures, economic pressures, and high public expectations (Nor, 2022).

This study aims to examine how *Tribun Jabar*, *Tribun Yogyakarta*, and *Tribun Lombok* represent the HMPV virus and the COVID-19 variant NB 1.8.1 through critical discourse analysis, focusing on the structural dimension of news texts. Accordingly, the research question guiding this study is: How do local Indonesian newspapers represent the HMPV virus and the COVID-19 variant NB 1.8.1 in their news coverage?

LITERATURE REVIEW

In the context of a health crisis, such as the COVID-19 pandemic or other disease outbreaks such as HMPV (human metapneumovirus), the media plays a vital role in disseminating public health information: providing education about disease symptoms, prevention, and government regulations; shaping public opinion by encouraging awareness and compliance with health protocols; and acting as a liaison between authorities and the public (Houston et al., 2012); as well as combating misinformation by clarifying hoaxes and misleading content (World Health Organization, 2020).

As the object of this research, local media in a health crisis functions as a provider of information, shaper of public opinion, and maintainer of public trust in health authorities (Houston et al., 2012). Local media such as *Tribun Jabar*, *Tribun Yogyakarta*, and *Tribun Lombok* play a special role in reporting on HMPV and the COVID-19 variant NB 1.8.1, given their geographical and cultural proximity to the community, which allows them to convey health messages with an approach more appropriate to the local context (Haryanto, 2016). This is something national media, hampered by distance and time in accessing local issues or events, would not be able to do. Meanwhile, local media has the advantage of presenting local phenomena and supporting issues or events that can be raised to the national level.

Mass media is a crucial channel for disseminating information during public health crises. In the Indonesian context, media not only conveys information but also plays a role in shaping public opinion, framing crisis narratives, that is, selecting and emphasising particular aspects of an issue while downplaying others, and mediating relations between the government and the public (Kriyantono, 2020). Indeed, during several incidents of the COVID-19 pandemic, many media outlets acted as mediators for the government in disseminating COVID-19 messages.

In the COVID-19 pandemic and the spread of the HMPV virus, the media is expected to take responsibility for avoiding panic and balancing caution with rationality (Parahita, 2021). This role is even more crucial when information is technical, rapidly changing, and sometimes confusing. National and local media can step in to provide clearer information when situations and circumstances are unfavorable.

Several studies on media's role during COVID-19 (2019-2021) offer useful comparisons with coverage of HMPV and the COVID-19 variant NB 1.8.1. Krawczyk et al. (2021) analyzed 26 million articles from the front pages of 172 online news sources in 11 countries from January to October 2020. Krawczyk et al. found that media coverage varied emotionally, with approximately 16 percent of COVID-19 articles classified as negative, such

as those related to death, fear, and crisis. Wang et al. (2024) demonstrated that media coverage of the pandemic, anti-pandemic measures, and public support could mitigate negative public emotions. However, negatively framed coverage, such as reporting focused on case counts and fatalities, also influenced negative public reactions.

In a similar vein, Malaysian communication scholarship has also examined how the mass media manages public compliance during health crises. Mohd Yusoff et al. (2022) examined Malaysia's Stay-at-Home Campaign during the COVID-19 pandemic and found that public cooperation with government health directives depended largely on how clearly the purpose and benefits of the campaign were communicated through the media. Their findings reinforce the argument that media clarity, rather than sheer volume of coverage, is what ultimately shapes public compliance with health measures.

Taken together, these studies demonstrate that local media occupy a distinct communicative position during health crises, combining geographical and cultural proximity to the community with a mediating role between health authorities and the public (Houston et al., 2012; Haryanto, 2016; Kriyantono, 2020). However, existing scholarship on pandemic-related media coverage has concentrated predominantly on the 2019–2021 COVID-19 outbreak (Krawczyk et al., 2021; Wang et al., 2024) or on national-level reporting patterns (Joseph et al., 2022; Mohd Yusoff et al., 2022), leaving the representational strategies used by Indonesian local media for subsequent, lower-severity health events, such as HMPV and the COVID-19 variant NB 1.8.1, largely unexamined. This study addresses that gap by applying Van Dijk's (2006) critical discourse analysis to Indonesian local newspaper coverage of these two specific health events.

METHODOLOGY

This study uses the Critical Discourse Analysis (CDA) model developed by Teun A. van Dijk (2006), which comprises three main dimensions. This study focuses specifically on the structural dimension of news texts, analyzing titles, leads, paragraph content, word choice (diction), metaphors, active and passive sentences, stylistic strategies, and narrative. This study adopts a preliminary, text-focused approach within Van Dijk's (2006) CDA framework, consistent with similar text-focused applications of Van Dijk's model in Indonesian media discourse research (Putri et al., 2023). The cognitive and socio-political dimensions of discourse fall outside the scope of this initial analysis and are proposed as directions for future research.

This research examined three local newspapers: *Tribun Jabar* (representing West Java Province), *Tribun Yogyakarta* (representing the Special Region of Yogyakarta), and *Tribun Lombok* (representing West Nusa Tenggara Province). Therefore, the selected media outlets represent western, central, and eastern Indonesia.

Data collection covered news reports published between January and June 2025. All news articles related to HMPV and the COVID-19 variant NB 1.8.1 published by the three newspapers within this period were included, yielding a total of 10 articles. These ten articles represent the complete population of HMPV- and NB.1.8.1-related coverage published by the three outlets during the study period, rather than a sample drawn from a larger pool; the modest number reflects the comparatively lower media salience of these two health events relative to the 2019–2021 COVID-19 pandemic. Figure 1 illustrates the overall data structure, and Table 1 presents the distribution of articles by outlet and topic.

Articles were identified through manual searches of each outlet's online archive using the keywords 'HMPV', 'human metapneumovirus', 'Covid-19 varian baru', and 'NB.1.8.1' in Bahasa Indonesia and English. Articles were included if they were published between January and June 2025 and contained substantive reporting on either health event; brief news aggregator

summaries and duplicate wire reports were excluded. The unit of analysis was the individual news article, encompassing headline, lead, and body text. Coding followed Van Dijk's (2006) structural categories, namely headline, lead, quotation patterns, lexical choice, and sentence structure, with themes developed inductively through iterative, theory-informed close reading. All news excerpts were originally published in Bahasa Indonesia and translated into English by the researchers; a fellow researcher subsequently cross-checked translations to ensure accuracy and preserve the original meaning and tone of the source texts.

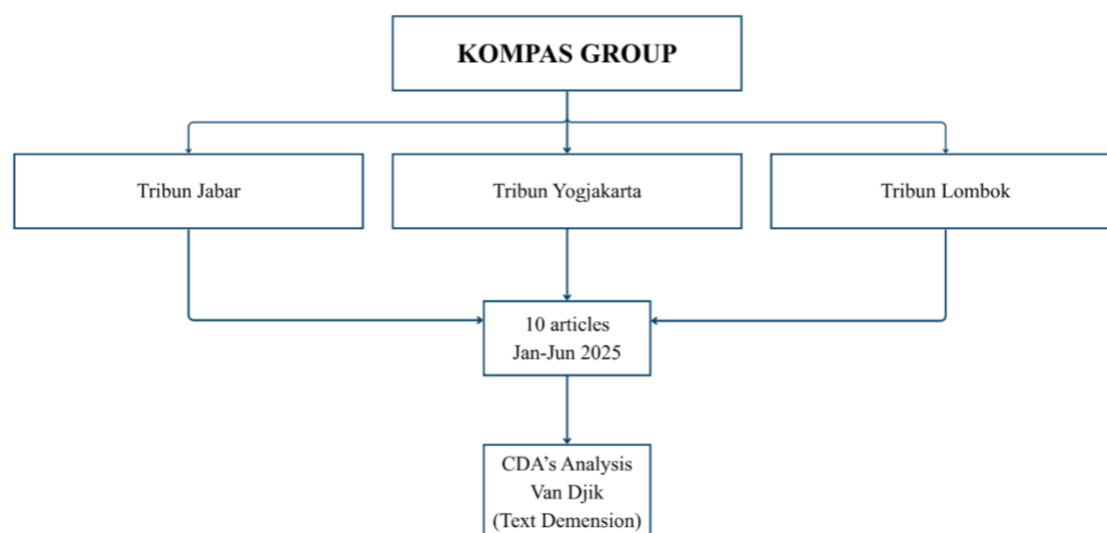


Figure 1: Data Structure of the Study

Table 1: Distribution of Articles by Newspaper and Topic

Newspaper	HMPV News	NB 1.8.1 News	Total
Tribun Jabar	2	2	4
Tribun Yogyakarta	2	2	4
Tribun Lombok	1	1	2
Total	5	5	10

Source: Compiled by the authors, 2025.

The news items analysed comprise all HMPV and COVID-19 variant NB 1.8.1 coverage published by Tribun Jabar, Tribun Yogyakarta, and Tribun Lombok between January and June 2025, as detailed in Table 1. These outlets were selected because they belong to the Kompas Group, maintain consistent print publication alongside other distribution platforms, and have a large and influential local readership. These outlets are also located in areas with high numbers of international tourists and visitors. Selecting outlets within a single media group also serves a methodological purpose: by holding editorial ownership and corporate policy constant across the three outlets, the analysis can more clearly attribute variation in coverage to regional and local-context factors rather than to differing corporate editorial standards.

As this study employs Van Dijk's (2006) CDA, a qualitative-interpretive approach, interrater reliability testing, typically associated with quantitative content analysis, was not applied. Analytical rigour was instead maintained through close, theory-informed reading of the selected texts.

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FINDINGS

Based on data obtained from news reports in Tribun Jabar, Tribun Yogyakarta, and Tribun Lombok, there are several important points to note regarding the representation of the HMPV virus and the Covid-19 variant NB 1.8.1 carried out by the three local media outlets, namely: the media represents the power of the state in responding to and managing global health issues that can impact the Indonesian people; the media represents that the public remains alert and does not panic in facing it; the media reminds the public to maintain a clean and healthy life to avoid various viruses; and the media informs that the HMPV virus and the Covid-19 variant NB 1.8.1 are scientifically not very dangerous.

State Power in Responding to Global Health

In their reporting on the HMPV virus and the NB 1.8.1 variant of Covid-19, Tribun Jabar, Tribun Yogyakarta, and Tribun Lombok consistently portrayed the state's power in managing global health issues. Here, they portray the state as an authoritative, responsive, and responsible actor, handling the virus's spread through surveillance and public education. As written by Tribun Jabar, Tribun Yogyakarta, and Tribun Lombok:

"The Ministry of Health issued a circular warning of an increase in Covid-19 cases, following the emergence of new cases in several Asian countries such as Thailand, Hong Kong, Malaysia, and Singapore." (Tribun Jabar, 3 June 2025)

"The health office is directly educating the public, including through social media, and coordinating with 27 districts and cities to promote vigilance and improve surveillance performance. The West Java Health Office has forwarded the Ministry of Health's circular regarding Covid-19 vigilance to districts and cities throughout West Java." (Tribun Jabar, 2 June 2025)

"The Indonesian Ministry of Health (Kemenkes) issued a circular warning of Covid-19 cases. The ministry noted that 72 cases of Covid-19 were detected in Indonesians during 2025." (Tribun Yogyakarta, 6 June 2025)

"Head of the Sumbawa Health Office, Junaedi, urged all healthcare workers to be on alert for the new Covid-19 variant." (Tribun Lombok, 10 June 2025)

In their reports, the three local media outlets represented that Indonesia did not directly issue appeals and warnings to the public but instead monitored developments in other countries and followed the guidance of the WHO, the highest health body. The three local media outlets presented the Indonesian government as an actor responsible for public health. They also demonstrated how the Indonesian government, as the policymaker and health administrator, was fully prepared for the threat of new diseases. The government continued to coordinate with President Prabowo, the Minister of Health, and the central and regional governments.

The three media outlets reported on state officials, in this case the Minister of Health of the Republic of Indonesia, highlighting various efforts as a rapid response by the Indonesian government to the spread of the HMPV virus and the Covid-19 variant NB 1.8.1, also as a form of state responsibility to protect its citizens from the spread of disease. Learning from the experience of handling Covid-19 in 2019, the government and the media were both proactive. The government was proactive by making appeals and clarifications about the HMPV virus and the Covid-19 variant NB 1.8.1 and publishing what the Indonesian government had done so that the public received information earlier regarding these health issues.

Vigilance Without Panic

Tribun Jabar, Tribun Yogyakarta, and Tribun Lombok also presented the HMPV virus and Covid-19 variant NB 1.8.1 with an informative and calming approach without creating tension for readers. All three media outlets presented the HMPV virus and Covid-19 variant NB 1.8.1 with complete information and could meet the information needs of the public. Although coverage from each outlet was brief, averaging two news items per topic, it met readers' information needs and helped ease public unease, drawing on lessons from 2019-2021, when extensive Covid-19 coverage caused anxiety, stress, and illness. Such as the news in Tribun Jabar, Tribun Yogyakarta, and Tribun Lombok:

“The Sumbawa Health Service (Dinkes) has asked all health workers to be on alert for the new Covid-19 variant.” (Tribun Lombok, 10 June 2025)

“Yes, we have received a circular from the Ministry of Health to be alert for the new Covid-19 variant. We ask our healthcare workers to be on alert, said Junaedi.” (Tribun Lombok, 10 June 2025)

“He is monitoring the development of Covid-19, noting that there has been a surge in neighboring countries like Singapore, Malaysia, and others. Although Indonesia hasn't seen a surge yet, positive Covid-19 cases must be monitored closely. Junaedi urged the public not to worry about this new variant of Covid-19 but to remain vigilant, even though no cases have been detected yet.” (Tribun Lombok, 10 June 2025)

The three local media outlets consistently remind the public to remain vigilant and avoid panic. Another suggestion from these three local media outlets, citing local authorities, is to use the Covid-19 pandemic that occurred between 2019 and 2021 as a valuable lesson in maintaining health. The messages from the government to the local community, disseminated by these three local media outlets, are that the experience of dealing with the 2019 pandemic is invaluable. Remaining cautious by maintaining health, maintaining a healthy lifestyle and getting regular rest will strengthen the immune system. Conversely, the government's message is also to avoid panic and stress, because panic leads to stress, and when stressed, the immune system will weaken. A weakened immune system will be susceptible to various diseases, including HMPV and Covid-19.

All three media outlets were more cautious in reporting on the HMPV virus and the new Covid-19 variant. Based on the experience during the 2019-2021 Covid-19 pandemic, media coverage was overly extensive and bombastic, leading to fear, stress, and a decline in immunity (Vasterman et al., 2005). This ultimately led to many becoming victims of Covid-19. Some members of the public also blamed media outlets reporting on Covid-19 for fuelling public panic.

Live Clean and Healthy

Tribun Jabar, Tribun Yogyakarta, and Tribun Lombok also convey the public health call to remain calm but vigilant regarding the presence of the HMPV virus and the Covid-19 variant NB 1.8.1. In addition, the media emphasises Clean and Healthy Living Behaviour (PHBS), an inexpensive and practical strategy for maintaining health, as unhealthy lifestyles are among the sources of disease exposure. As described by Tribun Lombok, citing a statement from a Lombok health official, and by Tribun Jabar and Tribun Yogyakarta:

“From now on, we urge the public to practice good hygiene and continue wearing masks to prevent the spread of Covid-19.” (Tribun Lombok, 10 June 2025)

“The public is also urged to adopt a healthy lifestyle to avoid infection. In an effort to prevent the spread of the JN.1 variant, Aji urged the public to continue maintaining their immune system and implementing PHBS. To prevent transmission, the public is asked to adopt a clean and healthy lifestyle, such as eating a balanced diet, getting enough rest, and maintaining good hygiene by washing hands frequently.” (Tribun Yogyakarta, 6 June 2025)

The three local media outlets provide health education to residents of West Java, Yogyakarta, and Lombok. Educating residents about healthy living by maintaining good food, hygiene, and adequate rest is crucial. Diseases can originate from various sources, including poor diet, unhygienic environments, and irregular sleep patterns, which increase susceptibility to illness. Local media outlets, by reminding residents to maintain a healthy and hygienic lifestyle, indirectly assist the government in preventing further exposure to HMPV and the spread of the Covid-19 variant NB 1.8.1. With the abundance of information on how to combat HMPV and Covid-19, including maintaining a healthy environment and lifestyle, the public is better prepared to deal with the spread of these health threats.

Scientific Information

Tribun Jabar, Tribun Yogyakarta, and Tribun Lombok present the HMPV virus and the Covid-19 variant NB 1.8.1 with a rational and educational approach. Scientific information, quotes from medical authorities, and explanations of virus and Covid symptoms help dispel misconceptions and address public concerns. When these three media outlets report on the scientific and medical aspects, the public gains knowledge, insight, and a clearer understanding of the risks posed by the virus and Covid-19. This can be seen in the coverage from Tribun Jabar, Tribun Yogyakarta, and Tribun Lombok, namely:

“Similar to SARS-CoV-2, which causes Covid-19, symptoms include coughing, runny nose, nasal congestion, sneezing, sore throat, and wheezing. The Minister of Health explained that the HMPV virus is different from the Covid-19 virus.” (Tribun Yogyakarta, 8 January 2025)

“When the Covid-19 virus was first discovered, it was a new type of virus, while HMPV is an older virus with similar characteristics to the common cold. The human immune system has long been familiar with the HMPV virus and therefore generally responds well to this disease.” (Tribun Jabar, 6 January 2025)

The three media present information about the HMPV virus and Covid-19 variant NB 1.8.1 from a scientific perspective, aiming to increase public understanding of the origin of these health threats, their mutation, how they are transmitted, and who is vulnerable to exposure, as well as scientific ways to address them.

DISCUSSION

State Power in Responding to Global Health

This pattern of indirect appeal, relying on WHO guidance rather than direct public warnings, reflects the WHO's role as a strategic response driver, as demonstrated in Tarisa's (2021) research showing that the WHO, as the highest authority in global health, provides guidance to UN member states on disease surveillance and public education. Similarly, Tang et al.'s (2024) analysis highlights the role of the state as a strategic response driver for various diseases and other issues.

WHO guidelines serve as a reference for countries in implementing policies to prevent their populations from being more severely exposed to various diseases, including the HMPV virus and the COVID-19 variant NB 1.8.1. South Korea, for example, responded to the WHO's warning to conduct surveillance and mitigation, emphasizing strict efficiency and effective public education (Jonathan & Sitha Dewi, 2021).

This reliance on government health authorities parallels Brazilian media outlets, which cited statements from officials as part of the government's political and scientific communication efforts, framing the issue of addressing social inequality as part of crisis communication to address COVID-19 (Oliveira et al., 2021). Hayek (2024) similarly found that media in five European countries presented their governments' responses during the pandemic crisis, while Hall and Wolf (2021) found that German media demonstrated effective communication by health authorities as a crucial part of their pandemic control strategy, building public trust.

Vigilance Without Panic

As McCombs and Shaw (1972) noted, media outlets not only convey health issues but also shape how the public understands them. Calm and educational framing encourages a more rational public response. This resonates with Salleh and Ibrahim's (2015) study on agenda-setting theory published in Jurnal Komunikasi Borneo, which found that Malaysian print media's news selection strategies determine which social and health issues gain public salience; in the same way, the selective and measured coverage given by Tribun Jabar, Tribun Yogyakarta, and Tribun Lombok was framed to encourage vigilance rather than fear as the intended reader response to HMPV and the COVID-19 variant NB 1.8.1.

Tribun Jabar, Tribun Yogyakarta, and Tribun Lombok consistently maintain an educational and non-sensational approach to disease reporting, consistent with Dabas's (2022) finding that calm, credible reporting fosters public trust and reduces anxiety, unlike sensationalist coverage that amplifies fear. Renn and Levine (2020) similarly suggest that information and empathy-based media can prevent infodemics, build social resilience, and foster public trust.

This reassuring approach is supported by Joffe's (2015) research analyzing calm framing, which can lead to a more collaborative public response, compared to fear framing,

which tends to make the public distance themselves from information. This closeness, in turn, benefits the media itself, as audiences continue to seek out and consume their coverage. Media messages that are low on threats have also been shown to increase public compliance without arousing excessive anxiety (Stanulewicz-Buckley & Cartwright, 2025).

Live Clean and Healthy

The media's role in raising awareness for healthy living is evident in how these three outlets consistently encourage PHBS alongside their vigilance-without-panic messaging. As demonstrated in research by Mufidah et al. (2024), during the COVID-19 pandemic in 2019-2020, there was a significant increase in knowledge, such as increased handwashing frequency and soap use and increased sanitation practices.

This pattern of public compliance driven by clarity of media messaging is also consistent with Mohd Yusoff et al. (2022) study in Jurnal Komunikasi Borneo on Malaysia's Stay-at-Home Campaign, which found that public cooperation with health-protective measures depended on how effectively the campaign's purpose was communicated through the media and government channels; where communication was unclear or inconsistent, compliance weakened. This suggests that the calm, clean-living messaging consistently repeated by Tribun Jabar, Tribun Yogyakarta, and Tribun Lombok appears designed to function as a compliance-encouraging device, resembling the messaging dynamics observed in the Malaysian public health campaign context.

Beyond mainstream media, education about healthy living during the pandemic or how to avoid disease can also be delivered through social media. Steinke's (2022) study of children's YouTube videos about COVID-19 showed that a combination of friendly and reassuring frames, such as wearing a mask to keep everyone safe, was quite effective in conveying serious messages about maintaining health without creating undue fear among the public.

Other studies have also shown that news reporting that prioritizes solutions without making many threats, encouraging people to remain calm, stay vigilant, wash hands diligently, and maintain distance, is much more effective as a proactive, educational narrative for raising public motivation to fight the pandemic without creating tension (Gutiérrez-Doña, 2025).

Conversely, if the media focuses too much on threatening messages, it can trigger fear, while framing positive futures can foster greater hope, especially when coupled with messages that offer hope and practical steps to increase preventive measures, such as handwashing and mask use, without inciting panic (Zhu, 2023).

Tribun Jabar, Tribun Yogyakarta, and Tribun Lombok combined informative and positive emotional aspects in their coverage of the HMPV virus and the COVID-19 variant NB 1.8.1, creating a reassuring and motivating representation. Zhang et al. (2023) found that this can reduce negative perceptions about the virus and increase public adherence to PHBS, demonstrating in research conducted in China, the origin of COVID-19, that reducing excessive risk perceptions can simultaneously increase adherence to PHBS practices such as vaccination and hygiene.

Scientific Information

Media coverage in Ireland paralleled that of Tribun Jabar, Tribun Yogyakarta, and Tribun Lombok in reporting on HMPV and the COVID-19 variant NB 1.8.1. Both print and digital media in Ireland consistently highlighted the scientific dimension of the story during the first wave of COVID-19, presenting expert narratives and scientific context for uncertainties, with direct quotes from Irish scientists and health officials (Fährnich et al., 2021). Fährnich et al. (2021) recommend that media use an educational approach that illustrates the scientific process and rationally explains changes in recommendations, rather than downplaying the scientific value of news.

Ogbodo et al. (2020) similarly argued that media needs to balance information about threats with concrete steps, such as symptoms and health protocols, so that reporting remains educational and reduces public panic, an approach reflected in how *Tribun Jabar*, *Tribun Yogyakarta*, and *Tribun Lombok* explained the scientific basis of HMPV and the COVID-19 variant NB 1.8.1 through an informational, non-alarmist register.

This contrasts somewhat with Reiter-Haas et al. (2024), who found that mainstream media more frequently used a scientific framework, presenting reliable data and sources, while conspiracy media focused on narratives of personal belief. Educational media narratives emphasized information from authorities, including the WHO and relevant health officials, explanations of symptoms, and clarification of potentially misleading facts.

CONCLUSION

The representation of the HMPV virus and the COVID-19 variant NB 1.8.1 by local media (*Tribun Jabar*, *Tribun Yogyakarta*, and *Tribun Lombok*) aligns with WHO's health communication framework, providing education about disease symptoms, prevention, and government regulations while framing both health events as manageable rather than alarming. Local media also constructs these health threats as low-risk while positioning vigilance as the appropriate reader response. Coverage consistently encourages compliance with health protocols and positions local media as a liaison between government health authorities and the public, disseminating policies and preventive measures intended to protect the community against the HMPV virus and the COVID-19 variant NB 1.8.1.

Tribun Jabar, *Tribun Yogyakarta*, and *Tribun Lombok*, as local media that are close to the community, are positioned to build community trust because they present the phenomena of the HMPV virus and the COVID-19 variant NB 1.8.1 within the media's immediate coverage area, namely West Java, Yogyakarta, and West Nusa Tenggara. This local proximity allows the three outlets to connect coverage of health threats directly to the community's everyday context, an approach especially relevant given the risk of hoaxes, as seen during the 2019-2021 COVID-19 pandemic, when misleading information caused widespread unease.

This study concludes that local media plays a substantial role in representing the HMPV virus and the COVID-19 variant NB 1.8.1, namely: portraying a responsive government in managing global health issues; encouraging public vigilance without panic; promoting clean and healthy living habits; and presenting HMPV and the COVID-19 variant NB 1.8.1 as scientifically less severe than the 2019-2021 COVID-19 outbreak. These findings offer a practical reference point for local health journalism: they suggest that a calm, source-anchored, and scientifically grounded reporting register, of the kind observed across *Tribun Jabar*, *Tribun Yogyakarta*, and *Tribun Lombok*, can be paired with sustained health education content without resorting to alarmist framing. For local newsrooms covering future lower-severity health events, this pattern of institutional-source reliance, measured tone, and consistent public-health messaging offers a replicable editorial model.

This study is limited to a preliminary, text-focused analysis of ten news articles from three Indonesian local media outlets over a six-month period. As the analysis relies solely on Van Dijk's (2006) structural dimension of news texts, it examines how HMPV and the COVID-19 variant NB 1.8.1 were represented in media discourse rather than how audiences perceived, trusted, or responded to this coverage. Claims regarding public reception, trust, or behavioural compliance therefore fall outside the scope of this study and are proposed as directions for future audience-reception research. Future studies could also extend Van Dijk's (2006) CDA framework to the cognitive and socio-political dimensions of discourse, examine a longer time frame, or compare local media representation with national or international outlets.

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KAJIAN AWAL SOROTAN LITERATUR SISTEMATIK PENGUNAAN KECERDASAN BUATAN GENERATIF DALAM PENDIDIKAN TINGGI

*A PRELIMINARY SYSTEMATIC LITERATURE REVIEW ON THE USE OF GENERATIVE
ARTIFICIAL INTELLIGENCE IN HIGHER EDUCATION*

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Abstrak: Teknologi Kecerdasan Buatan Generatif (*GenAI*) seperti *ChatGPT*, *Perplexity*, dan *QuillBot* semakin meluas digunakan dalam kalangan pelajar dan pendidik di peringkat universiti sejak kemunculannya pada tahun 2022. Penggunaan teknologi ini membawa manfaat kepada proses pembelajaran, tetapi turut menimbulkan isu berkaitan integriti akademik dan etika penggunaan. Oleh itu, kajian awal sorotan literatur sistematik ini dijalankan bagi menyintesis kajian empirikal berkaitan persepsi, penerimaan, manfaat, dan cabaran penggunaan *GenAI* dalam pendidikan tinggi. Pemilihan artikel mengikut garis panduan PRISMA melalui empat fasa iaitu pengenalanpastian, saringan, kelayakan, dan rangkuman, dengan carian dijalankan di pangkalan data *Google Scholar* menggunakan kata kunci dalam Bahasa Inggeris dan Bahasa Malaysia. Daripada 1,320 artikel yang dikenal pasti, had maksimum 50 artikel ditetapkan berdasarkan ketersediaan teks penuh PDF dalam julat tahun 2023 hingga 2026. Selepas proses kelayakan, hanya 43 artikel disahkan untuk dianalisis. Kesemua 43 artikel ini kemudiannya disintesis menggunakan pendekatan sintesis tematik. Sintesis menghasilkan lima tema utama iaitu i) Kerangka Teori Penerimaan AI; ii) Trend Metodologi; iii) Manfaat *GenAI*; iv) Cabaran dan Etika; dan v) Kelayakan Akademik. Dapatan kajian menunjukkan penggunaan *GenAI* memberi manfaat kepada pembelajaran dalam pendidikan tinggi, namun memerlukan sokongan dasar etika yang jelas dan program literasi AI yang terancang.

Kata kunci: Kecerdasan Buatan Generatif; Sorotan Literatur Sistematik; *Technology Acceptance Model*; Pendidikan Tinggi; Integriti Akademik

Abstract: Generative Artificial Intelligence (GenAI) technologies such as ChatGPT, Perplexity, and QuillBot have been increasingly widely used among students and educators at

the university level since their emergence in 2022. The use of this technology brings benefits to the learning process, but also raises issues related to academic integrity and ethics of use. Therefore, a preliminary review of this systematic literature review was conducted to synthesize empirical studies related to the perception, acceptance, benefits, and challenges of using GenAI in higher education. The selection of articles according to PRISMA guidelines goes through four phases namely identification, screening, qualification, and inclusion, with searches conducted in the Google Scholar database using keywords in English and Malaysian. Out of the 1,320 articles identified, a maximum limit of 50 articles is set based on the availability of full-text PDFs in the 2023 to 2026 year range. After the qualification process, only 43 articles were verified for analysis. All 43 articles were then synthesized using a thematic synthesis approach. The synthesis produced five main themes namely i) AI Acceptance Theory Framework; ii) Methodological Trends; iii) Benefits of GenAI; iv) Challenges and Ethics; and v) Academic Qualifications. The findings of the study show that the use of GenAI benefits learning in higher education, yet requires the support of clear ethical policies and well-planned AI literacy programs.

Keywords: Generative Artificial Intelligence; Systematic Literature Review; Technology Acceptance Model; Higher Education; Academic Integrity

PENDAHULUAN

Sejak diperkenalkan pada tahun 2022, teknologi Kecerdasan Buatan Generatif (GenAI) seperti *ChatGPT*, *Perplexity*, dan *QuillBot* semakin meluas digunakan dalam kalangan pelajar dan pendidik di institusi pendidikan tinggi. Penggunaan teknologi ini telah mengubah cara pelajar mengakses maklumat, memproses pengetahuan, dan menyiapkan tugas akademik. Kemunculan alatan GenAI yang mampu menjana teks dan idea secara automatik turut memberi kesan kepada proses pengajaran dan pembelajaran di peringkat universiti (Safiah Masbaka et al., 2024).

Walaupun penggunaan GenAI memberi manfaat kepada proses pembelajaran (Nugroho et al., 2025; Yuan et al., 2025), ia turut menimbulkan kebimbangan berkaitan integriti akademik dan etika penggunaan (Gustilo et al., 2024; Syahriani et al., 2025). Kajian mendapati bahawa pelajar cenderung menggunakan hasil janaan GenAI tanpa mengakui sumbernya, sekali gus menimbulkan risiko plagiarisme dan kebergantungan melampau terhadap teknologi ini (Li et al., 2025; Chatto & Logronio, 2025).

Di Malaysia, penggunaan GenAI dalam pendidikan tinggi turut berkembang pesat, dengan pendidik dan pelajar di institusi pengajian tinggi mula mengintegrasikan *ChatGPT* ke dalam proses pengajaran dan pembelajaran (*Access Partnership*, 2023). Perkembangan ini mendorong Kementerian Pendidikan Tinggi Malaysia untuk menggubal garis panduan berkaitan penggunaan GenAI di universiti bagi memastikan penggunaannya adalah beretika dan bertanggungjawab (Jabatan Pendidikan Tinggi, 2023).

Walaupun terdapat banyak kajian empirikal berkaitan penggunaan GenAI dalam pendidikan tinggi (Aldossary et al., 2024; Rahman et al., 2025; Utami et al., 2023), kajian-kajian tersebut dijalankan secara berasingan dengan fokus konteks dan populasi yang berbeza. Kajian yang menyorot secara sistematik dapatan kajian-kajian ini bagi mengenal pasti trend teori, metodologi, manfaat, dan cabaran etika masih kurang, khususnya dalam konteks terkini antara tahun 2023 hingga 2026.

Pernyataan Masalah dan Persoalan Kajian

Perkembangan pesat GenAI dalam pendidikan tinggi memerlukan sorotan literatur yang sistematik bagi membantu institusi pendidikan tinggi menggubal dasar penggunaan GenAI yang berkesan. Sehubungan itu, kajian ini dijalankan bagi menganalisis kajian empirikal terkini berkaitan penggunaan GenAI dalam pendidikan tinggi bagi tempoh 2023 hingga 2026.

Objektif Kajian

Secara khusus, kajian ini bertujuan:

- i. Mengenal pasti kerangka teori dan pendekatan metodologi yang dominan dalam kajian penerimaan GenAI dalam pendidikan tinggi;
- ii. Menganalisis manfaat utama dan cabaran etika penggunaan GenAI dalam pembelajaran;
- iii. Meneliti pengaruh kelayakan akademik terhadap corak penerimaan GenAI dalam kalangan pelajar pendidikan tinggi.

Bagi mencapai objektif tersebut, kajian ini menjawab tiga persoalan utama:

- i. Apakah kerangka teori dan pendekatan metodologi yang dominan dalam kajian penerimaan GenAI dalam pendidikan tinggi?
- ii. Apakah manfaat utama penggunaan GenAI dalam pembelajaran dan apakah cabaran etika yang dikenal pasti?
- iii. Bagaimanakah kelayakan akademik mempengaruhi corak penerimaan GenAI dalam kalangan pelajar pendidikan tinggi?

METODOLOGI

Kajian ini menggunakan garis panduan *Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)* yang diperkenalkan oleh Moher et al. (2010) sebagai kerangka pelaksanaan sorotan literatur. Versi asal PRISMA (Moher et al., 2010) dipilih kerana ia sejajar dengan reka bentuk kajian awal ini yang menggunakan satu pangkalan data secara manual, berbanding PRISMA 2020 (Page et al., 2021) yang direka untuk carian merentasi pelbagai pangkalan data dan proses automasi berskala lebih besar. Proses pemilihan artikel dibahagikan kepada empat fasa iaitu pengenalan, saringan, kelayakan, dan rangkuman. Pendekatan sistematik ini amat kritikal bagi memastikan ketelusan serta kebolehulangan proses pencarian literatur dalam mengenal pasti artikel yang paling relevan dengan objektif kajian. Melalui setiap fasa tersebut, kriteria kemasukan dan penyingkiran yang ketat telah diaplikasikan terhadap pangkalan data terpilih bagi menjamin kualiti pemilihan bahan. Prosedur terperinci ini membolehkan penyelidik menyintesis dapatan kajian lepas secara objektif, sekali gus memperkukuh kesahihan analisis perbincangan yang dibentangkan dalam kajian ini.

Fasa 1: Pengenalpastian

Carian literatur dijalankan di pangkalan data *Google Scholar* dari 1 Disember 2025 hingga 31 Mac 2026 menggunakan kata kunci dalam Bahasa Inggeris dan Bahasa Malaysia. Kata kunci yang digunakan merangkumi: “*students’ perception*”, “*Generative AI*”, “*AI in higher education*”, “penggunaan AI”, dan “persepsi mahasiswa”. Julat tahun ditetapkan antara 2023 hingga 2026 bagi memastikan kebaruan literatur yang dipilih. Menerusi fasa ini, sebanyak 1,320 artikel telah dikenal pasti.

Fasa 2: Saringan

Daripada 1,320 artikel yang dikenal pasti, saringan awal dijalankan berdasarkan dua kriteria iaitu ketersediaan teks penuh dalam format PDF dan julat tahun penerbitan antara 2023 hingga 2026. Memandangkan kajian ini merupakan sorotan awal yang dijalankan dalam konteks latihan akademik, had maksimum 50 artikel ditetapkan melalui persampelan bertujuan (purposive sampling) (Suri, 2011) bagi membolehkan analisis mendalam dijalankan terhadap setiap artikel, selaras dengan skop kajian awal/preliminari ini. Pemilihan artikel secara terhad ini penting bagi memastikan fokus penyelidikan tetap utuh, di samping membolehkan pengecaman tema dominan yang muncul dalam literatur. Pendekatan ini sangat wajar bagi menjamin setiap data yang diekstrak dianalisis secara komprehensif, sekali gus memberikan gambaran yang lebih jitu serta bermakna mengenai trend penggunaan GenAI dalam pendidikan tinggi sepanjang tempoh kajian.

Fasa 3: Kelayakan

Pada fasa kelayakan, kesemua 50 artikel disemak secara terperinci berdasarkan kriteria kemasukan dan pengecualian yang ditetapkan seperti dalam Jadual 1. Sebanyak tujuh artikel dikecualikan pada fasa ini, menjadikan jumlah artikel yang layak sebanyak 43 artikel.

Jadual 1 Kriteria Penentuan bagi Penerbitan yang Dipilih

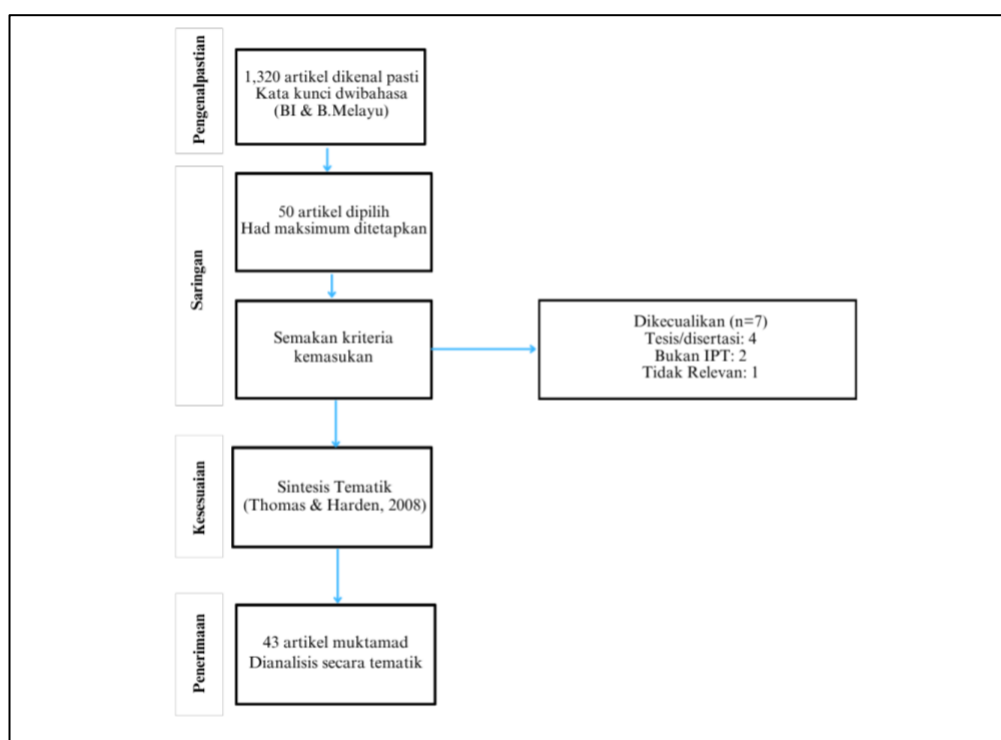
Kriteria	Faktor Penerimaan	Faktor Pengecualian
Garis Masa Penerbitan	2023 hingga 2026	Selain tahun 2023 hingga 2026
Jenis Sorotan	Artikel jurnal ulasan rakan sejawat	Tesis, disertasi, dan selain artikel jurnal
Skop Kajian	Penggunaan GenAI dalam pendidikan tinggi	Kajian berkaitan institusi bukan pendidikan tinggi
Bahasa	Bahasa Inggeris dan Bahasa Malaysia	Selain Bahasa Inggeris dan Bahasa Malaysia
Capaian	Teks penuh tersedia dalam format PDF	Artikel tanpa capaian teks penuh PDF

Fasa 4: Rangkuman

Selepas proses pengecualian, sebanyak 43 artikel disahkan untuk dianalisis. Maklumat daripada setiap artikel direkodkan dalam borang matriks literatur (LR Matrix) merangkumi nama penulis, tahun penerbitan, objektif kajian, metodologi, kerangka teori, dan dapatan utama. Kesemua 43 artikel ini kemudiannya dianalisis secara tematik mengikut kaedah Thomas dan Harden (2008). Penggunaan kaedah sintesis tematik ini membolehkan penyelidik merentas

batasan metodologi artikel-artikel terpilih untuk membina naratif yang lebih kohesif dan bermakna. Melalui proses pengekodan berulang, tema-tema kritikal yang muncul daripada data mentah telah dikategorikan secara sistematik bagi membentuk kerangka konsep yang menyeluruh. Pendekatan ini bukan sahaja memudahkan pengenalpastian jurang penyelidikan sedia ada, malah membantu dalam menstrukturkan hujah-hujah saintifik yang menyokong objektif kajian ini. Dengan mengintegrasikan dapatan daripada pelbagai sumber, analisis ini berjaya memberikan gambaran yang jelas mengenai trend semasa penggunaan teknologi GenAI dalam pendidikan tinggi. Akhirnya, hasil analisis tematik ini menjadi asas utama dalam menyusun perbincangan yang kritis, relevan, dan berwawasan bagi menjawab persoalan kajian secara berkesan.

Rajah 1: Proses Pemilihan Artikel Mengikut Garis Panduan PRISMA (Moher et al., 2010)



Sumber: Diadaptasi daripada Moher et al. (2010)

DAPATAN DAN PERBINCANGAN

Merujuk kepada Jadual 2, sebanyak 43 artikel telah dianalisis secara tematik mengikut kaedah Thomas dan Harden (2008). Analisis ini menghasilkan lima tema utama iaitu Kerangka Teori Penerimaan AI, Trend Metodologi, Manfaat GenAI dalam Pembelajaran, Cabaran Etika Penggunaan GenAI, dan Pengaruh Kelayakan Akademik terhadap Penerimaan GenAI. Data yang dirumuskan dalam Jadual 2 memberikan bukti empirikal yang kukuh mengenai trend penerimaan GenAI dalam kalangan komuniti akademik. Dominasi model TAM dalam majoriti 43 artikel tersebut, sama ada secara tunggal atau lanjutan seperti UTAUT dan SDT, membuktikan relevansi teori penerimaan teknologi dalam konteks AI (contohnya, Elfirdaus et al., 2024; Xia et al., 2025). Secara metodologi, integrasi pendekatan kualitatif dan kuantitatif membolehkan pengkaji menangkap nuansa penerimaan pelajar dan pendidik dengan mendalam. Dapatan kajian secara konsisten menonjolkan manfaat GenAI sebagai pemangkin

produktiviti, efikasi sendiri, dan kreativiti (contohnya, Yuan et al., 2025; Anggraeni, 2025). Namun begitu, isu etika seperti plagiarisme, kebergantungan yang melampau, dan ketepatan maklumat (Syahriani et al., 2025; Li et al., 2025) tetap menjadi kebimbangan utama. Selain itu, kajian seperti Xu et al. (2024) secara spesifik menunjukkan bahawa tahap pengajian dan kelayakan akademik memainkan peranan penting dalam menentukan corak penerimaan. Rumusan ini mengesahkan bahawa walaupun GenAI diiktiraf sebagai alat pembelajaran yang berkuasa, kerangka etika yang kukuh amat diperlukan untuk meminimumkan risiko intelektual dalam persekitaran pendidikan tinggi.

Jadual 2 Sorotan Literatur Berkaitan Penggunaan Kecerdasan Buatan Generatif dalam Pendidikan Tinggi (2023-2026)

Bil	Penulis & Tahun	Metodologi & Sampel	Kerangka Teori	Dapatan Utama
1	Liu & Zhang (2024)	Kualitatif; Temu bual; TAM n=50		Kesediaan pelajar dipengaruhi faktor objektif dan subjektif
2	Yuan et al. (2025)	Kaedah campuran; n=250	UTAUT	AI meningkatkan penglibatan dan efikasi sendiri pelajar
3	Gustilo et al. (2024)	Kuantitatif; Soal selidik; n=100	TAM	Pendidik bimbang tentang integriti akademik dan had akses
4	Nguyen & Dieu (2024)	Kaedah campuran; n=46+7	TAM	96% pelajar biasa guna ChatGPT; positif terhadap produktiviti
5	Nugroho et al. (2025)	Kuantitatif; PLS-SEM; n=102	TAM	PU berpengaruh signifikan terhadap penggunaan aktual
6	Syahriani et al. (2025)	Kualitatif; Temu bual; n=10	Self-Regulated Learning	AI membantu penulisan tetapi berisiko plagiarisme terselubung
7	Nguyen et al. (2024)	Kaedah campuran; n=73+15	TAM & CLT	ChatGPT diterima luas namun menimbulkan kebergantungan
8	Ragolane & Patel (2024)	Kaedah campuran; n=49+17	TAM & AITAM	Pelajar menerima AI jika ada pengawasan manusia
9	Belda-Medina & Kokoskova (2024)	Kaedah campuran; n=58	TAM	Persepsi positif; kebimbangan tentang ketepatan maklumat
10	Sallam et al. (2024)	Kuantitatif; e-survey	TAM	Penggunaan ditentukan oleh PU, risiko rendah, dan PEOU
11	Bonsu & Baffour-Koduah (2023)	Kaedah campuran; n=107+10	TAM	Persepsi positif namun tiada hubungan signifikan dengan niat
12	Elfirdaus et al. (2024)	Kuantitatif; PLS-SEM; n=399	TAM (Simplifikasi)	Kredibiliti dan motivasi hedonik mempengaruhi penerimaan

Bil Penulis & Tahun	Metodologi & Sampel	Kerangka Teori	Dapatan Utama
13 Li et al. (2025)	Kaedah campuran; n=167	TAM	Sikap positif; risiko utama ialah kebergantungan melampau
14 Liu et al. (2025)	Kaedah campuran; n=867+20	TAM	PEOU dan PU mempengaruhi niat penggunaan
15 Pham & Le (2024)	Kualitatif; Temu bual; n=9	TAM & CLLF	AI dilihat sebagai pemangkin kreativiti
16 Dahri et al. (2024)	Kaedah campuran; n=300+30	Extended TAM	Penerimaan tinggi dipengaruhi efikasi dan kepercayaan
17 Ho & Nguyen (2024)	Kuantitatif; Soal selidik; n=369	TAM	ChatGPT berguna untuk membaca dan menulis
18 Largou & Mrah (2024)	Kaedah campuran; n=66+14	TAM	66.7% pelajar bersikap positif; ChatGPT meningkatkan motivasi
19 Almulla (2024)	Kuantitatif; Soal selidik; n=262	Extended TAM	Kualiti maklumat mempengaruhi penggunaan
20 Nguyen Hoang (2025)	Kaedah campuran; n=18	TAM & UTAUT	Pelajar bimbang tentang ketepatan kandungan
21 Xia et al. (2025)	Kuantitatif; SEM; n=303	TAM & SDT	PEOU meningkatkan niat penggunaan
22 Chatto & Logronio (2025)	Kualitatif; Temu bual + FGD; n=14	TAM & Integriti Akademik	Enam tema dikenal pasti: pemeraksanaan akademik
23 Rahmah & Ramli (2025)	Kualitatif; Fenomenologi	SDL, TAM	ChatGPT membantu kecekapan tugas
24 Anggraeni (2025)	Kualitatif; Temu bual; Analisis Tematik n=26+4		AI meningkatkan keyakinan dan kualiti tulisan
25 Krecar et al. (2024)	Kaedah campuran; n=350+12	TAM	Pelajar bersikap neutral; profesor 53% tepat kesan tulisan AI
26 Abdullah & Zaid (2023)	Kualitatif; Kajian kes; n=33	TAM	PU dan kemudahan mempengaruhi penerimaan
27 Salmi & Setiyanti (2023)	Kualitatif; Google Form; n=46	TAM	Persepsi positif; ChatGPT membantu kreativiti
28 Chauke et al. (2024)	Kualitatif; Temu bual; n=10	TAM	ChatGPT membantu penjanaan idea dan jimat masa
29 Mulaudzi & Hamilton (2024)	Kualitatif; Analisis tematik; n=40	TAM	AI dihargai kerana mesra pengguna
30 Laili et al. (2025)	Kualitatif; Soal selidik + temu bual; n=45+10	Literasi Digital & Etika	ChatGPT berkesan menjelaskan topik kompleks
31 Abdulhajar et al. (2024)	Kualitatif; Soal selidik TAM; n=150	TAM	ChatGPT diterima meluas; plagiarisme menjadi cabaran
32 Slimi et al. (2025)	Soal selidik + analisis tematik; n=89	Integriti Akademik & Literasi Digital	AI meningkatkan pemikiran kritis

Bil Penulis & Tahun	Metodologi & Sampel	Kerangka Teori	Dapatan Utama
33 Uppal & Hajian (2025)	Kuantitatif; Korelasi kanonikal; n=44	TAM, CLT, SDT	Persepsi positif AI berkorelasi dengan gred tinggi
34 Rahman et al. (2025)	Kuantitatif; PLS-SEM; n=429	Extended TAM	PU, PEU, dan kecekapan teknologi mempengaruhi pengambilan AI
35 Yim & Wegerif (2024)	Kaedah campuran; n=60	TAM & TPACK	Guru bersikap positif tetapi menghadapi cabaran pengetahuan
36 Mutmainah & Saputra (2025)	Kuantitatif; Regresi linear; n=96	TAM & Perceived Risk Theory	Kemudahan dan kepercayaan mempengaruhi minat positif
37 Aldossary et al. (2024)	Kuantitatif; Soal selidik; n=1390	TAM & VAM	Tahap penerimaan tinggi; pelajar kurang kesedaran etika
38 Xu et al. (2024)	Kualitatif; Temu bual rakan sebaya; n=187	TAM	Tahap pengajian paling berpengaruh terhadap penerimaan
39 Soliman et al. (2025)	Kuantitatif; PLS-SEM; SDT, TAM, PAM + fsQCA; n=340	TPB	PU dan autonomi adalah peramal utama
40 Anani et al. (2025)	Kaedah campuran; n=339	TPB	Norma subjektif sangat kuat mempengaruhi adopsi
41 Utami et al. (2023)	Kajian kes; Kaedah campuran; n=58	TAM	AI membantu fasa perancangan dan draf penulisan
42 Afifah et al. (2024)	Kualitatif deskriptif; Kajian lapangan	TAM	Aplikasi berpotensi tinggi tetapi terhalang kurang latihan
43 Aina et al. (2024)	Kuantitatif; Korelasi Pearson; n=63	TAM & USE Questionnaire	Korelasi positif sederhana ($r=0.64$); ChatGPT berkesan jimat masa

Sumber Analisis penulis (2026)

Tema 1: Kerangka Teori Penerimaan AI

Analisis terhadap kajian yang disorot menunjukkan bahawa *Technology Acceptance Model* (TAM) yang diperkenalkan oleh Davis (1989) merupakan kerangka teori yang dominan dalam kajian penerimaan GenAI dalam pendidikan tinggi (Nugroho et al., 2025; Rahman et al., 2025; Gustilo et al., 2024). Kajian-kajian ini menggunakan TAM untuk mengukur dua elemen utama iaitu Persepsi Kebergunaan (*Perceived Usefulness*) dan Persepsi Kemudahan Penggunaan (*Perceived Ease of Use*) sebagai peramal kepada niat pelajar menggunakan GenAI. Namun, TAM dalam bentuk asalnya didapati mempunyai batasan dalam menjelaskan faktor-faktor lain yang mempengaruhi penerimaan GenAI. Oleh itu, beberapa kajian terkini menunjukkan trend pengembangan TAM dengan menggabungkannya bersama kerangka teori lain seperti *Unified Theory of Acceptance and Use of Technology* (UTAUT) dan *Self-Determination Theory* (SDT) (Yuan et al., 2025; Dahri et al., 2024). Dapatan ini menunjukkan bahawa kajian penerimaan GenAI dalam pendidikan tinggi tidak lagi terhad kepada TAM asal, sebaliknya mula mengintegrasikan pelbagai kerangka teori bagi menjelaskan kerumitan penerimaan teknologi ini. Transformasi ini mencerminkan keperluan untuk memahami

dinamika psikologi dan kontekstual yang lebih mendalam, terutamanya apabila teknologi GenAI menawarkan keupayaan kognitif yang jauh melangkaui aplikasi perisian tradisional. Penggabungan pelbagai teori ini membolehkan penyelidik meneliti pemboleh ubah baharu seperti pengaruh sosial, efikasi sendiri, dan motivasi intrinsik pelajar dengan lebih holistik. Langkah ini bukan sahaja meningkatkan kuasa penerangan model-model sedia ada, malah membantu institusi dalam merangka polisi sokongan yang lebih berkesan. Dengan mengambil kira kepelbagaian faktor luaran dan dalaman, integrasi teori yang lebih komprehensif ini menjadi kunci utama dalam memastikan kajian masa depan mampu menangani evolusi pantas teknologi AI yang sentiasa mencabar norma pembelajaran sedia ada di peringkat universiti.

Tema 2: Trend Metodologi

Dari sudut reka bentuk kajian, analisis terhadap kajian yang disorot menunjukkan bahawa pendekatan kuantitatif berbentuk tinjauan keratan rentas (*cross-sectional survey*) dengan instrumen soal selidik berskala Likert merupakan pendekatan yang dominan (Nugroho et al., 2025; Elfirdaus et al., 2024; Rahman et al., 2025). Analisis data pula dijalankan menggunakan kaedah *Partial Least Squares Structural Equation Modeling (PLS-SEM)* bagi menguji hubungan antara pemboleh ubah penerimaan teknologi dalam kalangan pelajar (Nugroho et al., 2025; Rahman et al., 2025). Walau bagaimanapun, terdapat trend baharu dalam kalangan pengkaji yang mula menggunakan pendekatan kaedah campuran (*mixed-methods*) bagi mendapatkan pemahaman yang lebih mendalam tentang pengalaman pelajar menggunakan GenAI (Thi Nguyen et al., 2024; Chatto & Logronio, 2025). Trend peralihan ini menunjukkan bahawa kajian penerimaan GenAI tidak lagi terhad kepada pendekatan kuantitatif semata-mata, sebaliknya mula mengintegrasikan kaedah campuran bagi memahami pengalaman pelajar secara lebih mendalam. Transformasi metodologi ini dilihat sebagai respons kritikal terhadap keperluan meneroka nuansa subjektif pelajar yang tidak mampu dijelaskan sepenuhnya oleh data berangka sahaja. Penggunaan kaedah kualitatif seperti temu bual bersemuka atau perbincangan kumpulan fokus membolehkan pengkaji menyelami persepsi pelajar, kebimbangan etika, serta halangan praktikal yang mereka hadapi dalam situasi pembelajaran sebenar. Integrasi data triangulasi ini bukan sahaja mengukuhkan kesahan dapatan, malah memberikan dimensi interpretatif yang lebih kaya mengenai bagaimana interaksi manusia-AI berlaku dalam ekosistem pendidikan tinggi. Selain itu, peralihan ini turut mencerminkan kematangan bidang penyelidikan ini yang semakin mementingkan konteks sosial dan pedagogi, bukan sekadar pengukuran statistik hubungan pemboleh ubah. Justeru, penyelidikan pada masa hadapan disarankan untuk terus memanfaatkan kepelbagaian reka bentuk kajian bagi memetakan evolusi penerimaan teknologi ini dengan lebih holistik, sekali gus menyumbang kepada dasar pendidikan yang lebih inklusif, responsif, dan berpaksikan kepada keperluan kognitif serta emosi pelajar.

Tema 3: Manfaat GenAI dalam Pembelajaran

Kajian-kajian yang disorot mendapati bahawa penggunaan GenAI memberi manfaat kepada pembelajaran pelajar dalam tiga aspek utama iaitu peningkatan produktiviti akademik, sokongan pembelajaran diperibadikan, dan mempercepatkan penjanaan idea (Nugroho et al., 2025; Rahmah & Ramli, 2025; Yuan et al., 2025). Dari aspek produktiviti, penggunaan GenAI didapati membantu pelajar menyiapkan tugas akademik dengan lebih cepat, mempercepatkan penjanaan idea awal, dan mencari maklumat dengan lebih berkesan, sekali gus mengurangkan beban kerja pelajar (Rahmah & Ramli, 2025; Chatto & Logronio, 2025). Kajian-kajian yang disorot turut mendapati bahawa GenAI berupaya menyesuaikan sokongan pembelajaran mengikut tahap pemahaman setiap pelajar, sekali gus menyokong pembelajaran

terarah sendiri (Yuan et al., 2025; Soliman et al., 2025; Dahri et al., 2024). Dapatan ini menunjukkan bahawa manfaat GenAI dalam pembelajaran bukan terhad kepada peningkatan produktiviti sahaja, tetapi turut meliputi sokongan pembelajaran yang lebih diperibadikan berbanding kaedah pembelajaran tradisional.

Selain manfaat tersebut, penggunaan GenAI secara strategik dalam penulisan tesis dan penyelidikan akademik juga perlu ditekankan, di mana ia mampu membantu pelajar mengenal pasti jurang penyelidikan (*research gap*), menyusun naratif bab tesis yang sistematik, serta membina tinjauan literatur yang kritikal melalui penggunaan gesaan (*prompt*) akademik yang berkesan. Walau bagaimanapun, pengintegrasian teknologi ini haruslah sentiasa mematuhi garis panduan institusi serta mengekalkan etika dan integriti akademik bagi memastikan kualiti penulisan ilmiah tetap terpelihara, selaras dengan piawaian yang ditetapkan oleh pihak universiti.

Tema 4: Cabaran Etika Penggunaan GenAI

Selain manfaat, kajian turut mengenal pasti risiko plagiarisme sebagai cabaran utama penggunaan GenAI dalam pendidikan tinggi, di mana pelajar cenderung menggunakan hasil janaan GenAI tanpa mengakui sumbernya dalam penulisan akademik (Gustilo et al., 2024; Syahriani et al., 2025; Chatto & Logronio, 2025). Kajian-kajian yang disorot turut mendapati bahawa penggunaan GenAI secara berterusan tanpa kawalan boleh menyebabkan pelajar bergantung sepenuhnya kepada teknologi ini, sekali gus mengurangkan kemahiran berfikir secara kritis dan daya analisis mereka (Li et al., 2025; Thi Nguyen et al., 2024; Pham & Le, 2024). Selain itu, pengkaji turut mendapati bahawa GenAI kadangkala menghasilkan maklumat yang tidak tepat atau mereka-reka rujukan akademik yang tidak wujud, iaitu fenomena yang dikenali sebagai halusinasi AI, yang boleh mengelirukan pelajar dan menjejaskan kualiti penulisan akademik mereka (Belda-Medina & Kokoskova, 2024; Nguyen Hoang, 2025; Ho & Nguyen, 2024). Dapatan ini menunjukkan bahawa cabaran etika penggunaan GenAI bukan terhad kepada isu plagiarisme sahaja, tetapi turut meliputi kebergantungan melampau dan ketepatan maklumat yang memerlukan perhatian institusi pendidikan tinggi. Justeru, pihak institusi perlu memainkan peranan proaktif dengan merangka polisi penggunaan AI yang jelas serta mengintegrasikan modul literasi teknologi ke dalam kurikulum sedia ada bagi membimbing pelajar memanfaatkan alat ini sebagai sokongan pembelajaran yang beretika, sekali gus memastikan proses pemikiran intelektual dan integriti akademik tetap menjadi keutamaan.

Tema 5: Pengaruh Kelayakan Akademik terhadap Penerimaan GenAI

Dapatan kajian turut menunjukkan bahawa kelayakan akademik pelajar mempengaruhi corak penerimaan GenAI dalam pendidikan tinggi. Kajian mendapati bahawa pelajar pascasiswazah menunjukkan tahap kebimbangan yang lebih tinggi terhadap ketepatan dan kebolehpercayaan maklumat yang dihasilkan oleh GenAI berbanding pelajar prasiswazah (Xu et al., 2024; Nguyen Hoang, 2025). Dapatan ini turut disokong kajian Belda-Medina dan Kokoskova (2024) yang mendapati pendidik pelatih, yang lazimnya berlatar belakang pascasiswazah, menunjukkan kebimbangan lebih tinggi terhadap ketepatan maklumat GenAI berbanding pelajar prasiswazah. Sebaliknya, pelajar prasiswazah didapati lebih terbuka menerima GenAI dalam pembelajaran, dengan tumpuan kepada kemudahan penggunaan sebagai faktor utama penerimaan mereka (Xia et al., 2025; Liu & Zhang, 2024). Dapatan ini menunjukkan bahawa penerimaan GenAI bukan seragam dalam kalangan pelajar, sebaliknya dipengaruhi oleh kelayakan akademik yang menentukan cara pelajar menilai dan menggunakan

teknologi ini. Jurang perbezaan ini berkemungkinan besar berpunca daripada tuntutan akademik yang berbeza, di mana pelajar pascasiswazah lebih tertumpu kepada penghasilan karya penyelidikan yang memerlukan validasi data yang sangat ketat, manakala pelajar prasiswazah sering kali memberikan penekanan kepada kecekapan masa dan sokongan teknikal dalam menyelesaikan tugas rutin. Justeru, pihak pengurusan universiti perlu merangka strategi intervensi yang bersifat lebih fleksibel dan disesuaikan dengan keperluan spesifik setiap peringkat pengajian, bagi memastikan potensi penuh GenAI dapat dioptimumkan sebagai pemudah cara pembelajaran tanpa menjejaskan kualiti intelektual dan standard akademik yang ditetapkan.

Selain faktor kelayakan akademik, penguasaan literasi digital juga memainkan peranan signifikan dalam menentukan kejayaan integrasi teknologi ini. Pihak universiti tidak seharusnya sekadar menyediakan akses kepada alat GenAI, sebaliknya perlu mengintegrasikan modul latihan literasi digital yang komprehensif ke dalam kurikulum sedia ada. Latihan ini wajar merangkumi kemahiran mengesahkan maklumat, teknik memberikan arahan yang berkesan, serta pemahaman mendalam tentang isu etika dan plagiarisme siber. Dengan melengkapkan pelajar bersama kemahiran ini, kerisauan terhadap ketepatan maklumat dalam kalangan pelajar pascasiswazah dapat diuruskan dengan lebih proaktif, sementara kecekapan pelajar prasiswazah dapat dipertingkatkan ke tahap yang lebih analitikal. Sinergi antara sokongan infrastruktur teknikal dan pendidikan etika yang berterusan merupakan kunci utama dalam membudayakan penggunaan GenAI secara berhemah. Secara keseluruhannya, pendekatan holistik ini bukan sahaja mampu memelihara integriti akademik institusi daripada risiko penyalahgunaan teknologi, malah secara tidak langsung dapat memacu budaya inovasi dan kecemerlangan penyelidikan yang lebih dinamik, sekali gus memastikan graduan kekal berdaya saing dalam landskap akademik global yang sentiasa berkembang pesat di era kecerdasan buatan.

KESIMPULAN

Kajian awal sorotan literatur sistematik ini telah menganalisis 43 artikel berkaitan penggunaan GenAI dalam pendidikan tinggi yang diterbitkan antara tahun 2023 hingga 2026. Analisis tematik mengenal pasti lima tema utama iaitu kerangka teori penerimaan AI, trend metodologi, manfaat GenAI dalam pembelajaran, cabaran etika penggunaan GenAI, dan pengaruh kelayakan akademik terhadap penerimaan GenAI.

Dapatan kajian ini memberi beberapa implikasi penting kepada pelbagai pihak dalam pendidikan tinggi. Dari sudut institusi, terdapat keperluan untuk menggubal dasar penggunaan GenAI yang jelas, selari dengan Garis Panduan Penggunaan Teknologi Kecerdasan Buatan Generatif dalam Pengajaran dan Pembelajaran Pendidikan Tinggi yang telah dikeluarkan oleh Jabatan Pendidikan Tinggi (JPT, 2023). Bagi pengajar, dapatan kajian menunjukkan keperluan untuk menyesuaikan kaedah pentaksiran dan pendekatan pedagogi bagi menggalakkan pemikiran kritis pelajar dalam konteks penggunaan GenAI yang semakin meluas. Bagi pelajar pula, kesedaran tentang cabaran etika penggunaan GenAI perlu dipupuk melalui program literasi AI yang diintegrasikan dalam kurikulum pendidikan tinggi. Dapatan berkaitan kelayakan akademik pula menunjukkan bahawa program sokongan penggunaan GenAI perlu direka bentuk mengikut tahap pengajian pelajar, memandangkan keperluan pelajar prasiswazah dan pascasiswazah adalah berbeza. Dari sudut penyelidikan, trend pengembangan TAM dan peralihan kepada kaedah campuran yang dikenal pasti dalam kajian ini menunjukkan bahawa pengkaji masa hadapan perlu terus mengembangkan kerangka teori penerimaan AI yang lebih inklusif serta mempelbagaikan pendekatan metodologi dalam kajian berkaitan GenAI.

Kajian ini mempunyai beberapa batasan yang perlu diakui. Pertama, carian literatur yang terhad kepada pangkalan data *Google Scholar* tidak merangkumi kajian yang diterbitkan dalam pangkalan data lain seperti *Scopus* dan *Web of Science*. Kedua, kata kunci carian yang tertumpu kepada persepsi dan penerimaan teknologi menyebabkan kajian yang menggunakan kerangka teori komunikasi tidak disertakan dalam korpus analisis. Ketiga, had maksimum 50 artikel yang ditetapkan sebagai kajian awal membataskan skop sintesis berbanding SLR yang lebih luas. Keempat, julat tahun 2023 hingga 2026 bermakna kajian yang diterbitkan sebelum tempoh ini tidak diambil kira dalam analisis. Kelima, carian menggunakan kata kunci terhad (5 rangkai kata) tanpa operator Boolean (*AND/OR*) berkemungkinan tidak menangkap keseluruhan literatur berkaitan berbanding carian sistematik yang lebih menyeluruh.

Berdasarkan batasan yang dikenal pasti, beberapa cadangan dikemukakan untuk kajian lanjutan. Pertama, kajian lanjutan disarankan menggunakan pelbagai pangkalan data seperti *Scopus* dan *Web of Science* bagi mendapatkan korpus literatur yang lebih luas. Kedua, penggunaan kata kunci yang merangkumi kerangka teori komunikasi yang sesuai, seperti Teori Penyebaran Inovasi (*Diffusion of Innovation*) dan Teori Kegunaan dan Kepuasan (*Uses and Gratifications Theory*), disarankan bagi meneroka dimensi komunikasi dalam penggunaan GenAI di peringkat pendidikan tinggi. Ketiga, dataset 43 artikel dalam kajian ini boleh digunakan semula untuk kajian yang lebih spesifik, seperti perbandingan konteks Asia Tenggara atau analisis mendalam terhadap tema etika penggunaan GenAI.

Selari dengan cadangan tersebut, adalah wajar untuk melihat evolusi penggunaan GenAI bukan sekadar sebagai alat sokongan teknikal semata-mata, malah sebagai pemangkin kepada transformasi paradigma dalam pengajaran dan pembelajaran pendidikan tinggi. Penyelidikan masa hadapan perlu bergerak melangkaui persoalan asas mengenai penerimaan teknologi, kepada penerokaan mendalam tentang bagaimana kolaborasi antara manusia dan kecerdasan buatan dapat memupuk kemahiran berfikir aras tinggi yang lebih sofistikated. Transformasi ini menuntut anjakan drastik dalam reka bentuk pentaksiran akademik, di mana tumpuan wajar dialihkan daripada penilaian berasaskan produk akhir kepada proses pembelajaran yang lebih reflektif dan kritikal.

Selain itu, pertimbangan mengenai ekuiti digital dan inklusiviti harus menjadi teras dalam setiap inisiatif dasar yang dirangka. Pengintegrasian GenAI tidak boleh menyebabkan jurang perbezaan yang lebih besar antara pelajar yang mempunyai akses kepada teknologi canggih dan mereka yang kurang bernasib baik. Oleh itu, institusi pengajian tinggi perlu memastikan bahawa setiap modul latihan literasi AI yang diperkenalkan bersifat inklusif, mengambil kira kepelbagaian latar belakang sosioekonomi pelajar serta keperluan aksesibiliti yang berbeza.

Dalam konteks yang lebih luas, penyelidikan mengenai GenAI juga perlu dikaitkan dengan matlamat pembangunan mampan dan tanggungjawab sosial universiti. Keupayaan GenAI dalam mempercepatkan penyelidikan dan inovasi harus diimbangi dengan rangka kerja etika yang teguh bagi mengelakkan penyelewengan maklumat dan bias algoritma yang boleh menjejaskan integriti akademik. Akhir sekali, dinamik perkembangan teknologi yang pantas menuntut agar kajian sistematik seperti ini dilakukan secara berkala dan berterusan. Hanya melalui pengemaskinian data dan sintesis bukti yang konsisten, pihak pengurusan dan pengamal pendidikan dapat membuat keputusan yang berasaskan data, relevan, serta mampu memacu ekosistem pendidikan tinggi negara ke arah kecemerlangan yang lebih berdaya saing di peringkat global, sambil tetap memelihara nilai-nilai kemanusiaan dan etika intelektual yang menjadi tunjang utama dunia akademik.

PENGHARGAAN

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EMPIRICAL ASSESSMENT OF GOVERNMENT COMMUNICATION STRATEGIES FOR COMMUNAL CONFLICT MEDIATION IN THE NORTH CENTRAL GEOPOLITICAL ZONE OF NIGERIA

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Abstract: Conflict situations are endemic in the African continent, and Nigeria is not an exception. Plagued with different types of conflicts that ranged from political to ethnic, religious, and communal, the country and different advocacy groups and INGOs have worked in synergy and separately to ensure peaceful coexistence. In respect of the foregoing, this study was conducted to assess the communication strategies adopted by government in the North Central geopolitical zone toward conflict mediation in the region. The researchers relied on a survey research design using questionnaires distributed to 594 respondents. The study recorded a 94.6% response rate, and findings showed government to have used different strategies for communal mediation. Some of the strategies identified are community relations, traditional institutions approach, public relations, peacebuilding communication, media relations, and religious organisation approach, among others. It also demonstrated a high level of use of communication in conflict mediation while showing that the use of strategies has led to reduced tensions and peaceful coexistence among others. The researchers concluded that communication strategies are effective means to mediate in conflict and recommend their continuous use in similar situations.

Keywords: Communication, Government, Media, Mediation, Strategies

INTRODUCTION

Conflict is common in human society due to the interrelationship and interconnectedness among people, which often result in disagreements and confrontations. This is an indication that conflicts usually involve two or more parties that have reached a position of disagreement due to the pursuit of opposing goals and objectives. Al-Rawashdeh and Al-Majali (2017) lent credence by describing conflict as a competitive phenomenon whereby two or more persons aim at the same thing, making it difficult to meet the demands of one party. It is now common in human society and can be considered natural, but for its propensity to result in war and violence, it is associated with a negative connotation (Doss, Airth & Pisano, 2023). In essence, conflict in human society can lead to destructive violence at different levels.

According to Cuppen (2018), conflicts may arise on account of conflicting values, interests, or expectations and can also extend to other broader issues related to social cohesion, trust in institutions, local democracy, and prolonged cases involving regional, national, or global players. This implies that conflicts are consequences of incompatible opinions, beliefs, and objectives among humans who co-habit. These incompatibilities may assume complex and dynamic dimensions, leading to violent clashes between and among parties to the conflict situations. In the event, a conflict situation turns violent, the devastating impact that follows

may culminate in disruption of economic and social systems, property damage, physical harm (as in loss of lives) and long-term trauma for victims of the conflict. Conflicts left unresolved can also lead to long-term instability in certain regions of the world. This has been seen in the case of the Middle East, and different parts of Africa.

Conflict situations are reported across the African continent with proliferation of armed non-state actors and violent extremism by Boko Haram spreading from Nigeria to other neighbouring countries especially the Lake Chad region (Adeleke, 2023). Conflicts of similar impact are also reported in Burkina Faso (European Civil Protection and Humanitarian Aid Operations, 2024; Yeboah & Aikins, 2024) and the Central African Republic (Baleta, 2023; Guenard, 2024). In the East and the Horn of Africa, there were also reported cases of violent conflict, including human rights abuses from different parts which resulted in the death of thousands of civilians in Ethiopia and Sudan and the abduction and killing of dozens in Kenya and other dimensions of the conflicts in South Sudan, Tanzania, Uganda, and Eritrea (Hassan, 2024; Human Rights Watch, 2025). The foregoing is to establish the background of conflicts in different parts of the African continent.

In consideration of the severity of the violence and the duration of hostilities, one conclusion can be reached, and this is the possibility of a number of factors being responsible for the conflicts across the continent. For instance, Nshom (2017) observed that the conflicts cannot be viewed from the social psychological perspective, such as prejudice alone, but must be given a holistic consideration by looking at social and economic factors that may have led to a particular conflict because of the complexity of the continent and on the grounds that there could be intertwined causes of conflict. According to Matsinhe (2022), governance of natural resources remains a prominent catalyst for conflicts in Africa even in the face of the multidimensional and complex history behind the extreme violence across different countries on the continent. The impacts are devastating, and a report also revealed that over 630 million children and their mothers have been displaced across the world owing to the nature of violent conflicts (Adeyanju et al., 2025). Africa is no exception, as extremism and violent conflicts continue to be a source of concern.

In Nigeria, the Boko Haram extremism, the bandits' killing spree, and the farmer-herder conflicts as well as the pockets of violence arising from chieftaincy tussles in various communities across the length and breadth of the country are some of the recorded cases of conflict situations. Tuki (2024) lent credence to the assertion that Nigeria continues to see violent conflicts, with the 2024 Global Terrorism Index report ranking the country as the eighth least peaceful country in the world. Conflicts arising from resource allocation and control have always been glaring in the country considering the lingering nature of the Niger Delta disturbances and the economic impact on the Nigerian nation. Accordingly, Tanko (2021) observed that Nigeria is faced with insecurity problems that can be traced to different conflict situations, which can be summarized as five basic threats which include oil militants, separatist insurgency, banditry and kidnapping, farmer-herder clashers and Jihadism.

The North Central geopolitical zone of Nigeria is both a geographical delineation and a political zone. It comprised six states which include Kwara, Kogi, Benue, Plateau, Nasarawa, Niger and the seventh being the Federal Capital Territory. The area is not new to conflicts as Ojewale (2021) reported that violent clashes have been recorded in different areas in the zone. Ajodo-Adebanjoko and Nwofor (2024) also revealed that violent clashes between farmers and herders have been recorded in parts of the North Central states of Benue, Nasarawa, Kogi and Plateau with competition over fresh water and land resources are the major factors responsible for the perennial violent situations in the area. In Niger state, the situation is on a different level as economic disparities also result in violent conflicts in different parts leading to multidimensional poverty economic disruptions (Abimbola et al., 2023). Violent conflicts on

different levels have also been recorded in Kwara (Akinnusi et al., 2019; Azeez et al., 2024; Luqman, 2010) and the FCT (Ajadi, 2023; Anyadike, 2023) at different points in time.

Faced with the multidimensional conflicts and their multifaceted impact, government and other stakeholders are poised to make efforts at mediation and reconciliation as part of measures to ensure peaceful coexistence in society. Nigeria's public institutions charged with conflict/dispute mediation and resolution are the public complaints commission (PCC), national human rights commission (NHRC), national industrial court, federal ministry of justice's department of citizens' rights, and the Central Bank of Nigeria (Mmeje, 2023). These institutions of government are charged with mediating in disputes that range from industrial to communal and even personal. Their functions are multifaceted, taking on different tasks to ensure that disputants or parties to disputes get to sit and discuss toward reconciliation on both short- and long-term basis. This implies that communication is a crucial aspect of the process.

From the foregoing, the use of communication strategies by the government is considered as crucial. Ignoring the fault lines and not engaging in mediation through dialogue can make things degenerate into chaos. Accordingly, Abiodun (2021) noted that human communication remains an important avenue or channel for dispute resolution or even worsens an already difficult situation resulting in negative results. The implication is that communication within the context of a dispute can be a force for good or evil depending on the application. Therefore, careful application of communication strategies is required especially while dealing with conflicts of a communal nature. Such communication strategies may include but not limited to promoting understand and facilitating dialogue between the parties, building trust, ensuring concise and clear communication and leveraging on non-verbal cues while showing empathy to victims. These strategies have been activated at different times in conflict mediation efforts in Nigeria (Babatope & Olanipekun, 2017). This study, therefore, assessed communication strategies deployed by the government for conflict mediation in North Central Nigeria.

Statement Of the Problem

Conflicts have a devastating impact on society. It is based on this knowledge that constituted authorities and interested stakeholders usually take on different approaches to resolve conflicts. Prolonged conflicts without intervention could result in many unthinkable and unimaginable consequences, including hunger resulting from insecurity (Africa Centre for Strategic Studies, 2024), deaths and destruction of property at the social and human level (Biekpe, 2024), and overall regression of the countries in economic, social, and political dimensions (Nkabane, 2022). These different dimensions of the impacts of conflict are indicative of the need to prevent conflicts at all costs. In situations where conflicts become inevitable, peaceful resolution through dialogue (communication) must be the most significant option.

Considering the social, economic, and political instability dimensions of the devastating impacts of conflicts on nations, it becomes expedient that concerned authorities refuse the temptation to ignore any situation that could develop into a full-scale conflict. The foregoing is an indication that conflict mediation and resolution are crucial to ensure that conflicts are not prolonged. Previous studies have established the need for communication in conflict mediation efforts (Adejimola, 2020; Amiara, 2018; Ogbu, 2017; Okai et al., 2014). However, due to the continuous state of conflict in Africa and Nigeria in particular, this study empirically assessed the communication strategies of the government toward conflict mediation in North Central Nigeria.

Objectives of the Study

The objectives of the study were to:

1. Find out the state of communal conflict mediation efforts of the government towards resolving conflicts in North Central Nigeria
2. Ascertain the extent of government conflict mediation efforts toward resolving conflicts in the region.
3. Determine the influence of government conflict mediation on peace building in the region.

Government Communication Strategies

The concept of government strategic communication is treated here in the component's "government" and "communication strategies." Government as a concept is broad, but as used here, it is used to refer to the authority that sets rules for society to function. This is in line with the conceptualisation of the concept according to Enders et al (2023), who described government as the authority that sets rules for a society. On a related note, Brogan (2025) described government as that political system by which a community or country is regulated and administered. The political system is arranged in such a way that actions are organised through plans and taken to solve societal issues. For instance, the government ensures law and order through control, direction, and command, among other administrative functions. In the same vein, actions organised through plans by the government can also help quell chaotic situations in a community or country at large.

Communication strategy is about plans followed toward achieving communication goals (Meiners et al., 2023). The authors further note that communication strategies serve as a blueprint for communicating with one another. Another conceptualisation of the concept showed that communication strategies could be verbal and non-verbal techniques through which communication effectiveness is enhanced, and breakdowns in communication are overcome (Aoyama et al., 2023). The researchers identified rapport and gestures (interpersonal strategies), speech accommodation, code-switching, and attitudinal resources in the form of tolerance and patience as communication strategies required to navigate cultural and linguistic differences in diverse communication encounters and settings. This implies that the strategy developed for effective communication involves a careful consideration of some factors, including culture and language, and acknowledging these means that the communication encounter may produce desired results.

Government communication strategies, therefore, refer to the plans by a constituted authority to achieve the desired communication outcomes or goals. The government may be intentional about communication goals, and so strategies are leveraged to develop and convey the messages, build awareness, and launch campaigns toward certain initiatives. With such strategies, the government can take control during crises and ensure that listeners across different demographics understand the same message when conveyed (Content Works, 2024). Government communication strategy encompasses stages from planning to implementation and evaluation and refers to the main values and objectives of government communication, which sets out the shared communication model through which information about change and progress can be made available to the public (Jamalullail et al., 2023). As applied in this study, communication strategies are such communication plans to address communal conflict situations in the North Central geopolitical zone of Nigeria.

Communal Conflict Mediation

Communal conflict mediation refers to a structured process where a neutral third party facilitates negotiation and dialogue between parties in a dispute in the most peaceful manner possible and promotes reconciliation, ensuring trust is returned and showing mutual respect to all parties involved. Adom and Ugal (2025) averred that in both Western and traditional societies, mediation involves a third party that leverages the confidential process of mediation to assist parties toward reaching a solution that is mutually agreeable to all. On their part, Anene and Duru (2019) explained that mediation is an intervention that is non-coercive and involves mediator(s), otherwise known as a “third party,” whose main task is to take actions to reduce or bring conflict to a situation of peaceful settlement of all parties to the dispute. Paul (2023) referred to mediation as a structured interactive process where specialised negotiation and communication techniques are applied by an impartial third party.

As an important alternative dispute resolution measure, mediation is concerned with efforts through which negotiations between and among disputants are facilitated to help them resolve disagreements. For clarification, communal conflicts refer to conflicts that arise from non-state groups with similar or the same communal identity (Bello & Awa, 2020). Conflict situations also require some form of intervention for peace not to become elusive to a particular community or geographical location. Accordingly, Usman et al (2025) state that alternative dispute resolutions save cost and time, result in satisfaction and effective issue resolution with parties expressing happiness at the outcome, improve and sustain cordial relationships between and among parties to the conflict, and also maintain the privacy of parties against litigation. Furthermore, the researchers stated that ADR also provides platforms for less confrontational dispute resolution measures with unique control and flexibility.

Communal mediation is also known as community mediation. In community conflict mediation, Sanpietro (2021) noted that communities are offered a forum in which conflicts can be resolved through the process of addressing those underlying issues that led to escalations in the first instance. The researchers considered mediation as a quick route to ensure improved communal and collaborative relationships at the lowest ebb of society, where persons are able to cohabit in peace. Serious mediation efforts have been taken by the government and other interested stakeholders, and it is on this note that they are considered critical in the eventual resolution of conflict situations (Elfverson, 2019). In different parts of Nigeria, governments at different levels usually take steps to mediate in conflict toward a peaceful resolution of the issues that caused the situation.

LITERATURE REVIEW

Issues around conflict have generated attention and research focus from time immemorial, largely due to the nature of human societies, where there never exists a situation of absolute absence of conflict and disputes. Some researchers are mainly focused on mediation efforts and strategies. However, this study takes on an approach that considers the communication strategies of the government in communal conflict mediation efforts in a part of Nigeria. Therefore, it is necessary to provide a foundation for literature in this study with conflict in society and Nigeria, examining the government's approach to such conflicts and the success story or otherwise before delving into the crux of this study. According to Ajodo-Adebanjoko and Nwofor (2024), across the six geopolitical zones of Nigeria, conflicts are rife, and the ones between herders and farmers are most common and worrisome. This is an indication that Nigeria is faced with a conflict challenge that affects its length and breadth.

Nnabuihe (2024) also observed that the country has witnessed countless number of conflicts that span a number of years, with resistance from the minority groups in the nation being a strong driver. Whereas the researcher identified the centrist form of federalism that promotes a dominance of the majority ethnic groups over the rest, other researchers adduced

the conflict to socio-economic factors such as struggle for land resources between farmers and herders (Ajodo-Adebanjoko & Nwofor, 2024), poverty and inequality (Abimbola et al., 2024), and ethnic and religious factors (Atuluku et al., 2023; Okibe, 2022; Ngwoke & Ituman, 2020). A study by Usoro et al (2014) also revealed the feeling of alienation as a major source of conflict in Nigeria. This implies that various reasons are responsible for the different levels of conflicts seen in different parts of the country, and these range from ethno-religious to socio-political.

No doubt, governments in various areas of Nigeria have made significant efforts to resolve conflicts in their domain. Familugba and Adedayo (2020) showed that the government of Nigeria has made significant efforts to resolve conflicts in the country through various mechanisms, including the use of indigenous strategies and techniques. One of the several strategies the government has attempted to mediate in communal conflict in Nigeria is through the intervention of setting up panels (Nwaogwugwu & Dabelema, 2019). Mediation through different avenues was also identified as a critical measure by the government of Nigeria to build relationships and address conflicts in the country (Adom & Ugal, 2025). Across the West African region, dialogue has also been explored as a mediation strategy for communal conflict mediation (Okai et al., 2014). In Nigeria, several commissions of enquiry or panels have been set up to reconcile parties to a conflict, whether in the communities, at the state level or even at the national level. These efforts involved communication between and among parties to the conflicts at different levels.

These scholarly positions and perspectives demonstrate the state of government conflict mediation strategies to be on course as they are known to be reactive and not proactive. Panels and commissions of enquires are usually instituted whenever there is a conflict and such usually outlive their relevance due to recurring conflicts in the country. Studies have also showed the recurring nature of communal conflicts in the country (Aboh et al., 2023; Fadeyi & Adamu, 2023; Fadeyi & Abdullahi, 2019; Okoli & Ukwandu, 2021) and the larger African region (Yemane & Borowy, 2023). Conflict situations remain endemic in view of the many environmental impact coupled with considerations such as the struggle for lean resources in form of Land and water (Olademo et al., 2021; Orhero, 2020; Zubairu & Agba, 2023). This remains a disturbing situation for successive governments who have made phenomenal efforts to stem the tide and create a peaceful atmosphere for all citizens. Communication and conflict mediation strategies are some of the measures explored by the government.

Such efforts of government have had significant impact on conflict resolution measures in the country. The administration of Yar'Adua reportedly utilised alternative dispute resolution mechanism to address the Niger Delta militancy through the amnesty programme, creation of the Niger Delta Ministry and related intervention (Orhero, 2020). These efforts now considered as impactful strategies helped douse tensions in the area. In contrast, findings from a study also demonstrated that though there have been interventions by government; the conflicts are recurring because of imperfect enforcement of the conflict resolution strategies (Olademo et al., 2021). There is another challenge of coercive and unconstructive conflict management pattern by successive administrations in Nigeria with the Abacha's interventions in the Ife-Modakeke conflicts and Obasanjo's administration solution to the Arogbo Ijaw-Ugbollaji crises (Orhero, 2020). These may have had immediate impact on the spate of violence that accompanied the conflicts but have negative effect due to the fragile peace and the recurring nature of such conflicts in affected areas.

Researchers also conducted some empirical studies on conflict mediation in Nigeria. A study conducted by Abimbola et al (2023) based on survey of residents in select states of North Central Nigeria (Benue, Nasarawa and Plateau) revealed that increased occurrences of conflicts can be linked to higher levels of deprivations such as inequality and poverty among the people. The researchers concluded that equitable resource distribution, inclusive economic growth, and

enhanced access to social services are some of the socio-economic disparities that need to be addressed toward mitigating communal conflicts and promoting peaceful coexistence in the geopolitical zone. The study under review and this current one are similar due to their geographical focus on the North Central region of Nigeria. The difference between the studies stems from the specific variables tested. For the study under review poverty and inequality are critical variables while this study is mainly concerned with communication strategies utilised by government.

A mixed-method study conducted by Olademo et al (2021) was an attempt to identify factors responsible for the conflict between Share and Tsaragi communities in North Central state of Kwara. The study also sought to examine interventions previously activated to resolve the crises. Issues such as the communal clashes arising from land and boundary disputes, religious biases, non-implementation of government white paper, and reluctance of disputants to embrace peace are some of the critical factors that affect conflicts in the areas. This is also related to the indigene and settler dichotomy on one hand, and the betrayer and enemy tag on the other that were identified major factors to the conflicts. Findings of the study showed that interventions by government to mediate in conflicts are defective in terms of enforcement and that failure is a primary factor for recurring conflicts in the country. The government's failure to implement white paper and fire brigade approach are major challenges. The researchers concluded that different tiers offered various interventions alien to the African culture and were deemed ineffective. The difference between the study under review and this current one is that of the specific focus. While the former is based on communities in Kwara, the latter is about select states in North Central.

A related study was conducted by Maikasuwa, Sani and Ibrahim (2024) in which the researchers attempted to understand the place of traditional institutions in conflict resolution and prevention in Nigeria with focus on Sanga LGA of Kaduna State. Findings of the study demonstrated that conflict mediation strategy that emphasised peaceful coexistence was the traditional institution-oriented strategy adopted to mediate in communal conflict in the area. The study, however, showed that factors such as economic, religious and political challenges negatively altered the effectiveness of the traditional measures put in place to address conflicts in the area. Through recommendations, the researchers canvassed constitutional provisions to strengthen the roles of traditional institutions in conflict mediation. With the evaluation of conflict mediation strategy, the study under review is similar to the current one but differ based on its narrow-focus on the traditional institution-oriented strategy as opposed to this study's focus on government communication strategies.

A study on the roles played by traditional rules in conflict mediation in Kwara State was another conducted by Abdulsalam, Olokooba, Okafor and Adika (2020) in which the researchers laid emphasis on the sustenance of democracy. Findings showed that the traditional institutions through the rulers play crucial roles in conflict resolution in a way that fosters democratic stability through peace initiatives. Conclusion drawn from the study is that traditional rulers with good knowledge of local issues that affect individuals and social groups may have the capacity to facilitate effective conflict resolution. The researchers recommended that rulers must be engaged to address the concerns of community members. The focus on communal conflict resolution mechanisms is the common denominator between the study under review and this current one. However, the studies differ in specific geographic scope as it communities of focus.

Theoretic Framework

This study is anchored on the interest-based relational approach model and the conflict transformation theory. The interest-based relational approach is a win-win-oriented model of

conflict resolution that seeks to address underlying interests and needs of all parties to a dispute rather than a focus on their demands and position (Usman et al., 2025). The model has foundations set on the key principles with emphasis on the focus on interests rather than individual positions in the negotiation or mediation process and these foundations are based on Fisher et al (1991) who suggested that the theory is focused on four primary areas. Accordingly, the scholars identified these areas as: 1) the focus on interests rather than the positions taken by parties to the conflict; 2) that the theory separates people from the problems; 3) its emphasis on mutual gains and creative options; and 4) the focus on collaboration and communication.

On account of this model, it is important to take cognizance of the individual differences of parties to a conflict while providing the required assistance to avoid being too entrenched in a fixed position (Thomas & Kilmann, 1978). It has been provided that conflicts can be resolved with the application of the interest-based relational approach, however, some rules are to be observed, and these, according to Thomas and Kilmann (1978) are 1) to ensure that priority is given to good relationships; 2) to separate people from problems; 3) to pay proper attention to interests being presented; 4) to first, listen, before talking; 5) to set out the facts; 6) to jointly explore available options. This theory is applied to this study to provide justification for government's choice of certain communication strategies toward resolving communal conflicts in select states of North Central geopolitical zone.

The second theoretical framework for this study is the conflict transformation theory. The J. P. Lederach has been identified as one of the major proponents of this theory (Botes, 2001). The theory rests on the foundation of Lederach's argument that finding a solution to conflict situation is beyond mere rhetoric that borders on resolution and that the root cause of the conflict must be addressed in a manner that it is transformed (Lederach, 1995). Furthermore, the theorist explained that there may be four dimensions to conflict transformation on the grounds that the concept is multidimensional. The four dimensions identified by the scholar rule transformation, structural transformation, actor transformation and issue transformation. These four are critical in the conflict resolution process. This study is anchored on the conflict transformation theory based on its analysis that supports the use of communication strategies to foster mediation and achieve cohesion in Nigeria.

METHODOLOGY

The research design for this study is a survey. It is based on an elaborate study of the government's communication strategies adopted for conflict mediation in select states of North Central Nigeria. The survey research was considered appropriate to gauge the perceptions of respondents as to the application of the strategies toward finding peace in the conflict-prone region. The population of the study comprised residents in the geographical location known as the North Central zone. Accordingly, the researchers relied on their knowledge of the nature of conflicts in the zone to select areas considered "hotbeds" in the zone. By the foregoing, the researchers imply that there are some conflict-prone areas in the region based on available information and observation. This yielded Agatu (Benue State), Eggon (Nasarawa), and Jos North (Plateau State) as the specific focus for the study. Data from the National Population Commission showed that the three towns have 1, 039, 200 inhabitants.

A sample was taken from the population using the Australian Sample Size calculator to arrive at 600 as the sample for the study. This was achieved by keying certain calculation parameters such as confidence level (95%), population size (1, 039, 200), confidence interval (0.04), upper (0.54000), lower (0.46000), standard error (0.02041), relative standard error (4.08). This implies that 600 is the sample size. However, due to the subtraction of 6 persons from the size on account of the larger study's design to include the individuals in the in-depth interviews (qualitative data), the researchers arrived at 594 as the final sample size for this

study. A multistage sampling technique was utilised to arrive at the final sample units that include respondents in the area of study. These stages involved the use of purposive sampling in the first and second stages to arrive at a selection of Benue, Nasarawa, and Plateau from the list of 6 in the zone and a selection of Agatu, Eggon, and Jos North from the selected states. The questionnaire is the instrument of data collection for this study. It was designed with the aid of a Likert scale for ease of coding, and a sample of one of the questions being (Strongly Agree = 5; Agree = 4; Indifferent = 3; Strongly Disagree = 2; Disagree = 1). Face validity was used to determine the suitability of the instrument, and this was done by experts in the Department of Mass Communication, Glorious University, Ogwa, Edo State, Nigeria. A test-retest method was conducted at a 14-day interval to determine the reliability. The result of the test showed a coefficient of .75 implying that it was reliable. The instrument of data was personally administered to the respondents in the study area with the aid of 2 research assistants. In line with research ethics, respondents were informed of their rights, including voluntary participation and withdrawal from the study at any point in time. They were also ensured of the protection of their identity in the ethical statement provided. SPSS Version 26 was relied upon for the analysis of the data after appropriate coding.

FINDINGS

Table 1: What are the crisis communication strategies used by governments in North Central Nigeria for communal conflict mediation?

Variable/Parameter	Frequency	Per cent [%]	Valid Percent [%]	Cumulative Percent [%]
Community relations	100	17.8	17.8	27.2
Public relations	80	10.7	10.7	71.0
Advocacy	11	2.0	2.0	2.0
Peacebuilding communication	27	4.8	4.8	58.5
Participatory communication	16	2.8	2.8	53.7
Traditional institution approach	97	17.3	17.3	98.8
Civil societies and NGOs approach	12	2.1	2.1	6.9
Dialogue approach	16	2.8	2.8	46.1
Religious organisation approach	23	4.1	4.1	80.6
Aids and donor agencies approach	4	.7	.7	4.8
Media relations	24	4.3	4.3	50.9
Total	562	100.0	100.0	

Source: Field Survey, 2025

Data in Table 2 demonstrated the state of conflict mediation, showing that there is active use of different strategies in the area to find lasting peace. As seen in the table, the strategies range from community relations to media relations, religious and traditional institution approaches, among others.

Table 2: The extent to which the government uses communication for communal conflict mediation in your community

Variable/Parameter	Frequency	Percent [%]	Valid Percent [%]	Cumulative Percent [%]
High	137	24.4	24.4	37.9
Very high	140	24.9	24.9	89.0
Can't tell	76	13.5	13.5	13.5
Low	147	26.2	26.2	64.1
Very low	62	11.0	11.0	100.0
Total	562	100.0	100.0	

Source: Field Survey, 2025

As in Table 2 above, respondents are of the notion that the use of communication for conflict mediation in their area is high. This is demonstrated based on the perception of 24.9 percent of respondents, in addition to another 24.4 percent of them.

Table 3: To what extent have you actively participated in government-sponsored communal conflict mediation efforts?

Variable/Parameter	Frequency	Percent [%]	Valid Percent [%]	Cumulative Percent [%]
High	145	25.8	25.8	46.4
Very high	90	16.0	16.0	86.5
Can't tell	116	20.6	20.6	20.6
Low	135	24.0	24.0	70.5
Very low	76	13.5	13.5	100.0
Total	562	100.0	100.0	

Source: Field Survey, 2025

Table 3 data showed a significantly high rate of participation among respondents in communal conflict mediation forums created by the government. In essence, they were actively involved in the avenues the government created for peace.

Table 4: The crisis communication of the government has influenced my decision to accept to cohabit peacefully with people in my community

Variable/Parameter	Frequency	Percent [%]	Valid Percent [%]	Cumulative Percent [%]
Agree	286	50.9	50.9	50.9
Strongly agree	114	20.3	20.3	92.2
Can't tell	33	5.9	5.9	56.8
Disagree	85	15.1	15.1	71.9
Strongly disagree	44	7.8	7.8	100.0
Total	562	100.0	100.0	

Source: Field Survey, 2025

The data in Table 4 showed that members of the affected communities agreed to cohabit based on their exposure to the crisis communication initiated by the government toward conflict mediation.

Table 5: Tensions are reduced in my community because of the crisis communication of the governments in North Central

Variable/Parameter	Frequency	Percent [%]	Valid Percent [%]	Cumulative Percent [%]
Agree	231	41.1	41.1	41.1
Strongly Agree	99	17.6	17.6	71.5
Undecided	113	20.1	20.1	100.0
Disagree	72	12.8	12.8	53.9
Strongly disagree	47	8.4	8.4	79.9
Total	562	100.0	100.0	

Source: Field Survey, 2025

As seen in Table 13, tensions arising from conflicts are reduced due to the communication of the government in the geopolitical zone, and this is based on the opinion of the majority of respondents.

Table 6: To what extent has the crisis communication of the governments in North Central reduced conflict?

Variable/Parameter	Frequency	Percent [%]	Valid Percent [%]	Cumulative Percent [%]
High	170	30.2	30.2	30.2
Very high	96	17.1	17.1	92.7
Undecided	149	26.5	26.5	75.6
Low	106	18.9	18.9	49.1
Very low	41	7.3	7.3	100.0
Total	562	100.0	100.0	

Source: Field Survey, 2025

Data in Table 6 imply that conflict may have reduced based on the communication strategies adopted by the government toward conflict mediation in select states of North Central Nigeria.

Table 7: The crisis communication efforts of the government have enhanced inter-ethnic cooperation in North Central

Variable/Parameter	Frequency	Percent [%]	Valid Percent [%]	Cumulative Percent [%]
Agree	227	40.4	40.4	40.4
Strongly Agree	111	19.8	19.8	73.3
Undecided	106	18.9	18.9	100.0
Disagree	74	13.2	13.2	53.6
Strongly disagree	44	7.8	7.8	81.1
Total	562	100.0	100.0	

Source: Field Survey, 2025

The implication of the data in Table 7 above is that inter-ethnic cooperation among the ethnic groups in the North Central states of Benue, Nasarawa, and Plateau is enhanced through communication strategies adopted by the government toward conflict mediation.

Table 8: To what extent has the crisis communication of the governments in North Central enhanced inter-ethnic cooperation in North Central?

Variable/Parameter	Frequency	Percent [%]	Valid Percent [%]	Cumulative Percent [%]
High	206	36.7	36.7	36.7
Very high	120	21.4	21.4	91.5
Undecided	80	14.2	14.2	70.1
Low	108	19.2	19.2	55.9
Very low	48	8.5	8.5	100.0
Total	562	100.0	100.0	

Source: Field Survey, 2025

As demonstrated in Table 8 above, inter-ethnic cooperation among the various ethnic groups in the region is highly enhanced through the communication efforts of the government aimed at mediating in conflicts.

DISCUSSION

The main purpose of this study was to assess government communication strategies to address conflicts in the North Central states of Benue, Nasarawa, and Plateau. Based on result from the field trip, this study demonstrated that there is active utilisation of communication as part of efforts to address conflicts in the zone. Accordingly, the study showed that several strategies utilised prominently among the ones utilised are community relations, public relations, traditional institution approach, media relations, and religious organisation approach, among others. Earlier studies such as the ones conducted by Aleshinloye and Orolade (2020), Igben and Timiyan (2023), and Ngwu et al (2020) also showed the use of similar communication strategies in different yet similar conflict scenarios in various parts of Nigeria.

Furthermore, the study also demonstrated the extent of the use of communication strategies for communal conflict mediation in the zone. As seen in the data from the field survey, responses captured by 24.9 percent (very high) and 24. 4 percent (high) are evidence that there was a high level of communication in the zone. Igbashangev and Ogunyemi (2022) also showed in their study that the government has devoted efforts to the use of communication to address the myriads of conflicts that have plagued the North of Nigeria for a long period of time. In contrast, researchers have also shown that there was insignificant use of public relations as a conflict mediation strategy in different parts of Nigeria. This implies that there may be no uniform and equal reaction to conflict situations by the government. While the response might be effective in some situations, it may be the same in others.

The influence of the communication strategy is the main crux of this study as it is based on an assessment of strategies utilised in different conflict situations and contexts in North Central Nigeria. The study showed in Tables 4 – 8 that there is a great influence of communication strategies. Respondents showed that they actively participated in conflict mediation initiatives of the government in order to anticipate genuine responses as to the influence of such measures on them. Relatedly, they also demonstrated that the communication strategies influenced their resolve to cohabit peacefully with people in the same area. This is based on the notion of 50.9 percent of the respondents who agreed and 20.3 percent who strongly agreed to the notion. Chimaroke (2002), in a similar study, also demonstrated that communities in dispute have agreed to a truce in the past on account of the utilisation of a participatory approach to conflict mediation. Abiodun and Salama (2023) also found in a study that communities approached for resolution can also opt to cohabit, setting aside their differences.

The study also revealed that tensions are reduced in communities on the grounds of the adoption and utilisation of communication strategies, and this is based on the perception of 41.1 percent and 8.4 percent who strongly agreed to the notion. This has led to the overall reduction in conflict situations. In respect of the extension, the foregoing is achieved; the study showed that it is high. The implication of the foregoing is that the government deployed communication to address issues, including the underlying cause of conflicts, to bring about reduced tensions and a solution to the conflict situations. This aligned with the conflict transformation theory's construct of paying close attention to addressing the root causes of conflicts.

Findings also showed that inter-ethnic cooperation is enhanced by virtue of the utilisation of communication strategies for conflict mediation in the North Central region of Nigeria. On the extent of the possibility of such cooperation as enhanced through communication, findings of the study demonstrated that it is high. Findings from a study conducted by Saleh (2022) aligned with the foregoing that various faith-based groups used mediation efforts to ensure peaceful coexistence in Nigeria. Researchers such as Dyikuk and Edeh (2022), Kariuki (2015), and Ntem (2022) have also shown the use of various communication strategies to foster inter-ethnic cooperation in different parts of Nigeria and the African continent. This is an indication that communication can be used to foster good relationships, as espoused in the interest-based relational approach model's construct of ensuring that priority is given to ensuring good relationships between and among disputants.

CONCLUSION

In conclusion, the use of communication strategies as a means to mediate in conflict situations is well documented in both research and practice. In North Central Nigeria, the government has explored different measures that ranged from community relations to the use of religious organisations and traditional institutions – all of which are deemed effective in conflict mediation. The use of communication in specific conflicts in the central part of Nigeria has resulted in ensuring peaceful coexistence of the various ethnic groups in the zone. In line with the findings and conclusions, the recommendations are that:

1. Stakeholders must continue to explore more effective ways to deploy communication to resolve conflict situations, even in seemingly difficult circumstances, as seen in terror-related conflicts and other violent encounters.
2. Community members and interested organisations must continue to leverage the power of communication, especially the dialogue and community relations aspects, to negotiate and find lasting solutions to issues arising from communal and other types of conflicts common in the African continent and Nigeria in particular.

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CRISIS COMMUNICATION IN MALAYSIAN MEDIA: A COMPARISON OF ASTRO AWANI AND MALAYSIA KINI'S COVERAGE OF THE PUTRA HEIGHTS GAS PIPELINE FIRE

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Abstract: The purpose of this study is to examine the reporting of the April 2025 gas pipeline fire incident in Putra Heights by two Malaysian news outlets, Astro Awani and Malaysiakini. The study aimed to examine headline framing, source types, and thematic patterns in the coverage of both media outlets. A total of 273 news articles published within the first seven days following the incident (174 from Astro Awani and 99 from Malaysiakini) were analysed using a mixed-methods content analysis approach, integrating quantitative analysis of content frequencies and distributions with qualitative thematic examination. Results show that both publications mainly used factual headlines and relied on official sources. However, Malaysiakini offered a wider range of themes, such as conflict and consequences, whereas Astro Awani focused on human interest and responsibility. In conclusion, the two media's different editorial concepts affected how they presented the crisis narratives, even though they both followed the rules of factual and source credibility. This study improves our knowledge of the media's function in crisis communication and emphasizes how crucial fair reporting and public media literacy are in influencing how society reacts to crises.

Keywords: Astro Awani, Malaysiakini, crisis communication, news sources, Putra Heights gas pipeline fire.

INTRODUCTION

In the digital media era, news organisations play a critical role in communicating environmental and technological crises, shaping public understanding, emotional responses, and levels of trust in institutions (Salleh & Ibrahim, 2015). During disasters, crisis communication becomes especially important for informing the public, reducing uncertainty, and facilitating accountability (Seeger, 2006). Media coverage does not merely transmit information; it actively constructs meaning, influencing how audiences interpret risk, responsibility, and institutional performance.

Malaysia's experience with environmental and infrastructural disasters provides an important context for understanding the significance of crisis reporting. Over the past several decades, the country has witnessed a series of landslides and structural failures, many of which were attributed not solely to natural causes but also to human negligence, inadequate maintenance, and weak regulatory enforcement. These incidents have repeatedly raised concerns about environmental governance, urban development practices, and institutional accountability.

Among the most notable cases were the landslides in Bukit Antarabangsa, Ulu Klang, in July 1998 and October 2000, reportedly linked to poorly maintained underground drainage systems. In July 1988, the collapse of the jetty at Pengkalan Sultan Abdul Hamid in Butterworth — then one of the busiest piers in the country — resulted in 32 fatalities and more than 1,600 injuries, exposing serious infrastructural vulnerabilities. The 1993 collapse of a block of the Highland Towers condominium in Hulu Klang, Selangor, which claimed 48 lives following a slope failure, remains one of the most tragic landslide disasters in Malaysia's history.

Subsequent incidents, including the 2002 Taman Hillview landslide and the 2011 tragedy at the Hidayah Madrasah Al-Taqwa orphanage in Hulu Langat, further underscored the recurring nature of slope-related disasters. Even in cases where casualties were avoided, such as the 2012 soil movement in Puncak Setiawangsa, mass evacuations reflected ongoing environmental risk (Ahmad & Lateh, 2016).

The recurrence of such disasters has produced profound physical, psychological, and socio-economic consequences for affected communities. Whether natural or human-induced, disasters disrupt livelihoods, hinder economic development, and undermine socio-political stability (Ahmad et al., 2011). Repeated incidents have also intensified public scrutiny of development practices, regulatory oversight, and crisis management mechanisms in Malaysia.

Against this backdrop of recurring environmental risk, the gas pipeline fire that occurred in Putra Heights on 1 April 2025 represents another significant industrial crisis. The explosion, which took place near residential areas, generated widespread public concern due to its scale and its potential environmental and social implications. In the immediate aftermath, the incident received extensive media coverage, with outlets such as Astro Awani and Malaysiakini providing continuous updates as the situation unfolded.

In reporting such crises, news organisations frame events through headline construction, source selection, and thematic emphasis. These framing choices shape how audiences perceive risk, assign responsibility, and evaluate institutional responses (Entman, 1993). Comparing how different media outlets report the same event therefore offers valuable insight into broader patterns of environmental risk communication and media influence.

This study examines how Astro Awani and Malaysiakini framed the Putra Heights gas pipeline fire, focusing on headlines, sources, and dominant themes. Although both outlets covered the same incident, their editorial orientations and professional cultures may produce differing framing strategies. Understanding these differences contributes to environmental communication scholarship by illustrating how media narratives shape public interpretation of environmental hazards within a media-diverse society.

While previous Malaysian research has examined media framing in political, health, and social contexts, comparatively limited attention has been given to how mainstream and independent media frame sudden environmental or industrial crises in real time. By analysing coverage of the Putra Heights gas pipeline fire, this study addresses this gap and provides empirical insight into crisis communication practices within Malaysia's environmental risk landscape.

This study examines how Astro Awani and Malaysiakini framed the Putra Heights gas pipeline fire, focusing on three key dimensions of media framing: headline construction, source selection, and thematic emphasis. Although both outlets reported on the same incident, their differing editorial orientations may have influenced how the crisis was presented to the public. Accordingly, this study addresses the following research questions: (RQ1) How did Astro Awani and Malaysiakini frame the Putra Heights gas pipeline fire through their headlines? (RQ2) What types of sources were prioritised by Astro Awani and Malaysiakini in their coverage of the incident? (RQ3) What dominant themes emerged in the reporting, and how did these themes differ between the two news outlets? By addressing these questions, the study contributes to a deeper understanding of media framing practices in environmental and industrial crisis communication within the Malaysian context.

LITERATURE REVIEW

Crisis Reporting

Crisis reporting plays a central role in shaping public perception, trust, and public response during environmental and technological emergencies. In the context of environmental communication, the media functions as a key intermediary between authorities, affected communities, and the wider public by translating complex risk information into accessible narratives. In Malaysia, media outlets such as Astro Awani and Malaysiakini operate within different ownership structures and editorial orientations, which influence how environmental crises are framed and reported. Effective crisis reporting requires journalistic competence in navigating uncertainty, scientific and technical information, institutional sources, and public expectations (Rahim & Nazmi, 2016).

However, the Malaysian media landscape does not operate in isolation from broader political and economic forces. Like other social institutions, the media functions within a network of state actors, political elites, corporate entities, and regulatory structures that seek to influence news production (Anuar, 2005). The ownership structure of mainstream media, which is often linked to political interests, has been shown to shape editorial agendas, source selection, and framing strategies. Environmental issues, particularly those connected to state-led development projects, may be underreported, reported superficially, or framed in ways that align with official narratives to preserve political and social stability (Hussein & Siarap, 2006; Norma & Hasan, 2007). Within such a constrained environment, critical perspectives that challenge governmental policy may receive limited space, while self-censorship may emerge due to legal and institutional pressures (Anuar, 2005; Smeltzer, 2008).

Empirical research on environmental disaster reporting in Malaysia reflects these structural dynamics. A comparative content analysis of Utusan Malaysia and The Star covering the 2012 Taman Puncak Setiawangsa landslide found that, despite differences in language and readership, both newspapers demonstrated remarkably similar reporting patterns (J. Ahmad & Lateh, 2016). Coverage was predominantly presented as straight news, heavily reliant on official sources such as government officials and ministers and largely focused on follow-up actions taken by authorities. Critical engagement with structural causes, accountability, or long-term environmental governance was minimal. While The Star incorporated more “humanity” elements by highlighting residents’ experiences, both newspapers framed the disaster primarily through governmental response narratives. These findings suggest that mainstream environmental crisis reporting in Malaysia tends to privilege official accounts and adopt surface-level reporting approaches, reflecting broader institutional and ownership influences.

Existing studies on Malaysian crisis and disaster communication, particularly during the COVID-19 pandemic and recurring flood events, further demonstrate that media framing often emphasises risk severity, government intervention, and collective responsibility. Analyses of mainstream outlets such as Berita Harian and The Star show a tendency to align coverage with official narratives, particularly during national emergencies, shaping public understanding and compliance with safety measures (Chan, 2023). While such framing can support risk management and social order, it may also limit critical discussion of environmental accountability and long-term mitigation.

Crisis communication scholarship highlights that environmental and industrial disasters can have lasting implications for institutional credibility and public trust when handled inappropriately (Zafra & Maydell, 2018). Proactive crisis communication strategies, including timely information dissemination, transparency, and agenda management, are essential during the crisis response phase, which is characterised by heightened uncertainty, emotional stress,

and fear, particularly when incidents involve environmental damage, displacement, or loss of life (Sebastião, 2016; Seeger et al., 2003).

Empirical research in Malaysia further demonstrates the growing role of digital and social media in environmental crisis communication. During flood disasters and the COVID-19 outbreak, institutions such as the University of Malaya Medical Centre (UMMC) relied heavily on official social media platforms to reduce uncertainty, provide practical guidance, and reassure the public, frequently amplifying information from authoritative sources such as the Ministry of Health (Ibrahim et al., 2024). These findings highlight the importance of credibility, consistency, and emotional sensitivity in communicating environmental and health risks.

Studies of environmental disaster reporting in Malaysia also reveal differences in audience interpretation and emotional response. Research on flood communication in Sarawak found that disaster victims expressed stronger emotional reactions and greater attribution of blame toward authorities, while non-victims responded more cognitively and sought preventive and preparedness information (Li & Ting, 2025). Comparative analyses between mainstream and alternative media outlets further indicate differences in coverage volume and narrative emphasis, even when framing structures appear similar, suggesting the influence of agenda-setting and editorial positioning in environmental crisis reporting (Ee & Nik Hasan, 2024). Environmental crisis reporting also carries significant societal consequences. Studies indicate that social media is a primary source of information during floods and environmental disasters, enabling rapid dissemination of warnings and updates but also facilitating the spread of misinformation and panic (Mohd Zahari et al., 2022; Yap et al., 2023). While coordinated mass media reporting during national emergencies has been shown to reduce uncertainty and promote compliance with safety measures (Mat Piah, 2020), scholars caution that digital platforms often amplify both credible information and rumours, making institutional trust a key mediating factor in public response (Norazan et al., 2024).

A recent comparative study of Malaysian and Indonesian journalists covering tsunami disasters (Mustafa et al., 2021) highlights several structural and professional constraints that shape environmental crisis reporting. The study found that many journalists assigned to disaster coverage lack specialised training in environmental or disaster journalism, increasing the risk of superficial reporting and factual omissions, particularly in technically complex emergencies. Organisational preparedness was also reported to be uneven, with journalists often required to perform multiple technical roles in fast-paced, breaking news environments, thereby intensifying professional pressures. In addition, newsroom hierarchy, editorial gatekeeping, ownership structures, and perceived audience expectations were found to influence decisions about content selection and framing. These findings suggest that environmental crisis communication is shaped not only by framing choices but also by institutional capacity, professional competence, and internal newsroom power dynamics.

Crucially, the structural tension between mainstream and independent media during industrial and environmental crises is not unique to the Malaysian context but reflects a documented global phenomenon. Research on global communication indicates that sudden technological and environmental emergencies are frequently covered according to a “indexing” model, in which coverage is heavily indexed to official state and corporate sources to sustain institutional order and institutional trust (Bennett, 1990). Conversely, independent and digital-native alternative media outlets around the world tend to reject this top-down reliance by actively introducing divergent interpretive lenses, framing industrial risks through questions of long-term accountability, regulatory gaps, and systemic failures (Nisbet, 2009). By connecting the local dynamics of the Putra Heights pipeline fire to these wider international reporting structures, this study raises its analytical framework from a single-country observation to a cross-contextual validation of global crisis communication practices.

Overall, existing literature underscores the importance of transparent, timely, and accurate media communication in managing environmental and industrial crises. At the same time, structural constraints, ownership patterns, and reliance on official sources continue to shape how environmental disasters are framed within Malaysia's media ecosystem. Despite extensive research on floods, public health emergencies, and political crises, limited studies have conducted direct comparative analyses of how mainstream and independent media frame sudden environmental or industrial disasters. Addressing this gap, the present study examines Astro Awani's and Malaysiakini's coverage of the Putra Heights gas pipeline fire to better understand media framing practices and their implications for environmental communication and public trust.

The Integration of Agenda Setting and Framing in Crisis Communication

To systematically deconstruct the media dynamics of the Putra Heights pipeline fire, this study relies on a dual-theoretical framework consisting of Agenda-Setting and Framing theories. These two theories operate sequentially in this research design. First, Agenda-Setting Theory provides the mechanism to evaluate macro-salience. Second, because an issue's prominence is inherently tied to how it is interpreted, the study transitions into Framing Theory. Framing serves as the micro-level analytical tool required to shifting the focus from what is covered to how the crisis is structurally packaged through specific headlines, institutional sources, and thematic narrative tracks.

Agenda-setting and framing theories are central to understanding how environmental crises are constructed in public discourse. Agenda-setting theory argues that media influence public priorities by determining which issues receive attention and prominence (Mccombs & Shaw, 1972). In environmental communication, scholars have shown that the visibility, frequency, and placement of environmental stories shape public perceptions of risk severity, urgency, and policy importance. When environmental disasters receive sustained coverage, they are elevated to the level of national concern; conversely, limited or episodic coverage may contribute to issue fatigue or marginalisation. Research in environmental journalism has consistently demonstrated that media salience influences not only public awareness but also policy attention and governmental responsiveness, especially during industrial accidents, climate-related disasters, and public health emergencies.

While agenda-setting explains issue prominence, framing theory provides insight into how environmental crises are interpreted. Framing refers to the selection and emphasis of particular aspects of reality in ways that promote specific problem definitions, causal attributions, moral evaluations, and recommended remedies (Entman, 1993). Because of the emergent reporting nature in industrial crises, (Entman, 1993) structural foundation offers the basic mechanism to assess how media outlets diagnose the root cause of the Putra Heights pipeline fire, assign moral blame and justify remedies that may be taken. To operationalize this mechanism in systematic content analysis, this study adopts the multi-dimensional framing matrix by (Semetko & Valkenburg, 2000), as the core analytical framework. By using (Semetko & Valkenburg, 2000), model to break the text down into individual, measurable levels: the responsibility frame measures who is responsible for the infrastructure failure, the human interest frame reflects the emotional and human effects of the explosion on the local community, the consequence frame tracks the economic, social and environmental damage, and the conflict frame analyzes any institutional friction between authorities, corporate entities and independent watchdogs. Building on the functional definitions of (Entman, 1993), and on the specialized domains of (Semetko & Valkenburg, 2000), this research moves beyond surface-level reading, translating abstract theories of communication into an empirical toolkit

that can identify how crisis narrative paths get processed structurally by mainstream and alternative media.

In environmental communication scholarship, framing has been widely used to examine how media narratives construct responsibility—whether crises are attributed to natural causes, technical failure, corporate negligence, regulatory weakness, or broader structural problems. Scholars such as Boykoff (2009) argue that environmental issues are often framed strategically to resonate with public values, for example through newsroom routines, professional norms, organisational hierarchy, ownership influence and journalistic expertise. We can say that environmental communication is shaped by institutional power structures, not just narrative choices.

Environmental crises are particularly sensitive to framing because they involve uncertainty, risk perception, and emotional response. The way a disaster is framed—whether as an isolated incident, a systemic governance failure, or a test of institutional competence—can significantly influence public trust and blame attribution (Zhang & Zhang, 2024). Research in risk communication further suggests that media frames shape how audiences interpret severity, vulnerability, and responsibility, thereby affecting behavioural responses and support for policy change (Happer & Philo, 2013; Smeltzer, 2008; Sofian et al., 2026). In this sense, framing operates not merely at the level of narrative style but as a mechanism that structures public understanding of environmental governance and institutional legitimacy.

Importantly, agenda-setting and framing are interconnected. (Boykoff, 2009) demonstrates that environmental crisis coverage operates at both agenda-setting and framing levels. Media institutions determine not only the prominence of environmental issues but also the interpretive lenses through which such crises are understood. Through selective emphasis on causality, responsibility, and moral evaluation, environmental reporting constructs meaning rather than merely transmitting information. These processes are further shaped by newsroom hierarchy, ownership structures, and professional routines, suggesting that environmental narratives are institutionally mediated rather than neutral reflections of events. Applying both theories therefore allows for a comprehensive analysis of how environmental crises are made visible and how their meanings are constructed, contested, or stabilised within Malaysia's media landscape.

METHODOLOGY

This study employs a comparative mixed-methods content analysis to examine how Astro Awani and Malaysiakini framed the Putra Heights gas pipeline fire. Content analysis is widely used in crisis and environmental communication research to identify patterns in media framing, source usage, and thematic emphasis (Entman, 1993; Semetko & Valkenburg, 2000). The mixed-methods approach allows the study to combine systematic quantitative comparison with qualitative interpretation of media narratives.

The analysis focuses on three dimensions: headline framing, news sources, and thematic content. Drawing on framing theory, the study examines how media highlight certain aspects of an environmental crisis; such as responsibility, consequences, or human impact; while downplaying others, thereby shaping public understanding and emotional responses. Using purposive sampling, the study analyses written news articles published by Astro Awani and Malaysiakini over a specific 7-day data collection window from 1 April 2025 to 7 April 2025, a critical period when dominant crisis frames are typically established (Houston et al., 2012). Only articles that substantively reported on the incident were included, while brief mentions and duplicated reports were excluded. Data were collected from the official online portals of both outlets using the keyword “Putra Heights”. Video and live broadcast content were excluded to ensure consistency in textual analysis. A strict filtering process was applied

to ensure high empirical reliability and conceptual clarity, systematically excluding brief mentions and duplicated reports from the final sample. Brief mentions were operationalized as articles in which the Putra Heights incident was only mentioned in passing, in bulleted crime rounds or weekly event roundups, without independent narrative development. Duplicated reports were identical syndicated wire text or articles duplicated with identical body copy but under slightly different headlines; in these cases, only the earliest version was retained. Thus, only articles with a significant focus on and report of the primary industrial crisis were selected, giving rise to the final consolidated sample of 273 articles.

The population consists of Malaysian news media organisations reporting on national crises. Using purposive sampling, this study focuses on Astro Awani and Malaysiakini due to their contrasting ownership structures, editorial orientations, and audience reach.

A structured coding scheme, adapted from established framing models (Semetko & Valkenburg, 2000), was used. To capture the agenda-setting function at the macro-level, the coding scheme initially tracked media salience as a primary variable. This was operationalized by the daily chronological volume, frequency of publication and the duration of coverage during the 7-days cycle. This quantitative tracking served as the basic empirical baseline for the measurement. It ranked the Putra Heights crisis on each outlet's editorial agenda.

Quantitatively, articles were further coded for headline framing (factual or emotional), source type (official or citizen), and thematic frames, including conflict, consequences (environmental, social, or economic), responsibility, moral framing, and human interest. Qualitatively, the coding scheme included a close textual analysis framework to interpret the message tones, in the news copy across both portals. To enrich the empirical depth of these structural categories, the coding approach also looked closely at the "tone" of each news report. By paying attention to tone alongside the main themes, the analysis could capture how each story felt emotionally and how critical or supportive it was. Including tone in the research process helped make sure that the emotional details found later were based on a clear, consistent method so the results were not just a matter of personal opinion. The qualitative track operationalized textual parameters editorial tone, to systematically unpack the micro-level framing patterns. The editorial tone was qualitatively coded to determine how the crisis was felt emotionally, capturing whether the text took on a reassuring, community-centric, and post-crisis recovery tone, or an adversarial, critical, and investigative tone that highlighted institutional friction.

Frequencies and proportions were analysed to compare framing patterns between the two media organisations. Qualitatively, selected articles were examined through close textual analysis to explore how environmental risk, public safety, responsibility, and disaster narratives were constructed. This qualitative component allows for deeper interpretation of language use, narrative emphasis, and contextual framing that cannot be fully captured through numerical analysis alone, particularly in understanding how environmental crises are meaningfully represented to the public.

To ensure reliability, a pilot coding exercise was conducted with a second independent coder. This process helped refine coding categories and reduce interpretive bias prior to full analysis (O'Connor & Joffe, 2020).

FINDINGS

A total of 273 news articles were analysed in this study, comprising 174 articles from Astro Awani and 99 articles from Malaysiakini. The substantial volume of coverage reflects the high news value of the Putra Heights gas pipeline fire and its significance as a national infrastructure and environmental crisis. The findings are presented according to three analytical dimensions:

headline framing, source usage, and thematic emphasis, allowing for a direct comparison between the two media outlets.

Both Astro Awani and Malaysiakini demonstrated a strong preference for factual headline framing in their coverage of the incident. Astro Awani recorded 99.4% factual headlines, with only a negligible presence of emotional framing. Similarly, 100% of Malaysiakini's valid headlines were framed factually, with no emotional headlines identified. This consistent reliance on neutral and informational headlines across both outlets suggests a shared editorial approach during crisis reporting, prioritising clarity, accuracy, and public reassurance over sensationalism. Despite differences in ownership structure and editorial positioning, both media organisations exercised editorial restraint in headline construction when reporting on the environmental disaster.

In terms of sourcing, both Astro Awani and Malaysiakini relied predominantly on official sources. Astro Awani cited official voices in 91.4% of its articles, while Malaysiakini recorded a comparable figure of 90.9%. Citizen sources, including eyewitnesses and affected residents, were minimally represented in both outlets.

This heavy dependence on institutional sources reflects a top-down communication pattern, where authorities, government agencies, and experts were positioned as the primary narrators of the crisis. The similarity in sourcing patterns indicates that, regardless of media type, both mainstream and alternative outlets prioritised verified and authoritative information during the early stages of the disaster.

Thematic analysis revealed that responsibility attribution was the dominant frame used by both media outlets. Astro Awani emphasised responsibility in 60.3% of its coverage, while Malaysiakini recorded a similar emphasis at 58.6%. This focus highlights the media's role in scrutinising accountability, particularly in relation to institutional, technical, or governance failures. Malaysiakini's narrative structure often adopted an adversarial tone in attributing responsibility, framing the pipeline explosion not as an isolated technical failure but as a systemic regulatory oversight. The story blueprint in Malaysiakini was built in a way that systematically highlighted institutional friction, often by juxtaposing statements from corporate bodies directly against critical demands from local action committees and environmental watchdogs, thereby intensifying the conflict frame.

Human interest emerged as the second most prominent theme in both outlets, though Astro Awani placed slightly greater emphasis on personal narratives compared to Malaysiakini. Coverage of consequences, including environmental, social, and economic impacts, appeared at comparable levels across both platforms. However, Malaysiakini showed a relatively stronger focus on conflict, reflecting its tendency to highlight institutional tensions and structural issues even during crisis situations. Astro Awani's coverage took a more reassuring, people-focused approach. Their articles often highlighted community spirit and the effectiveness of those in charge, using comforting phrases like "situasi terkawal" (situation under control) and "bantuan segera disalurkan" (immediate aid dispatched). Instead of focusing on who was at fault, Astro Awani's stories followed a clear pattern where they began by sharing the immediate struggles and emotions of those forced to leave their homes, then spotlighted the courageous work of first responders, and finally ended with promises from officials to restore safety. This approach helped reassure the public and showed confidence in how the crisis was being managed.

Overall, the thematic patterns suggest that while both outlets shared common framing priorities, subtle differences existed in narrative emphasis, reflecting their respective editorial orientations.

DISCUSSION

This study examined how two Malaysian news outlets with different editorial orientations, Astro Awani and Malaysiakini, reported the Putra Heights gas pipeline explosion. By analysing headline framing, source selection, thematic emphasis, and message tone, the findings offer insight into how environmental crises are constructed within Malaysia's media landscape and how editorial positioning influences crisis communication practices.

Headline Framing and Professional Norms in Crisis Reporting

The first objective examined how both outlets constructed their headlines when covering the pipeline explosion. The findings indicate a remarkably high level of factual framing in both organisations. Astro Awani recorded 99.4% factually framed headlines, while Malaysiakini demonstrated complete reliance on factual headlines without emotionally charged language. At first glance, the similarity between these outlets may appear surprising, given Malaysiakini's reputation for publishing critical and sometimes provocative content. However, the convergence reflects broader norms of responsible journalism during crisis situations. In emergencies involving public safety and potential fatalities, journalists often prioritise accuracy, caution, and verification over sensationalism. Crisis communication scholarship emphasises that clear and reliable information plays a crucial role in reducing uncertainty and preventing misinformation during high-risk events (Sebastião, 2016; Seeger, 2006).

These findings suggest that professional norms within journalism can temporarily override ideological differences between media organisations. During the early stages of a crisis, both mainstream and alternative media appear to adopt a restrained reporting style that prioritises factual communication and public reassurance.

In the Malaysian context, crisis reporting is heavily influenced by the regulatory environment and the overarching framework of media ownership. Media outlets in Malaysia, such as Astro Awani and Malaysiakini, operate under the guidelines set by the Malaysian Communications and Multimedia Commission (MCMC), which emphasizes responsible reporting. This regulatory oversight promotes a cautious approach in news coverage, particularly during crises that may affect public safety or national interest. The commitment to factual reporting observed in this study reflects an awareness of the potential consequences of misinformation during critical situations, which can exacerbate public anxiety and hinder effective crisis management.

Moreover, cultural considerations also play a crucial role in shaping journalistic practices in Malaysia. The emphasis on maintaining social harmony and avoiding sensationalism aligns with the concept of "*kebahjikan*" (well-being) that pervades Malaysian society. Media organizations are often aware of their responsibility to foster a sense of community trust and cooperation during crises. This perspective reinforces the preference for neutral and factual reporting, as evidenced in the analyzed articles. By prioritizing informative content that offers clear insights into the crisis, Malaysian media serve not only as sources of information but also as facilitators of public understanding, thereby contributing to a more informed citizenry in navigating complex situations.

Source Selection and the Hierarchy of Institutional Credibility

The second objective examined the sources used in reporting the crisis. The results reveal a strong reliance on institutional actors in both outlets, with official sources appearing in 91.4% of Astro Awani articles and 90.9% of Malaysiakini coverage. These sources included

government officials, fire and rescue authorities, law enforcement agencies, and corporate actors such as Petronas and DOSH. Citizen voices appeared far less frequently, accounting for only 8–9% of coverage.

This pattern reflects what communication scholars describe as the hierarchy of credibility, where institutional actors are prioritised as primary sources because they are perceived as authoritative and reliable during emergencies. In fast-moving crisis situations, journalists often depend on official sources to obtain verified information, technical explanations, and real-time updates.

The findings are consistent with earlier research on environmental disaster reporting in Malaysia. For example, Ahmad & Lateh (2016) found that coverage of the Taman Puncak Setiawangsa landslide relied heavily on government officials and ministers, with limited engagement with alternative perspectives or structural explanations of the disaster. Similarly, (Chan, 2023) observed that Malaysian media coverage during national emergencies frequently emphasises official narratives and institutional responses.

This reliance on institutional voices also reflects broader structural characteristics of Malaysia's media environment. Scholars such as Anuar (2005), Nik Norma (2007), and Smeltzer (2008) have argued that political and institutional influences shape editorial practices in Malaysian media, often privileging official accounts while limiting critical or oppositional perspectives. Within such contexts, journalists may depend on authoritative sources not only because of professional norms but also due to institutional expectations and access constraints (Lee et al., 2017).

Interestingly, Astro Awani incorporated slightly more citizen voices than Malaysiakini. Although the difference is marginal, this inclusion may indicate an attempt to incorporate human-interest perspectives that personalise the crisis experience. Such narratives can introduce emotional resonance while still reinforcing broader messages of institutional response and recovery.

In Malaysia, the reliance on official sources in news reporting is shaped by both the media regulatory landscape and the cultural inclination towards respecting authority. The Malaysian Communications and Multimedia Commission (MCMC) enforces guidelines that encourage media outlets to prioritize verified information, particularly during crises where accurate reporting can have significant implications for public safety. This regulatory framework promotes a top-down communication pattern, whereby government officials and experts are often viewed as the most reliable sources of information. Consequently, outlets like Astro Awani and Malaysiakini gravitate toward official narratives, reflecting an institutional trust that aligns with broader societal values.

Additionally, the cultural context in Malaysia, which emphasizes consensus and harmony, further contributes to this sourcing trend. In times of crisis, there is a prevalent ethos that prioritizes statements from authoritative figures and institutions, as these are perceived as more dependable in providing clarity and assurance to the public. The minimal representation of citizen sources, such as eyewitness accounts, can be attributed to this inclination to uphold a narrative structured around institutional expertise. While such an approach can enhance the perceived credibility of reporting, it may also limit the diversity of perspectives presented, particularly those of individuals directly impacted by the crisis.

Thematic Framing and Editorial Identity

The third objective analysed the thematic patterns used by both outlets when reporting the crisis. While both organisations placed strong emphasis on responsibility attribution—appearing in 60.3% of Astro Awani articles and 58.6% of Malaysiakini coverage—clear differences emerged in the range of themes used.

Astro Awani's coverage demonstrated a relatively focused thematic approach. Its reporting emphasised responsibility attribution and human-interest narratives that highlighted victims, community experiences, and institutional responses. These themes were frequently accompanied by official explanations, safety assurances, and recovery efforts. Such reporting reflects the role often associated with mainstream media organisations in Malaysia, which frequently emphasise stability, institutional competence, and national cohesion during periods of disruption.

This pattern aligns with earlier observations by Nik Norma (2007) and Anuar (2005), who argue that mainstream Malaysian media often frame issues in ways that support social order and institutional legitimacy. In crisis contexts, the media may therefore act as an intermediary between authorities and the public, communicating official responses while reinforcing confidence in crisis management efforts.

In contrast, Malaysiakini demonstrated greater thematic diversity in its coverage. In addition to responsibility attribution and human-interest narratives, the outlet included higher proportions of conflict (11.1%) and consequence (12.1%) frames. These themes suggest a broader interpretive scope, where the crisis was not only reported as an immediate emergency but also examined in terms of governance issues, systemic weaknesses, and long-term implications.

From a narrative perspective, these differences illustrate how editorial orientation shapes the construction of crisis reporting. Astro Awani largely presented the incident through narratives of institutional management and stabilisation, emphasising official responses and efforts to restore public safety. Malaysiakini, however, demonstrated a greater tendency to highlight governance issues, systemic implications, and potential long-term consequences of the incident. This pattern is consistent with earlier studies on Malaysian media, which show that Malaysiakini often adopts a more critical stance toward state institutions and government responses as part of its watchdog role in the media ecosystem (Sofian et al., 2025; Sofian et al., 2026).

Within the Malaysian context, the thematic emphasis on responsibility attribution aligns with the media's critical role in holding authorities accountable, particularly in a country where institutional transparency and governance are often scrutinized. The persistent focus on accountability reflects not only a journalistic commitment to informing the public but also a societal expectation for media outlets to serve as watchdogs in crises. This is significant in a landscape where public trust in institutions may be fragile, necessitating a clear narrative on who is responsible for crises and the subsequent actions taken to address them.

Editorial Tone and Strategic Message Construction

Another difference between the two outlets emerged in the tone of reporting. Astro Awani displayed a stronger tendency toward positive messaging, with many articles emphasising reassurance, institutional response, recovery efforts, and community solidarity. This approach aligns with traditional crisis communication strategies, which aim to reduce public anxiety and restore a sense of stability following disruptive events.

Malaysiakini, in contrast, recorded a slightly higher proportion of negative tones in its coverage. These messages often emphasised concerns, criticisms, or the seriousness of the incident. Although the outlet still relied on factual reporting, its tone occasionally reflected a more investigative orientation that highlighted potential weaknesses in crisis management or institutional accountability.

The neutral tone that dominated many Malaysiakini articles also suggests a journalistic strategy focused on presenting information with minimal emotional framing. Such reporting

allows readers to interpret events independently, reinforcing the outlet's reputation for analytical and issue-oriented journalism.

These tonal differences illustrate how editorial values influence crisis communication strategies. While Astro Awani prioritised reassurance and social stability, Malaysiakini appeared more inclined to maintain critical distance and highlight broader governance implications.

CONCLUSION

This study fills the research gap related to media framing of sudden industrial crises in Malaysia's environmental communication field. It adopts an empirical real-time comparative method to analyze coverage of the Putra Heights gas pipeline fire by mainstream digital media Astro Awani and independent media Malaysiakini. The study finds that both outlets used fact-based headlines and relied heavily on official sources, but they differed significantly in editorial focus, tone, and thematic diversity. Most previous literature has centred on long-term public health crises or general natural disasters, and this study confirms that media ownership and editorial orientation shape differentiated risk narratives for rapidly occurring technological emergencies.

Astro Awani's coverage originated in stability, reassurance and institutional authority, reflective of its position in a state-aligned media context where social order and public calm are the dominant issues in environmental crises. On the other hand, Malaysiakini filled the alternative space of this research gap, relying on its editorial independence to expand the interpretive perspectives, including critical watchdog elements to the crisis discourse. By giving greater attention to conflict, accountability, and structural weaknesses, Malaysiakini expanded the environmental crisis narrative beyond immediate technical explanations to include broader questions of governance, responsibility, and risk management. Such framing is significant within environmental communication, as it encourages public reflection on systemic causes of environmental hazards rather than treating disasters as isolated events.

Taken together, these findings demonstrate how shared professional norms of accuracy and factual reporting coexist with divergent editorial cultures, producing distinct crisis narratives even when covering the same environmental disaster. The interaction between institutional alignment, editorial independence, and crisis journalism shapes not only how environmental risks are presented, but also how responsibility, trust, and public understanding are constructed.

These dynamics highlight the necessity for media organizations in Malaysia to navigate the delicate balance between adhering to professional standards and addressing the public's need for comprehensive coverage. As media outlets like Astro Awani and Malaysiakini contribute to the formation of public discourse during crises, their editorial choices and sourcing strategies significantly impact societal perceptions of accountability and trust. By fostering media literacy among the public, there is an opportunity to empower citizens to critically engage with crisis narratives, ultimately enhancing their understanding of environmental issues and the institutional responses to them.

Future research could extend this analysis by incorporating audience reception studies to examine how different environmental framing strategies influence public trust, risk perception, and behavioural responses. Comparative studies across other environmental crises would further enrich understanding of the media's role in shaping environmental awareness and crisis communication in Malaysia.

To ensure empirical transparency and provide a foundational baseline for future research, several explicit limitations of the current study must be acknowledged. First, the data collection framework operates within a strict 7-day chronological window (April 1, 2025, to

April 7, 2025) immediately following the Putra Heights pipeline fire. While this short-term cycle captures the most intense and critical phase of initial crisis framing, it does not account for long-term narrative shifts, follow-up investigative journalism, or the enduring policy discourse that develops months after an industrial disaster.

Second, this study focuses exclusively on text-based online news articles. By excluding multimedia content such as live television broadcasts, video clips, and real-time social media streams from Astro Awani and Malaysiakini the analysis misses out on visual framing, vocal tone, and the sensory elements unique to digital broadcast journalism. Finally, the study comparative framework relies on data from just two media outlets. While these organizations represent distinct editorial models within Malaysia, the findings cannot be generalized to reflect the country's entire media landscape, including mainstream print newspapers, regional vernacular media, or citizen journalism platforms.

Acknowledging these boundaries does not weaken the findings instead, it provides a clear roadmap for future research. Subsequent studies can build on this foundation by expanding the sample size, integrating multimedia datasets, and tracking the coverage over a longer period to fully understand how risk communication evolves after a crisis.

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AN ANALYSIS OF THE SAMARINDA CITY GOVERNMENT'S DIGITAL PUBLIC RELATIONS COMMUNICATION STRATEGY THROUGH INSTAGRAM IN SHAPING THE LOCAL GOVERNMENT IMAGE

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Abstract: The advancement of digital technology has transformed public communication practices, particularly in how governments utilize social media as a public relations tool. This study aims to analyze the digital public relations communication strategy employed by the Samarinda City Government through the Instagram platform in shaping the image of the local government. This research adopts a qualitative approach using a case study method, focusing on the Instagram account “samarinda.beradab” as the primary object of analysis. Data were collected through documentation and non-participatory observation of published content, supported by statistical data from social media analytics platforms. Data analysis was conducted using qualitative content analysis based on image-building indicators, including transparency, closeness, professionalism, responsiveness, and positive image. The findings reveal that the communication strategy is predominantly characterized by visual content presenting governmental activities accompanied by informative narratives. Such practices contribute to the construction of a transparent image through information disclosure, a sense of closeness through representations of interactions with the public, and a professional image through structured presentations of governmental activities. However, the relatively low to moderate level of audience engagement indicates that two-way interaction has not been fully optimized, suggesting that communication remains more informative than dialogical. This study concludes that social media plays a strategic role in shaping the image of local government; however, its effectiveness depends largely on the ability to implement interactive and participatory communication strategies. Therefore, local governments are encouraged to optimize social media not only as a tool for information dissemination but also as a dialogic space to enhance public engagement and strengthen a positive institutional image.

Keywords: Digital Public Relations, Government Communication, Social Media, Instagram, Local Government Image

INTRODUCTION

The development of information and communication technology has driven fundamental transformations in public communication practices, particularly in the relationship between government and society (Sukmana et al., 2025). The digital era has not only changed how information is produced and disseminated but has also shaped interaction patterns that are more open, participatory, and real-time. In this context, governments are required to adapt to increasingly rapid and complex communication dynamics, where social media has become one of the primary channels for reaching the public widely and effectively. One platform that has a significant influence in contemporary public communication is Instagram, which functions not only as a visual-sharing medium but also as a space for representing institutional identity and image.

From a Public Relations perspective, social media has shifted the communication paradigm from a one-way model to a more dialogical two-way communication model.

Governments are no longer merely information providers but also act as facilitators of interaction with the public (Quraissyin, 2026). This transformation requires communication strategies that are not only informative but also capable of building sustainable relationships with the public. Digital Public Relations emerges as an important concept in explaining how government institutions utilize digital technology to shape perceptions, enhance trust, and build a positive image in the eyes of society. In this context, communication is understood not only as a process of message delivery but also as a process of meaning construction involving public interpretation of symbols, narratives, and visual representations.

The image of local government is one of the aspects highly influenced by consistently implemented public communication practices (Buluamang, 2018). Image is not formed instantly but through a long process involving the accumulation of messages, experiences, and public perceptions of government performance. In the digital era, image formation is increasingly influenced by how governments represent themselves in the virtual public sphere. Content published through social media can shape certain impressions, whether positive or negative, depending on how the message is packaged and received by the audience. Therefore, digital Public Relations communication strategies become an important instrument in managing government image in a systematic and planned manner.

In practice, many local governments in Indonesia have utilized social media as part of their public communication strategies. The use of platforms such as Instagram enables governments to disseminate information related to policies, programs, and governmental activities more quickly and broadly. In addition, social media provides space for the public to respond, criticize, or appreciate government performance. This condition indicates that public communication is no longer top-down but has evolved into a more interactive and participatory process. However, the effectiveness of social media in building government image largely depends on the communication strategies implemented, including content selection, language style, and patterns of interaction with the public.

Nevertheless, not all government communication practices on social media are capable of generating a positive image. In some cases, the use of social media may even create negative perceptions due to a lack of consistency, transparency, or responsiveness in its management. This indicates that the presence of social media as a public communication tool does not automatically guarantee success in building government image. A well-planned communication strategy based on an understanding of audience characteristics and digital media dynamics is required (Helmi, 2026). In other words, the success of digital Public Relations communication is determined not only by presence on social media but also by the quality of messages and interactions established.

In the local context, the Samarinda City Government is one of the regions that actively utilizes social media as a public communication tool. One of the accounts used as a medium of governmental representation is the Instagram account “samarinda.beradab.” This account functions as both an information channel and a communication space that presents various governmental activities, development programs, and interactions with the public. Through the visual content and narratives published, this account indirectly contributes to shaping the image of the Samarinda City Government in the digital public sphere. Therefore, it is important to examine how communication strategies are implemented through this account and how these strategies contribute to the process of forming the local government’s image (Buluamang, 2018).

Research on government communication through social media has been widely conducted; however, most studies still focus on aspects such as media usage, levels of public participation, or the effectiveness of information dissemination (Purba et al., 2025). Studies that specifically link digital Public Relations communication strategies with the formation of local government image, particularly in the context of visual-based social media such as

Instagram, remain relatively limited. Furthermore, research focusing on local contexts, such as the Samarinda City Government, is still scarce, thus providing an opportunity for this study to contribute more contextually and academically.

Based on the above explanation, this study aims to analyze the digital Public Relations communication strategies employed by the Samarinda City Government through the Instagram account “samarinda.beradab” in shaping the local government’s image. The analysis is conducted by examining the published content, communication patterns, and image representations conveyed in each message. Therefore, this study is expected not only to provide an overview of government digital communication practices but also to offer a deeper understanding of how government image is constructed through social media.

More broadly, this study has significance in enriching the field of public communication, particularly in digital Public Relations and government communication. In addition, the findings are expected to serve as a reference for local governments in designing more effective and adaptive communication strategies in response to the development of digital media. In an era where public perception can be rapidly formed through interactions in digital spaces, the ability of governments to manage communication and image becomes a crucial factor in building public trust.

LITERATURE REVIEW

The development of public communication studies (Adnan, 2015) over the past few decades has shown a significant shift, particularly with the emergence of digital technology that has transformed the patterns of interaction between institutions and the public. In this context, Public Relations (PR) is no longer understood merely as a function of information dissemination, but rather as a strategic process in building sustainable relationships between organizations and their publics. Within the classical theoretical framework, Public Relations as proposed by James E. Grunig emphasizes the importance of two-way symmetrical communication as an ideal model for creating mutually beneficial relationships between organizations and their publics. This model places dialogue, feedback, and adaptation as key elements in effective communication practices (Asriadi, 2020).

Along with the advancement of digital technology, the concept of Public Relations has evolved into what is known as digital Public Relations. Digital PR refers to the use of internet-based media in designing, delivering, and evaluating organizational communication messages. In this context, social media has become a primary instrument that enables more interactive, flexible, and real-time communication (Purba et al., 2025). Platforms such as Instagram provide space for organizations, including governments, not only to disseminate information but also to construct narratives, identity, and image both visually and textually. With its visual-based characteristics, Instagram enables more persuasive message delivery through the integration of images, videos, and captions.

In the context of government communication, the use of social media cannot be separated from the concept of public communication oriented toward transparency, participation, and accountability. As a public institution, the government has the responsibility to deliver accurate and relevant information to the public while also opening space for constructive dialogue. Social media allows governments to reach a wider audience, including younger generations who are more active on digital platforms. However, the effectiveness of government communication on social media is not solely determined by the frequency of use, but also by the quality of the communication strategy implemented, including message packaging, content selection, and the management of public interaction.

One of the important aspects in Public Relations practice is image building (Purba et al., 2025). Image can be understood as the perception or impression formed in the public’s

mind regarding an organization based on the information received and experiences encountered. From a communication perspective, image is not objective in nature but rather a result of social construction influenced by ongoing communication processes. Therefore, image building becomes one of the main objectives in Public Relations activities, including in the governmental context. A positive government image can enhance public trust, strengthen legitimacy, and support the successful implementation of policies.

In the digital era, image formation becomes increasingly complex due to the dynamic, fast, and open nature of social media. Content published by governments on social media not only functions as a source of information but also as a representation of institutional identity (Peranginangin et al., 2025). Each element within the content, including visuals, narratives, and communication styles, has the potential to shape public perception. For instance, the use of visuals depicting governmental officials' activities can build an image of professionalism, while a more casual language style can create a sense of closeness with the community (Saidah, 2023). Therefore, communication strategies implemented on social media must be able to integrate these elements consistently to produce the desired image.

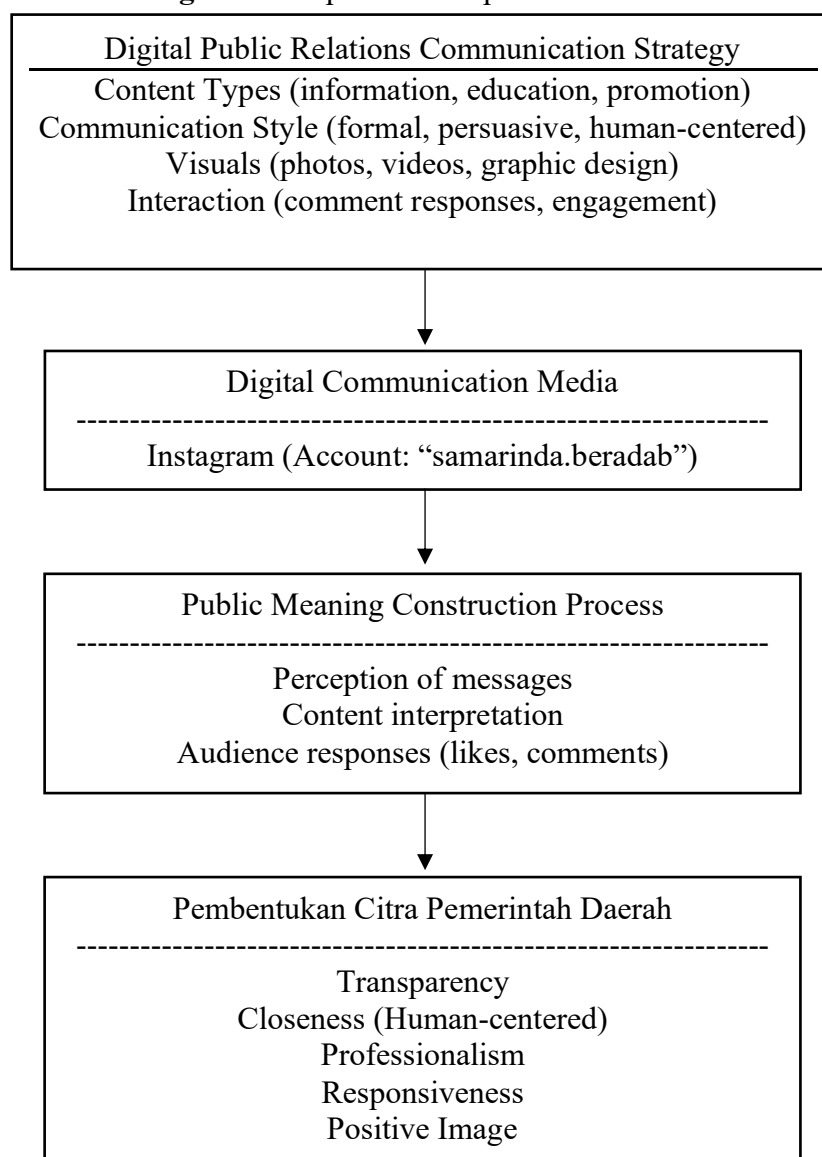
A number of previous studies indicate that social media plays a significant role in shaping organizational image, including that of government institutions. These studies generally emphasize that the success of digital communication is determined by an organization's ability to create content that is relevant, engaging, and responsive to public needs. In addition, interactions occurring on social media, such as comments and responses from administrators, also contribute to shaping public perception of the organization. In this context, dialogical and participatory communication tends to be more effective in building a positive image compared to one-way communication.

However, some findings also indicate that the use of social media by governments does not always produce positive outcomes. Several studies reveal that inconsistency in message delivery, lack of interaction with the public, and the dominance of ceremonial content may reduce communication effectiveness and even lead to negative perceptions. This suggests that the success of digital Public Relations does not solely depend on presence on social media, but also on how communication strategies are designed and implemented effectively.

In the context of this study, focusing on the analysis of the digital Public Relations communication strategy of the Samarinda City Government through the Instagram account "samarinda.beradab" is relevant to examine how such communication practices contribute to the formation of the local government's image. This approach allows researchers to gain a deeper understanding of how messages delivered through social media are constructed and interpreted by the public. Furthermore, this study contributes to enriching the discourse on government communication at the local level, which remains relatively limited compared to studies at national or international levels.

By referring to the theoretical frameworks of Public Relations, digital communication, and image theory, this study attempts to integrate various perspectives in analyzing the phenomenon of government communication on social media. This integration is essential to produce a comprehensive understanding of how communication strategies can be utilized as instruments in building the image of local government. In this context, social media is not only viewed as a communication tool but also as a symbolic space where meanings and public perceptions are dynamically constructed.

Figure 1: Proposed conceptual framework



METHODOLOGY

This study employs a qualitative approach (Saputri et al., 2025) using a case study method to analyze the digital Public Relations communication strategies implemented by the Samarinda City Government through social media, particularly the Instagram platform. A qualitative approach is chosen because this study aims to gain an in-depth understanding of digital communication phenomena in the context of local government image formation, which cannot be measured quantitatively but instead requires interpretation of the meanings embedded in communication messages.

The object of this study is the Instagram account “samarinda.beradab,” which serves as one of the official communication channels of the Samarinda City Government in disseminating public information. The selection of this account is based on the consideration that it represents governmental communication activities in the digital space and plays a role in building institutional image through various published content. Thus, this account serves as

the primary data source for examining how digital Public Relations communication strategies are implemented.

Data collection techniques in this study were conducted through documentation and non-participatory observation methods (Fadli, 2024). Documentation was carried out by collecting various types of content published on the “samarinda.beradab” Instagram account, including posts in the form of photos, videos, reels, and their accompanying captions. In addition, other elements such as hashtag usage, posting frequency, and forms of interaction appearing in the comment section were also included as part of the analyzed data. The collected data were limited to a specific time period to maintain focus and depth of analysis, for instance within the last three to six months, enabling the researcher to identify consistent communication patterns.

Non-participatory observation was conducted by observing communication activities on the account without directly engaging in interactions. Through this approach, the researcher was able to understand how content is presented, how messages are constructed, and how the public responds to the published content. This method allows for a comprehensive understanding of government digital communication practices in their natural context.

The data analysis technique used in this study is qualitative content analysis (Sarosa, 2021). Content analysis was conducted by categorizing and interpreting data based on themes relevant to the research focus. The analysis process began with data reduction, which involved selecting and simplifying data relevant to the research objectives. Subsequently, the data were classified into categories reflecting digital Public Relations communication strategies, such as content types, message delivery styles, use of visuals, and patterns of interaction with the public.

Following the categorization process (Leroy Holman Siahaan, 2026), the next stage involved data interpretation, which aimed to understand the meanings contained within each category in order to examine how communication strategies contribute to the formation of the local government’s image. In this stage, the researcher referred to image-building indicators, including transparency, closeness (human-centered), professionalism, responsiveness, and positive image. Using these indicators, the researcher identified how each published content represents the government’s efforts to construct specific perceptions among the public.

To ensure data validity (Ansorullah et al., 2025), this study employed source triangulation by comparing various types of data obtained from content, captions, and interactions occurring on the Instagram account. In addition, repeated readings of the data were conducted to ensure consistency in interpretation. This approach was undertaken to ensure that the findings are academically reliable. By applying this method, the study is expected to provide an in-depth understanding of the digital Public Relations communication strategies of the Samarinda City Government through Instagram, as well as how these strategies contribute to the process of local government image formation in the digital public sphere.

FINDINGS

This study presents findings based on a content analysis of the Instagram account “samarinda.beradab” as a digital communication medium of the Samarinda City Government. Data were obtained through observation of a number of posts within a specific time period, including content in the form of photos, videos, reels, and accompanying captions. In addition, interaction elements such as the number of likes and comments were also examined as part of the communication activities.

General Characteristics of Content and Message Presentation Patterns

Based on the data collected, the content published on the “samarinda.beradab” account shows variations in both form and type of presentation. In general, the content consists of documentation of governmental activities, dissemination of public information, and visual content featuring the activities of local leaders. The format of posts is dominated by photos and short videos accompanied by informative captions.

In terms of frequency, the account consistently publishes content throughout the observation period. Posts are uploaded regularly at certain intervals, indicating a structured content management pattern. In addition, the use of reels and stories was also identified as part of the variation in message delivery. The analysis further shows that the published content can be classified into several main categories as follows:

Table 1: Classification of Content Types on the “samarinda.beradab” Account

Content Type	Brief Description
Activity Information	Documentation of government and local officials’ activities
Policy Information	Dissemination of government programs and policies
Public Education	Educational information for the community
Regional Promotion	Content showcasing regional potential and image

From this classification, the most dominant content type is activity information, which presents official activities and work agendas of local leaders on various occasions.

Table 2: Summary Statistics of the “samarinda.beradab” Instagram Account (Blade, 2026)

Indicator	Value/Description
Total Followers	± 90,000 accounts
Total Following	± 528 accounts
Total Posts	± 3,600 contents
Engagement Rate	± 1.4%
Average Likes	± 1,100 per post
Average Comments	± 80–90 comments

These data indicate that the account has a relatively large audience base with a low to moderate level of engagement.

Table 3: Content Publication Activity (Media Count)

Date	Additional Posts	Total Posts
Jan 22, 2026	+3	3,599
Jan 23, 2026	+6	3,605
Jan 24, 2026	+2	3,607
Jan 25, 2026	+3	3,610
Jan 26, 2026	+4	3,614
Jan 27, 2026	+4	3,618
Jan 28, 2026	+3	3,621

The data show that the account consistently produces content on a daily basis, with an average of 2–6 posts per day.

Table 4: Account Performance Indicators (Engagement) (Blade, 2026)

Indicator	Value	Description
Engagement Rate	$\pm 1.4\%$	Low–moderate
Average Likes	$\pm 1,100$	Relatively high interaction
Average Comments	$\pm 80\text{--}90$	Active interaction
Interaction Pattern	Fluctuating	Depends on content type

This table indicates that user interaction occurs actively, although it is not evenly distributed across all content.

In terms of message presentation, the content on the Instagram account “samarinda.beradab” demonstrates the use of informative captions with narrative structures that explain the context of the visuals presented. The language used tends to be formal, with some variations that are more communicative in certain contexts.

The visuals used in the posts generally depict field activities, interactions with the community, and documentation of official events. In addition, graphic elements are incorporated in some content to enhance the clarity of the information conveyed.

Use of Features and Public Interaction

The Instagram account “samarinda.beradab” utilizes various features available on the platform, including:

1. Feed (main posts in the form of photos and videos)
2. Reels (short-form video content)
3. Stories (temporary posts)

The use of these features indicates variation in the way messages are delivered to the public. Reels are used to present more dynamic content, while the feed is used for more permanent documentation. Based on observations, each post on the “samarinda.beradab” account receives responses from users in the form of likes and comments. The level of interaction varies depending on the type of content published. Content that displays direct engagement with the community tends to generate higher interaction compared to purely informational content.

Furthermore, there are indications of interaction between account managers and users through the comment section, although this is not consistently observed across all posts. These interactions typically take the form of responses to questions or feedback from users.

Overall, the findings indicate that the “samarinda.beradab” account, as a digital communication medium of the Samarinda City Government, presents diverse content with a dominance of documentation of governmental activities. Message delivery is carried out through a combination of visuals and informative captions, supported by the use of various features available on the social media platform. The communication activities also include interactions between the account and the public, as reflected in responses to published posts.

DISCUSSION

The findings indicate that the Instagram account “samarinda.beradab” is utilized as one of the digital communication channels by the Samarinda City Government to disseminate public information and represent governmental activities. This finding reflects a shift in public communication practices from conventional patterns toward more open and distributed digital communication. From a public relations perspective, this practice can be understood as part of a communication strategy aimed at building relationships with the public while simultaneously shaping the institutional image through social media.

In general, the dominance of content in the form of documentation of governmental activities indicates that the communication strategy employed is oriented toward activity-based information dissemination. Content featuring the activities of local leaders, interactions with the community, and governmental agendas serves as a visual representation of institutional performance. Within the framework of public relations theory proposed by (Grunig & Grunig, 2013) this practice can be associated with a two-way communication model that begins to accommodate openness of information to the public. However, the predominance of informational content suggests that the communication practice has not yet fully achieved a symmetrical communication model, but rather remains in a transitional stage between one-way and two-way communication.

In the context of image formation, the findings reveal that the content published through the account contributes to the development of several dimensions of the local government's image. First, the image of transparency is reflected in the government's efforts to openly publish various activities and work programs. The consistent presentation of information through social media enables the public to gain insights into governmental performance, thereby reinforcing perceptions of openness. This finding aligns with public communication studies emphasizing transparency as a key element in building public trust in government institutions.

Second, the image of closeness (human-centered approach) is evident in content that displays direct interactions between the government and the community. The visualization of activities involving the public, along with the use of a more communicative tone in certain posts, reflects an effort to reduce the distance between the government and its citizens. From a digital communication perspective, this approach is essential for fostering more personal relationships and enhancing audience engagement. Previous studies also suggest that human-centered content tends to be more effective in building emotional connections between organizations and their publics.

Third, the image of professionalism is constructed through content that highlights formal activities, official agendas, and structured documentation of governmental work. The use of well-organized visuals and informative narratives reflects an effort to portray the government as a systematic and organized institution. This indicates that social media is not only used as a communication tool but also as a representational space for institutional identity, reflecting the credibility and competence of the government.

Fourth, the image of responsiveness is indicated by the presence of interaction between account managers and users, although it is not consistently observed across all posts. Responses to public comments demonstrate efforts to establish two-way communication, albeit still limited in intensity. Within the framework of digital public relations, responsiveness is a crucial indicator in assessing the quality of relationships between organizations and their publics. Higher levels of responsiveness are generally associated with increased public trust and satisfaction.

In addition, statistical data from SocialBlade indicate that the "samarinda.beradab" account exhibits a steadily increasing number of followers along with consistent content publication activity. This reflects the continuity of digital communication practices being implemented. However, the relatively low to moderate engagement rate suggests that interaction between the account and its audience has not yet been fully optimized. This finding is consistent with previous studies indicating that the success of social media communication is not solely determined by the frequency of content but also by the relevance and attractiveness of the messages delivered.

When compared with existing literature, these findings reinforce the argument that social media plays a strategic role in shaping organizational image, including that of government institutions. However, its effectiveness largely depends on the communication

strategies employed. Previous studies indicate that dialogical and participatory communication tends to be more effective in building a positive image than one-way communication. In this context, the communication practices observed in the “samarinda.beradab” account demonstrate the potential for developing more interactive strategies to enhance public engagement.

The implications of these findings suggest that local governments need to optimize the use of social media not only as a means of information dissemination but also as a dialogic space that enables more intensive two-way communication. Strengthening communication strategies oriented toward interaction and public participation can enhance the effectiveness of government image formation in the digital sphere. Furthermore, integrating informative content with a more human-centered communication approach can strengthen the emotional relationship between the government and the community. Thus, this discussion confirms that digital public relations communication strategies through social media play a crucial role in the process of shaping the image of local government. Social media functions not only as a communication tool but also as a medium for meaning construction that influences public perceptions of government institutions as a whole.

CONCLUSION

This study demonstrates that the utilization of social media, particularly Instagram, by the Samarinda City Government through the “samarinda.beradab” account has become an integral part of its digital public relations communication strategy in disseminating public information while simultaneously shaping the image of the local government. The implemented communication strategy is reflected in the consistency of content publication, the dominance of visual representations of governmental activities, and the use of informative narratives that support message delivery to the public.

The findings reveal that the published content functions not only as a means of information dissemination but also as a representational medium contributing to the construction of the government’s image. The image of transparency is reflected through the openness of information regarding governmental activities and programs, while the image of closeness is built through representations of interaction with the community. Furthermore, the image of professionalism is conveyed through structured and formal content presentation, and the image of responsiveness is indicated by the presence of interaction—although still limited—between account managers and the public. However, the relatively low to moderate level of audience engagement suggests that the implemented communication strategy has not yet been fully optimized in fostering dialogical and participatory communication. This indicates that the practice of digital public relations remains more oriented toward information dissemination rather than strengthening two-way interaction as emphasized in modern public relations communication theory.

Theoretically, these findings reinforce the view that social media serves as a strategic instrument in public communication practices and institutional image building. Nevertheless, its effectiveness largely depends on the organization’s ability to manage communication strategies in an integrated, interactive, and audience-oriented manner. In this context, digital government communication is not only required to be informative but also to foster engagement and closer relationships with the public. The implications of this study suggest that local governments need to develop more adaptive digital public relations communication strategies by emphasizing improved interaction quality, content diversification, and a more human-centered communication approach. Thus, social media should not merely function as a tool for information dissemination but also as an effective dialogic space in building a positive and sustainable government image in the digital era.

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MAKERSPACE@ENGLIB: PENGALAMAN DAN PERKONGSIAN AMALAN TERBAIK DALAM PENERAPAN BUDAYA PENCIPTAAN DAN PEMBELAJARAN PRAKTIKAL DI PERPUSTAKAAN MUSA MOHAMAD, UNIVERSITI SAINS MALAYSIA

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Abstrak: Pembangunan Makerspace@EngLib di Perpustakaan Musa Mohamad, Universiti Sains Malaysia (USM) bertujuan untuk memupuk budaya penciptaan dan inovasi dalam kalangan pelajar STEM Kampus Kejuruteraan, USM melalui penyediaan ruang dan peralatan ICT yang berteknologi tinggi. Makerspace ini menyediakan kemudahan seperti pencetak 3D, pemotong laser, dan lain-lain untuk membolehkan pelajar meneroka dan mengaplikasikan idea kreatif secara praktikal dengan berkesan. Objektif utama adalah untuk memperkasakan pelajar dalam bidang kejuruteraan dan teknologi, serta meningkatkan pembelajaran berasaskan projek dan pembelajaran praktikal. Walaupun menghadapi cabaran daripada segi kos dan penyelenggaraan, pelbagai aktiviti sokongan, termasuk bengkel latihan dan pertandingan inovasi, telah dijalankan untuk memaksimumkan penggunaan ruang dan alatan tersebut. Selain itu, Makerspace ini juga melibatkan kolaborasi dengan pusat pengajian lain di USM untuk menghasilkan produk inovatif dan berdaya saing. Penambahbaikan dalam bentuk latihan berterusan, kolaborasi antara perpustakaan, fakulti, dan industri, serta fleksibiliti penggunaan ruang dicadangkan untuk meningkatkan keberkesanan Makerspace. Kesimpulannya, Makerspace@EngLib merupakan platform penting dalam menyokong penciptaan dan inovasi, serta memberi pelajar peluang untuk mengembangkan kemahiran praktikal yang relevan dengan perkembangan industri masa depan.

Kata kunci: Makerspace, STEM, Mesin Pencetak 3D, Amalan terbaik, Budaya penciptaan

Abstract: The development of Makerspace@EngLib at the Engineering Library, Universiti Sains Malaysia (USM) aims to foster a culture of creation and innovation among STEM students of the Engineering Campus, Universiti Sains Malaysia through the provision of high-tech ICT space and equipment. This makerspace provides facilities such as High Speed 3D printers, laser cutters, etc. to enable students to explore and effectively apply creative ideas practically. The main objective is to empower students in the field of engineering and technology, as well as enhance project-based learning and hands-on learning. Despite challenges in terms of cost and maintenance, various support activities, including training workshops and innovation competitions, have been carried out to maximize the use of the space and tools. In addition, this Makerspace also involves collaboration with other study centers at USM to produce innovative and competitive products. Improvements in the form of continuous training, collaboration between the library, faculty, and industry, as well as flexibility in the use of space are recommended to increase the effectiveness of the Makerspace. In conclusion, Makerspace@EngLib is an important platform in supporting creation and innovation, as well as giving students the opportunity to develop practical skills relevant to future industrial developments.

Keywords: Makerspace, STEM, 3D Printer, Best practice, innovation

PENGENALAN

Makerspace bermaksud ruang yang membenarkan pelajar berkarya, mencipta dan meneroka dengan penggunaan bahan-bahan yang pelbagai dan menggunakan peralatan ICT berteknologi tinggi contohnya seperti mesin pencetak 3D, pemotong laser, seterika pematerian dan lain-lain lagi amatlah sesuai diwujudkan di Perpustakaan Musa Mohamad kerana jurusan subjek pelajar-pelajar di Kampus Kejuruteraan adalah berkaitan. Sehubungan dengan itu, ruang Makerspace adalah satu kemudahan yang perlu ditawarkan kepada pelajar Kampus Kejuruteraan selaras dengan sokongan perpustakaan kepada pembelajaran STEM, digital-based dan project based. Penyediaan ruang ini diharapkan dapat memupuk kerjasama, memberi pengalaman praktikal, berimpak tinggi dan menjana kreativiti dan inovasi pelajar untuk membantu proses pembelajaran.

Pembangunan Makerspace@EngLib di Perpustakaan Musa Mohamad, Universiti Sains Malaysia (USM) adalah salah satu usaha dan langkah penting ke arah memupuk budaya penciptaan, inovasi, dan pembelajaran berasaskan projek di kalangan pelajar dalam bidang kejuruteraan. Makerspace ini menyediakan ruang dan alatan canggih seperti pencetak 3D, pemotong laser, dan lain-lain, yang memudahkan pelajar berkarya dan meneroka idea-idea baru. Peranan perpustakaan ini amat penting dalam menyediakan sokongan dan kemudahan teknologi kepada pelajar yang mengikuti program berteraskan STEM (Sains, Teknologi, Kejuruteraan, dan Matematik) serta pembelajaran berasaskan projek. Maklumat mengenai Makerspace@EngLib, Perpustakaan Musa Mohamad boleh didapati di laman sesawang rasmi di [pautan https://lib.usm.my/index.php/visiting-the-library/library-branches/pk?view=article&id=302&catid=32](https://lib.usm.my/index.php/visiting-the-library/library-branches/pk?view=article&id=302&catid=32)

KAJIAN LITERATUR

Kajian berkaitan makerspace menunjukkan bahawa ruang pembelajaran kreatif dapat meningkatkan penglibatan pelajar dalam pembelajaran aktif dan pembangunan kemahiran abad ke-21. Menurut Binkley dan Wright (2018), makerspace berfungsi sebagai platform penting dalam menyokong pembelajaran berasaskan projek (*project-based learning*) serta pembelajaran kolaboratif yang menggalakkan kreativiti, inovasi, dan pembelajaran berasaskan pengalaman.

Selain itu, Sui dan Xu (2020) menyatakan bahawa makerspace dalam konteks pendidikan tinggi khususnya perpustakaan akademik memainkan peranan penting dalam memperkukuh literasi digital dan kreativiti pelajar melalui penggunaan teknologi seperti mesin pencetak 3D dan pembangunan prototaip serta sebagai ruang pembelajaran tidak formal yang mengintegrasikan teori dan amali secara seimbang kepada pelajar.

Manakala, Wong dan Tan (2023) pula menjelaskan bahawa makerspace dalam pendidikan kejuruteraan membantu pelajar memahami konsep teori secara lebih praktikal melalui pembangunan projek dan eksperimen. Penggunaan makerspace juga dapat meningkatkan kemahiran penyelesaian masalah, komunikasi, dan kerja berpasukan serta memperkukuh kefahaman konsep teknikal melalui pembelajaran berasaskan pengalaman.

Tambahan lagi, makerspace di perpustakaan akademik turut berfungsi sebagai ruang pembelajaran fleksibel yang menggalakkan kolaborasi antara pelajar, pensyarah dan komuniti industri. Jenkins dan Voss (2019) menekankan bahawa makerspace dapat memperkukuh budaya inovasi dan pembelajaran sendiri dalam kalangan pelajar universiti.

Zeng dan Liu (2019) juga mendapati bahawa akses kepada peralatan seperti mesin pencetak 3D dan teknologi fabrikasi digital membantu pelajar membangunkan kemahiran reka bentuk dan penyelesaian masalah secara praktikal.

Walaupun banyak kajian antarabangsa telah membincangkan keberkesanan makerspace, kajian berkaitan pelaksanaan makerspace di perpustakaan akademik di Malaysia masih terhad. Oleh itu, kajian ini dapat menyumbang kepada pengembangan pengetahuan berkaitan pelaksanaan makerspace dalam konteks perpustakaan universiti tempatan di Malaysia khususnya dalam bidang kejuruteraan. Sehubungan itu, pembangunan Makerspace@EngLib dilihat relevan dalam menyokong keperluan pembelajaran STEM serta sebagai medium pembelajaran alternatif yang lebih interaktif untuk pelajar.

METODOLOGI

Kajian ini menggunakan pendekatan kualitatif berbentuk kajian kes bagi meneliti pelaksanaan dan impak Makerspace@EngLib dalam menyokong pembelajaran praktikal pelajar. Pengumpulan data dilakukan melalui kaedah pemerhatian terhadap penggunaan ruang makerspace oleh pelajar, analisis dokumen berkaitan seperti laporan aktiviti, kehadiran bengkel dan pertandingan yang telah dianjurkan dan maklum balas tidak formal daripada pelajar dan staf yang terlibat dalam aktiviti di Ruang makerspace@EngLib. Data yang diperoleh dianalisis secara deskriptif bagi mengenal pasti pola penggunaan, jenis aktiviti yang dijalankan serta hubungan kait antara penggunaan makerspace dan pembelajaran pelajar. Pendekatan ini sesuai digunakan kerana ia membolehkan penilaian menyeluruh terhadap sesuatu inisiatif dalam konteks sebenar persekitaran pendidikan.

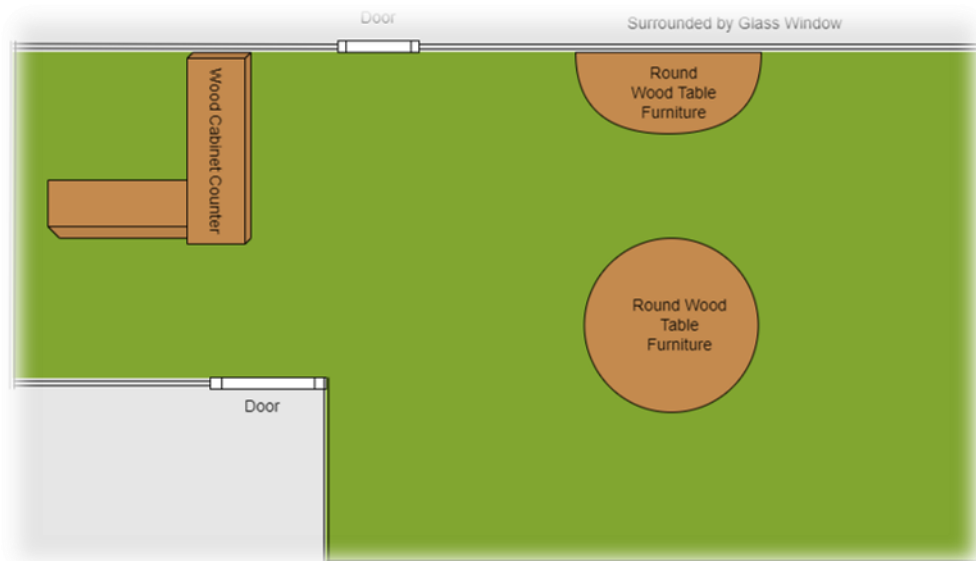
Objektif Projek Pembangunan Makerspace@EngLib

Objektif utama Makerspace@EngLib adalah:

1. Mengetahui fungsi peranan Makerspace@EngLib dalam menyokong pembelajaran praktikal pelajar.
2. Meneliti pelaksanaan aktiviti dan program makerspace di Perpustakaan Kejuruteraan USM.
3. Mengetahui cabaran dan kekangan dalam pembangunan Makerspace@EngLib.
4. Mencadangkan amalan terbaik bagi memperkukuh makerspace di perpustakaan akademik.

Hasil Implementasi Projek Pembangunan Makerspace@EngLib Sebelum Dan Selepas

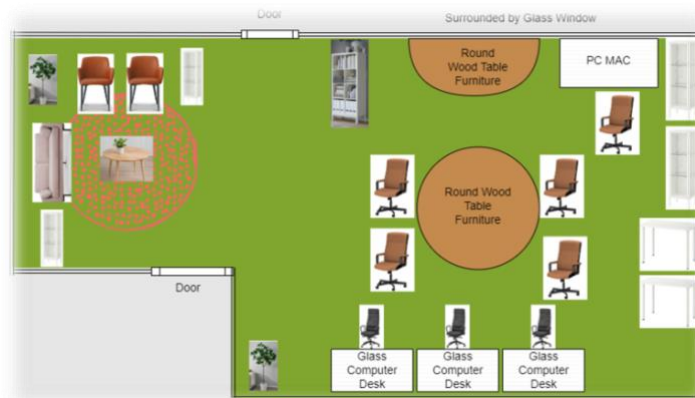
Lokasi yang dipilih untuk Makerspace@EngLib ialah Bilik Audio-Visual di Tingkat Dua Perpustakaan, yang telah diubah suai untuk memenuhi keperluan ruang dan susun atur peralatan moden. Makerspace ini dilengkapi dengan perabot, mesin, dan peralatan yang disusun dengan efisien bagi memaksimumkan penggunaan ruang dan kemudahan akses. Lihat gambarajah sebelum dan selepas seperti dibawah:



Gambar Rajah 1: Pelan Susun Atur Bilik Sebelum Pengubahsuaian



Gambar Rajah 2: Bilik Audio-Visual Sebelum Pengubahsuaian



Gambar Rajah 3: Pelan Reka letak baharu yang dicadangkan



Gambar Rajah 4: Ruang dan Susun Atur Bilik Selepas Pengubahsuaian



Gambar Rajah 5: Ruang dan Susun Atur Perabot Selepas Pengubahsuaian



Gambar Rajah 6: Ruang dan Susun Atur Peralatan Selepas Pengubahsuaian



Gambar Rajah 7: Ruang dan Susun Atur Peralatan Selepas Pengubahsuaian

Hasil Implementasi Projek Pembangunan Makerspace@Englib Sebelum Dan Selepas

Beberapa aktiviti utama telah dijalankan, termasuk Bengkel Pemantapan Makerspace@EngLib: Siri 1. Pengendalian Asas Mesin Pencetak 3D dan Rekabentuk Perisian yang telah diadakan pada 10 Julai 2024 oleh Pegawai Latihan Vokasional, Pusat Pengajian Kejuruteraan Aeroangkasa, Kampus Kejuruteraan, Universiti Sains Malaysia yang bertujuan untuk memberi pendedahan dan maklumat serta latihan kepada staf untuk mengendalikan mesin pencetak 3D dan pengetahuan asas rekabentuk perisian yang boleh digunakan bersama mesin pencetak yang baharu dibeli di Perpustakaan Musa Mohamad dan bengkel tersebut juga adalah latihan praktikal untuk pengendalian asas mesin pencetak 3D dan reka bentuk perisian.

Bengkel ini telah berjaya membantu staf dan pelajar memahami cara penggunaan alat dan perisian yang bertepatan dengan keperluan projek yang dijalankan di Makerspace.

Selain itu, satu Pertandingan Inovasi Pintar Cetakan 3D bertemakan Teknologi Sains dan Kejuruteraan telah diadakan bermula 4 Julai – 18 Oktober 2024. Seramai 9 peserta menyertai pertandingan ini daripada pelbagai Pusat Pengajian. Pertandingan Inovasi Pintar Cetakan 3D yang diadakan ini bagi menggalakkan pelajar mempraktikkan ilmu yang mereka pelajari ke dalam projek sebenar dan pertandingan peringkat antarabangsa yang sebenar dimana pelajar dilatih dan diberikan pengalaman menggunakan mesin dan peralatan secara praktikal dibawah pemantauan Pustakawan dan Pembantu Perpustakaan. Berikut adalah maklumat dan perincian pertandingan tersebut:



Gambar Rajah 8: Poster Pertandingan Inovasi Pintar Cetakan 3D

Jadual 1: Senarai Nama dan Tajuk Pertandingan Anjuran Perpustakaan

BIL.	NAMA PESERTA	TAJUK INOVASI CETAKAN 3D	PUSAT PENGAJIAN
1	Oon Ye Sheng	Merevolusikan Pengurusan Haba dalam Semikonduktor: Pemodelan Terma 3D Lanjutan untuk <i>Heatsink</i>	Pusat Pengajian Kejuruteraan Bahan dan Sumber Mineral
2	Yan Shu Rong & Chua Chia Yee	CubeSat	Pusat Pengajian Kejuruteraan Aeroangkasa
3	Lim Wiky	AirFlow Ear Shield	Pusat Pengajian Kejuruteraan Elektrik dan Elektronik

4	Kan Ming Xian	Modular Pots for Plantation	Pusat Pengajian Kejuruteraan Aeroangkasa
5	Muhammad Aiman Najmi Bin Mohd Nasir	Mini Hydroelectric Generator	Pusat Pengajian Kimia
7	Tan Wei Jim	Open-Source Modular 3D Printed Spectrophotometer with Adjustable Configuration Covering Visible-to-Near Infrared Range	Pusat Pengajian Kejuruteraan Bahan dan Sumber Mineral
8	Chin Han Lin	Green Building Innovation	Pusat Pengajian Kimia

Makerspace@EngLib juga menjalin kolaborasi dengan pelbagai pusat pengajian dalam USM dalam dan luar negara yang membolehkan pelajar dari pelbagai disiplin bergabung idea dan kemahiran untuk menghasilkan produk inovatif. Contohnya, pelajar dari Pusat Pengajian Kejuruteraan Aeroangkasa telah mengambil bahagian dalam pertandingan UAV Camera Frame Contest, yang memperlihatkan penggunaan peralatan dan kemudahan di Makerspace untuk menghasilkan produk kreatif.

Jadual 2: Senarai Nama dan Tajuk Pertandingan Kolaborasi Pelajar dan Perpustakaan

BIL.	NAMA PESERTA	TAJUK PERTANDINGAN DAN INOVASI PRODUK	PUSAT PENGAJIAN
1	Aina Syafiqah Che Embi	Teknofest International Unmanned Aerial Vehicle 2024 19-23 September 2024, Kahramanmaras Turkoglu Logistic Center, Kahramanmaras, Turki	Pusat Pengajian Kejuruteraan Aeroangkasa
2	Liu Huan	UAV Camera Frame Contest	Pusat Pengajian Kejuruteraan Aeroangkasa
3	Harriesh Bathmanaban	Aeros Satellite Competition Apex Orbitals	Pusat Pengajian Kejuruteraan Aeroangkasa
9	Ziyyad Imanhadi Yazid	Integrated Vision System for Enhanced Real-Time Object Detection and Streaming	Pusat Pengajian Kejuruteraan Aeroangkasa

Senarai Aktiviti Dan Projek Akan Datang

Tahun 2024

1. Penjurian Pertandingan Cetakan 3D oleh Prof. Madya Ir. Dr. Fadzli Mohd Nazri dan Prof. MadyaTs. Dr. Rosli Hasan pada 18 Oktober 2022, Dekan Pusat Pengajian Kejuruteraan Awam
2. Majlis Pelancaran Ruang Makerspace@EngLib pada 22 Oktober 2024 Berita Kampus <https://www.eng.usm.my/index.php/ms/berita2/news/1066-makerspace-englib-tarik-perhatian-pengarah-kampus-kejuruteraan-usm>
3. Hari Terbuka Makerspace@EngLib pada 22 – 24 Oktober 2024 sempena Hari

Bersama Pelanggan

4. Majlis Menandatangani Plak Pelancaran Makerspace@EngLib oleh Prof. Datin Azlina Harun@Kamarudin, Pengarah Kampus Kejuruteraan, Universiti Sains Malaysia
5. Pameran hasil cetakan 3D pelajar yang telah dicetak di Makerspace@EngLib – Oktober – Disember 2024
6. Lawatan Penandaarasan oleh Perpustakaan UiTM Cawangan Pulau Pinang pada 29 Oktober 2024 seramai 40 orang

Tahun 2025

1. Bengkel/Latihan Perisian Rekabentuk Cetakan 3D Perisian Solidworks
2. Pengumpulan hasil rekaan pelajar dimasukkan dalam repositori USM Digital Library
3. Penghasilan Souvenir Perpustakaan – ‘Keychain’
4. Bengkel Asas Perisian Cetakan 3D dan Pengendalian Mesin 3D
5. Makerspace Kem untuk komuniti luar secara berbayar atau ‘CSR’
6. Sudut Creative Art Corner
7. Penjanaan Kewangan untuk Cetakan dan Rekaan Model



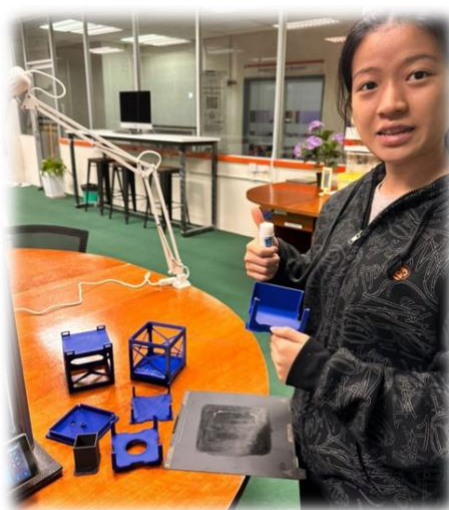
Gambar Rajah 9: Sesi Penjurian Pertandingan Inovasi Pintar Cetakan 3D oleh Prof. Madya Ir. Dr. Fadzli Mohd Nazri dan Prof. Madya Ts. Dr. Rosli Hasan



Gambar Rajah 10: Pameran Hasil Pertandingan Inovasi Pintar Cetakan 3D oleh Prof. Madya Ir. Dr. Fadzli Mohd Nazri dan Prof. MadyaTs. Dr. Rosli Hasan



Gambar Rajah 11: Hasil Produk Pertandingan Inovasi Pintar Cetakan 3D oleh Pelajar Kampus Kejuruteraan



Gambar Rajah 12: Hasil Produk Pertandingan Inovasi Pintar Cetakan 3D oleh Pelajar Kampus Kejuruteraan

Penemuan dan Perbincangan

Berdasarkan aktiviti yang telah dijalankan seperti bengkel pencetak 3D dan pertandingan inovasi, didapati bahawa makerspace berperanan sebagai pemangkin kepada pembelajaran berasaskan pengalaman (experiential learning). Penglibatan pelajar dalam pertandingan inovasi menunjukkan peningkatan motivasi dan keupayaan mereka untuk mengaplikasikan teori kepada penyelesaian masalah sebenar.

Sebagai contoh, penyertaan dalam Pertandingan Inovasi Pintar Cetakan 3D melibatkan pelajar daripada pelbagai pusat pengajian, menunjukkan bahawa makerspace berfungsi sebagai platform kolaborasi antara disiplin. Penemuan ini selari dengan kajian Wong dan Tan (2023) yang menyatakan bahawa makerspace dapat meningkatkan penglibatan pelajar dalam pembelajaran aktif.

Selain itu, bengkel latihan yang dijalankan telah meningkatkan kemahiran teknikal pelajar dalam penggunaan teknologi seperti pencetak 3D dan perisian reka bentuk. Ini menunjukkan bahawa makerspace bukan sahaja menyediakan kemudahan fizikal tetapi juga menyokong pembangunan kemahiran praktikal yang diperlukan dalam industri.

Walau bagaimanapun, kekangan seperti kapasiti ruang dan bilangan peralatan telah menghadkan jumlah pelajar yang boleh mengakses kemudahan ini secara optimum. Oleh itu, penambahbaikan dari segi infrastruktur dan perancangan program adalah penting untuk meningkatkan keberkesanan makerspace.

Cabaran, Kekangan dan Hala Tuju Pembangunan Makerspace@Englib, Perpustakaan Musa Mohamad

Makerspace@Englib adalah perkara yang baharu sahaja di laksanakan di Perpustakaan Musa Mohamad, Universiti Sains Malaysia. Justeru itu, menghadapi beberapa cabaran dan kekangan seperti; kos pembinaan dan penyenggaraan adalah salah satu cabaran utama dalam pembangunan Makerspace@EngLib kerana kos yang tinggi untuk membeli dan menyelenggara ruang serta peralatan canggih seperti pencetak 3D, pemotong laser, dan lain-lain. Kos ini meliputi perolehan alat, pemeliharaan, dan penyelenggaraan peralatan agar sentiasa dalam keadaan berfungsi dengan baik. Kos-kos tersebut perlu dibincangkan untuk dimasukkan dalam operasi belanjawan mengurus Perpustakaan.

Seterusnya adalah aksesibiliti dan penggunaan ruang; penggunaan ruang yang terhad di Perpustakaan Musa Mohamad menghadirkan kesukaran dalam mengoptimumkan penggunaan Makerspace. Kekurangan ruang boleh menjejaskan kapasiti untuk menerima lebih banyak pelajar atau menyokong pelbagai aktiviti pada masa yang sama. Jumlah penggunaan adalah terhad dan buat masa sekarang Perpustakaan hanya menawarkan maksimum 15 pengguna sahaja di Ruang Makerspace@EngLib. Ia menyukarkan pengendalian kelas atau latihan bagi sesi yang lebih besar. Kapasiti peralatan juga sangat terhad hanya 1 projek sahaja boleh dijalankan dalam masa seminggu peluang diberikan untuk mencetak dan mengukir produk atau prototaip.

Selain itu, penyediaan keperluan latihan, kemahiran kepada staf dan pengguna serta aspek keselamatan adalah penting dan utama kerana kebanyakan pelajar mungkin tidak mempunyai pengalaman dalam menggunakan peralatan canggih seperti pencetak 3D atau pemotong laser. Oleh itu, latihan dan sokongan berterusan sangat diperlukan untuk memastikan pelajar dapat memanfaatkan sepenuhnya kemudahan yang disediakan. Tanpa latihan yang mencukupi, alat ini mungkin tidak digunakan dengan efektif. Prosedur dan arahan kerja juga adalah perlu bagi memastikan keselamatan kepada pelajar ketika mengendalikan mesin dan peralatan di Ruang Makerspace@EngLib. Staf juga perlu memastikan pelajar mengikut

prosedur dan langkah yang betul serta mengkomunikasikan prosedur tersebut dengan jelas kepada pelajar.

Pengukuhan kolaborasi antara Pusat Pengajian dan komuniti luar juga perlu dilaksanakan bagi mendapatkan kerjasama yang lebih efektif antara semua pihak dipertingkatkan bagi memberi ruang dan peluang pembelajaran praktikal dan pembudayaan penciptaan inovasi kepada semua pihak untuk menjalin kerjasama bagi memberi peluang tanggungjawab social dan korporat diperkukuhkan dalam membantu komuniti bersasar secara amnya dan pelajar Kampus secara khusus.

Justeru itu, hala tuju pembangunan Makerspace@EngLib perlulah selari dengan peningkatan infrastruktur dan kemudahan harus merangkumi penambahbaikan dalam infrastruktur dan penambahan peralatan baru yang lebih relevan dengan perkembangan teknologi terkini. Menyediakan kemudahan yang lebih lengkap dan canggih akan menarik lebih banyak pelajar untuk menggunakan ruang ini. Keperluan yang dicadang pada tahun-tahun akan datang adalah mesin pencetak 3D berkelajuan tinggi, peralatan robotik seperti Set Raspberri Pi dan Arduino, peralatan pertukangan dan lain-lain.

Program dan latihan berterusan dan pembangunan kemahiran juga perlu dirancang dengan teliti. Program latihan yang lebih komprehensif dan maju perlu dilaksanakan untuk memastikan staf dan pelajar dapat menggunakan peralatan dengan cekap dan mahir. Selain itu, latihan juga perlu diperluaskan untuk melibatkan pelajar dari pelbagai bidang, bukan hanya mereka yang berada dalam jurusan kejuruteraan dan teknologi sahaja malah ke seluruh warga komuniti Universiti Sains Malaysia daripada pelbagai kampus. Bagi memantapkan kemahiran di pihak staf Perpustakaan sendiri perlu memperuntukan belanjawan latihan yang melibatkan kemahiran penyenggaraan peralatan dan pembaikpulih peralatan. Untuk menarik minat pelajar lagi Pemantapan Program Inovasi dan Kreativiti serta pertandingan inovasi dan bengkel berkala akan membantu memperkasa pelajar dalam meneroka idea-idea kreatif mereka. Program-program ini juga dapat menarik lebih banyak pelajar untuk mengambil bahagian dan meningkatkan penggunaan makerspace.

Hala tuju penyelidikan dan pembangunan produk juga perlu difikirkan untuk kesinambungan dan kelestarian pembangunan Makerspace@EngLib perlu menjadi tempat yang menyokong penyelidikan dan pembangunan produk inovatif. Pelajar harus digalakkan untuk menghasilkan prototaip atau penyelesaian teknologi yang boleh diaplikasikan dalam dunia industri, sekali gus memberi manfaat kepada masyarakat.

Perkongsian Amalan Terbaik Makerspace@Englib

Berdasarkan pengalaman Perpustakaan Musa Mohamad dalam Pembangunan projek ini, terdapat beberapa amalan terbaik yang boleh dijadikan panduan dalam penambahbaikan dan penawaran perkhidmatan makerspace di institusi pendidikan. Pertama, kolaborasi pintar antara perpustakaan, Pusat Pengajian, dan industri adalah penting untuk menambah baik perkhidmatan makerspace. Melalui perkongsian ini, makerspace boleh menjemput pakar industri untuk memberi latihan, menyediakan peralatan canggih, atau memberikan sokongan kewangan bagi pembangunan makerspace. Kedua, makerspace perlu menyediakan latihan berterusan kepada staf dan pelajar bagi memastikan kemahiran mereka sentiasa relevan dan mereka dapat memanfaatkan teknologi terkini. Perpustakaan Musa Mohamad kini menetapkan latihan dan bimbingan berfasa kepada staf bermula dengan latihan asas, pertengahan dan maju untuk meningkatkan kompetensi staf dan seterusnya dimanfaatkan bagi membantu pelajar.

Selain itu, penggunaan optimum ruang makerspace dan fasiliti di Makerspace tidak dikhususkan kepada aktiviti dan program makers sahaja. Sebaliknya terbuka untuk ruang pembelajaran dan hasil-hasil produk dan prototaip pelajar boleh dimanfaatkan sebagai bahan pameran untuk meningkatkan kesedaran mengenai penggunaan teknologi dalam penciptaan

produk. Dalam erti kata lain, makerspace harus dirancang dengan fleksibiliti dalam penggunaan ruang agar dapat disesuaikan dengan pelbagai aktiviti, seperti bengkel, pameran, atau projek kolaboratif. Ini memastikan ruang tersebut dimanfaatkan secara optimum tanpa menghalang akses pelajar yang memerlukan kepada perkhidmatan ini. Akhir sekali, Perpustakaan menggunakan perabot sedia ada bagi menjimatkan kos dan susun atur rekaan dalaman. Ruang direkabentuk semula menjadi ruang kolaboratif dan diberi sentuhan baru bagi memberi mood dan ilham baru ketika berkreaitiviti dan melaksanakan projek.

KESIMPULAN

Secara keseluruhannya, kajian ini menunjukkan bahawa Makerspace@EngLib berpotensi sebagai platform pembelajaran alternatif yang menyokong pembelajaran berasaskan projek dan pembangunan kemahiran praktikal dalam kalangan pelajar kejuruteraan. Melalui pendekatan hands-on dan penggunaan teknologi terkini, makerspace mampu meningkatkan penglibatan pelajar serta menggalakkan budaya inovasi dan kreativiti. Dapatan kajian juga menunjukkan bahawa pelaksanaan makerspace perlu disokong oleh perancangan yang sistematik termasuk aspek latihan, penyelenggaraan, dan kolaborasi strategik bagi memastikan keberkesannya dalam jangka panjang. Implikasi kajian ini mencadangkan bahawa perpustakaan akademik boleh memainkan peranan yang lebih signifikan sebagai ruang pembelajaran aktif yang menyokong agenda pendidikan tinggi serta Matlamat Pembangunan Mampan (SDG), khususnya dalam aspek pendidikan berkualiti dan inovasi.

PENGHARGAAN

Kami merakamkan setinggi-tinggi penghargaan kepada Persatuan Pustakawan Malaysia Kumpulan Sabah dan sekretariat Persidangan Pustakawan Borneo Tahun atas penganjuran persidangan ini yang membuka peluang perkongsian dan pengembangan ilmu dalam bidang kepustakawanan. Terima kasih kepada Allah S.W.T., ibu bapa, suami dan isteri serta ahli keluarga, sahabat seperjuangan dalam bidang yang sama. Semoga usaha penulisan dan perkongsian diteruskan sebagai sumbangan ilmu yang bermanfaat, jasa bakti dan amal jariah.

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USAGE OF WHATSAPP APPLICATION AS A SOCIAL MEDIA PLATFORM IN SABAH STATE LIBRARY

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Abstract: In today's digital age, social media has become an integral part of our lives. People now use technology, including social media platforms, to communicate with one another. It has become a widely used medium for interaction and communication through internet-based applications. Additionally, social media has become both a communication and promotional tool for public libraries today. This study aims to investigate and assess users' satisfaction with the use of WhatsApp application in Sabah State Library. To achieve this goal, the paper seeks to evaluate the current trends in WhatsApp application usage within the library sector as part of an effort to gauge user satisfaction.

Keywords: Social Media, WhatsApp, Library, Digital Literacy, Media Literacy

INTRODUCTION

Social media refers to platforms featuring user-generated content, such as Facebook, Twitter, YouTube, Instagram and WhatsApp. These platforms provide various features that promote social interaction, enabling users to share thoughts publicly, express emotions through photos, music, and videos, as well as exchange private messages. Over 4.88 billion social media users worldwide as of 2023, which represents about 60% of the global population (DataReportal, 2023). Social media adoption has grown by over 90% in the last decade, with platforms like Facebook, Instagram, TikTok, and WhatsApp leading the charge. For example, in 2022, global data showed that platforms like Facebook, Instagram, TikTok, and WhatsApp have seen significant user base expansions, contributing to the massive growth of social media usage. Platforms like TikTok have shown a growth in ad reach by over 12.6% within just one year, and WhatsApp remains the most popular social media app globally. The rapid increase in daily time spent on social media has also been reported, with the average global user now spending about 7 hours per day online (Kemp, 2022).

Social media refers to digital platforms and technologies that facilitate the creation, sharing, and exchange of user-generated content and interactions among individuals or groups. These platforms enable users to connect, communicate, and collaborate in virtual environments, often through text, images, videos, and other multimedia formats (Smith, 2023). Kaplan and Haenlein (2010) define social media as a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user-generated content. In other hand, according to Boyd and Ellison (2007) Social media are web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system. Besides, Zarella (2009) define social media as online platforms that enable people to share content, including text, images, and videos, and to interact with others in a digital environment.

The library, as a non-profit organization, is seizing the opportunity to leverage social media as a tool for information dissemination and service promotion. However, the question remains: Can these platforms meet users' expectations? Additionally, can information shared online effectively reach its intended audience? Given the current challenges associated with social media, the researcher aims to explore and assess users' satisfaction with library social

media platforms. The study will culminate in the development of a framework focused on enhancing Sabah State Library services through WhatsApp applications based on user satisfaction.

Purpose of Study

This study aims to investigate and assess users' satisfaction with the use of WhatsApp application in Sabah State Library. WhatsApp is a social media platform that provides communication tools and reference services for public libraries. However, can this platform cater the needs of public libraries users? How is this platform perceived by the public library's users? What is the users' expectation towards the public library WhatsApp service? With those questions, the researcher conducts this study and focuses on the users.

Research Objectives

This study has four (4) research objectives: to investigate and examine the users' satisfaction with library the library WhatsApp service.

1. To investigate the factors that influence user satisfaction with Sabah State Library WhatsApp service.
2. To determine the level of factors that influence user satisfaction towards Sabah State Library WhatsApp service users.
3. To examine the relationship between the independent variables (perceived usefulness, perceived ease of use, facilitating conditions and behavioural intention) and user satisfaction of Sabah State Library WhatsApp service users.
4. To examine how digital literacy mediates independent variables (perceived usefulness, perceived ease of use, facilitating conditions and behavioural intention) with user satisfaction of Sabah State Library WhatsApp service users.

Research Questions

1. What are the factors that influence user satisfaction among Sabah State Library WhatsApp service users?
2. What is the level of factors that influence user satisfaction among Sabah State Library WhatsApp service users?
3. How are the relationships between independent variables (perceived usefulness, perceived ease of use, facilitating conditions and behavioural intention) with user satisfaction of Sabah State Library WhatsApp service users?
4. How does digital literacy mediate independent variables (perceived usefulness, perceived ease of use, facilitating conditions and behavioural intention) with the user satisfaction of Sabah State Library WhatsApp service users?

LITERATURE REVIEW

WhatsApp application has been a phenomenon in year 2010 and it achieved a record as a primary communication platform in Malaysia (Encyclopaedia Britannica, 2026). WhatsApp usage increased tremendously until today across different age groups and sectors including government, educational, business and local communities. There are several researchers have

previously conducted studies on social media. For example, Pereira, A., & Ribeiro, M. (2020) explores how academic libraries use WhatsApp for communication and information dissemination. It discusses the benefits and challenges of implementing WhatsApp as a library service tool. Findings in their study proved that WhatsApp improves communication between library staff and users by providing a direct and immediate channel; the app facilitates quick dissemination of information, such as library updates, event announcements, and research assistance; it helps in engaging users more effectively through group chats and personalized messages, fostering a stronger connection with the library community. Besides, there is a case study investigates the application of WhatsApp in providing library services, focusing on user engagement and service effectiveness in a public library setting. The study concludes that WhatsApp can be a valuable tool for enhancing library services and user engagement, but it also highlights the need for careful management to address the associated challenges (Hammond & Williams, 2019). In other hand, there is a survey examines the adoption and use of WhatsApp in Indian academic libraries, analyzing its impact on library services and user satisfaction. In conclusion, Kumar and Kumar (2018) found that WhatsApp can positively impact library services and user satisfaction in Indian academic libraries, but it also requires careful consideration of resource allocation, staff training, and privacy issues. Additionally, Wang and Wang (2017) found that WhatsApp plays a significant role in enhancing library outreach and user engagement, offering practical benefits for communication and participation, while also highlighting the importance of managing user feedback and improving service practices.

Privacy Issues in Social Media

Tufekci, Z. (2014) explores the implications of big data and surveillance in the context of social media, focusing on how privacy concerns are impacted by computational social science techniques. The researcher underscores the profound implications of big data and computational social science on privacy and surveillance, advocating for greater transparency, regulation, and ethical considerations in the handling of personal data. Marwick and Boyd (2014) illustrate that teenagers employ complex and context-sensitive strategies to manage privacy on social media, influenced by social norms, platform designs, and their evolving understanding of privacy and data use. In the other hand, Solove (2021) underscores the pressing privacy challenges posed by digital technologies and social media, advocating for comprehensive legal reforms and ethical practices to safeguard individuals' privacy in the information age. Moreover, Zuboff (2019) provides a critical analysis of surveillance capitalism, detailing its impact on privacy, power dynamics, and individual autonomy, and advocates for comprehensive regulatory and societal responses to address these issues. Nissenbaum (2010) highlights the concept of contextual integrity as crucial for understanding and protecting privacy in the digital age. She advocates for privacy policies and technologies that respect and uphold contextual norms to address the challenges posed by evolving technologies and social media. The Technology Acceptance Model (TAM) explains users' behaviour toward accepting the technology, as shown in Figure 1 below. When the user's acceptance of the technology is low, it will influence their social media usage and indirectly affect user satisfaction. This was agreed by Lane and Coleman (2012), which confirmed the existence of a strong relationship between TAM and social media. (Lane & Coleman, 2012).

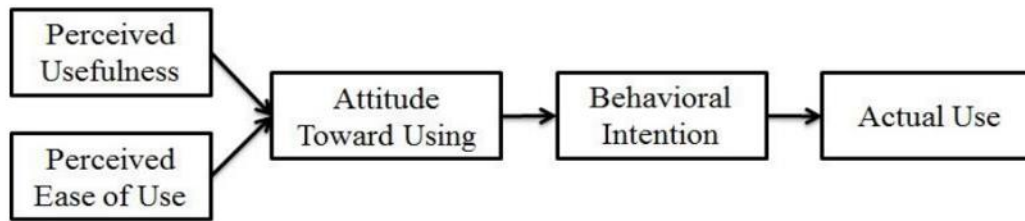


Figure 1: Technology Acceptance Model (Davis, 1989)

Digital Literacy Skills in Social Media

Hobbs, R. (2010) emphasizes the critical need for integrating digital and media literacy into education to prepare students for effective and responsible engagement with digital and social media. The study report provides actionable strategies for curriculum development, teacher training, and policy support to achieve these goals. Similarly, Livingstone (2014) reveals that while there are high expectations for children to use the internet effectively, there are significant challenges and gaps in their digital literacy skills. The book advocates for improved education, parental involvement, and policy support to better equip children for safe and responsible internet use. In addition, Mihailidis and Cohen (2013) argue that media literacy is essential for developing critical thinking and responsible behavior in the era of social media. They recommend integrating media literacy into education and providing professional development for educators to address the challenges and opportunities presented by new media. Furthermore, Bawden (2008) provides a comprehensive overview of the concept of digital literacy, emphasizing its evolving nature and the skills required to effectively engage with digital and social media. The study advocates for integrating digital literacy into education and policy to address the challenges and ensure individuals are equipped to navigate the digital landscape. Besides, Buckingham (2013) underscores the vital role of media education in developing critical digital literacy skills, particularly in the context of social media. Similarly, the study also calls for the integration of media literacy into educational curricula to prepare students for the challenges of engaging with contemporary media culture. Turan et al. (2015) proposed a theoretical framework based on the Technology Acceptance Model, Theory of Reasoned Action, Theory of Planned Behaviour, and Diffusion of Innovation Theory to illustrate the relationship between user satisfaction and user involvement. Their theory explained the integration of technology and personal issues that influence attitudes towards using, which then measured user satisfaction. (Turan et al., 2015).

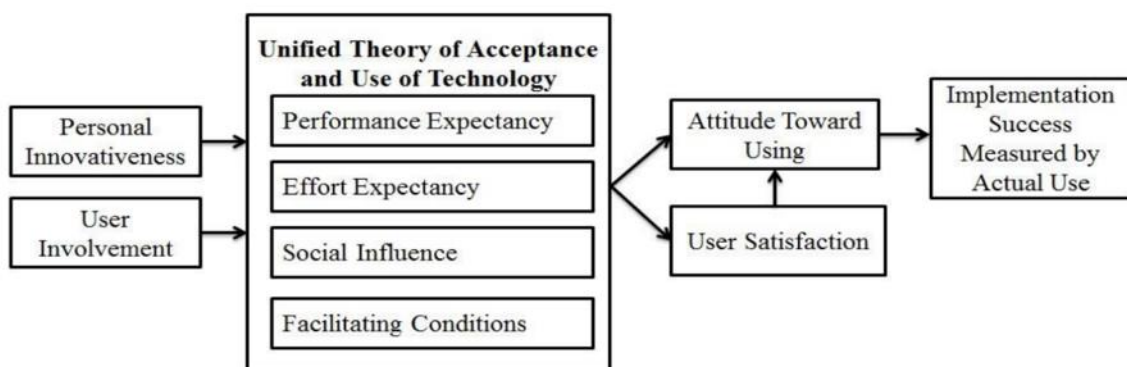


Figure 2: Unified Theory of Acceptance and Use of Technology (Davis, 1989)

Both the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) propose that the effort needed to use technology and the expected outcomes significantly influence an individual's behavioral intention toward a system (Figl & Derntl, 2011; Venkatesh et al., 2003). Given that TAM provides a more comprehensive perspective on the ease-of-use belief as a predictor of perceived usefulness (PU) and attitude—both of which ultimately shape behavioral intention and actual adoption—TAM serves as the foundational framework for developing the theoretical model in this study.

Inactive Library's Social Media Sites

Aharony, N. (2012) explores how academic libraries use Facebook, highlighting issues with inactive pages and underutilized platforms due to a lack of engagement and strategy. Aharony's study highlights the need for libraries to develop a more strategic and resource-supported approach to social media in order to maximize its potential for user engagement. Research underscores the importance of consistent activity and engagement on social media platforms to enhance user interaction and ensure libraries maximize their online presence (Shulman, 2011). Mon's (2014) study revealed that poor content management is a primary reason for the inactivity or underutilization of social media platforms in academic libraries. Libraries often struggle to create relevant, engaging content that appeals to their audience. Without a clear plan, libraries fail to engage users effectively and maintain an active online presence. Mon's study highlights that successful social media use in academic libraries depends on effective content management and a strategic approach to engaging users, both of which are often lacking in many institutions. In other hand, Al-Daihani, S. M. (2016) investigates Twitter usage in libraries and addresses why some libraries have inactive accounts, often due to limited staff involvement and unclear goals for social media engagement. The research highlights the importance of having a clear social media strategy and dedicated resources to maintain active and engaging Twitter accounts in both public and academic libraries. Similarly, Ayre's study emphasizes the importance of planning, engagement, training, and resources for libraries to succeed on social media platforms. Without these elements, social media accounts are likely to become inactive or fail to achieve meaningful outcomes (Ayre, 2013). The issue is better explained with the conceptual model in research done to understand the continuance intention of social media behaviour (Assensoh-Kodua, 2019). This concept of a social media continuance intention model (SoMCIM) shown in Figure 8 is compatible with the topic, which implies that inactive library social media sites can impact social media continuance intention and finally affect users' satisfaction when the users positively or negatively moderate the impact.

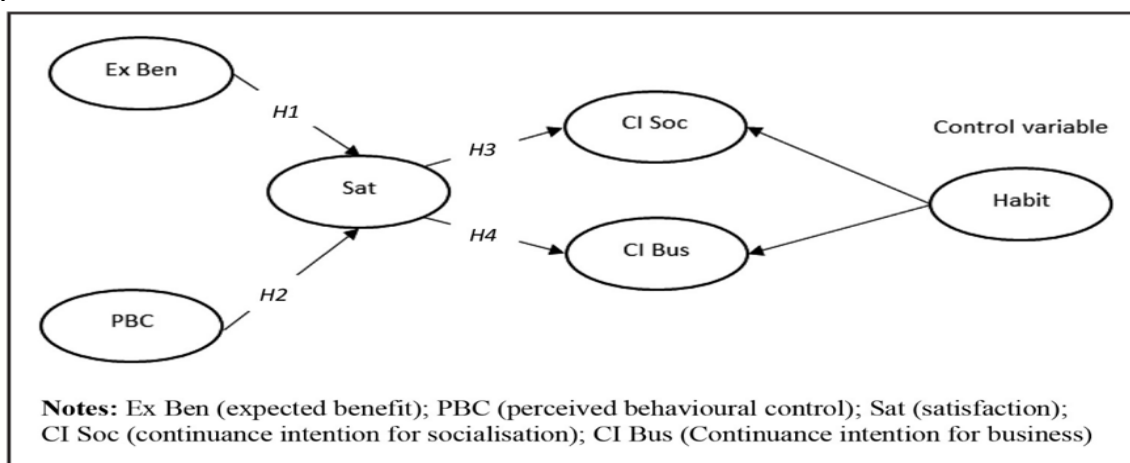


Figure 3: Social Media Continuance Intention Model (SoMCIM)

Proposed Framework

This research aims to investigate users' satisfaction with library social media sites (WhatsApp service). The measuring point is figuring out the variables affecting inactive library social media sites, which leads to exploring why they impact users' satisfaction positively or negatively. Based on the previous discussion, a proposed theoretical framework is shown in Figure 4.

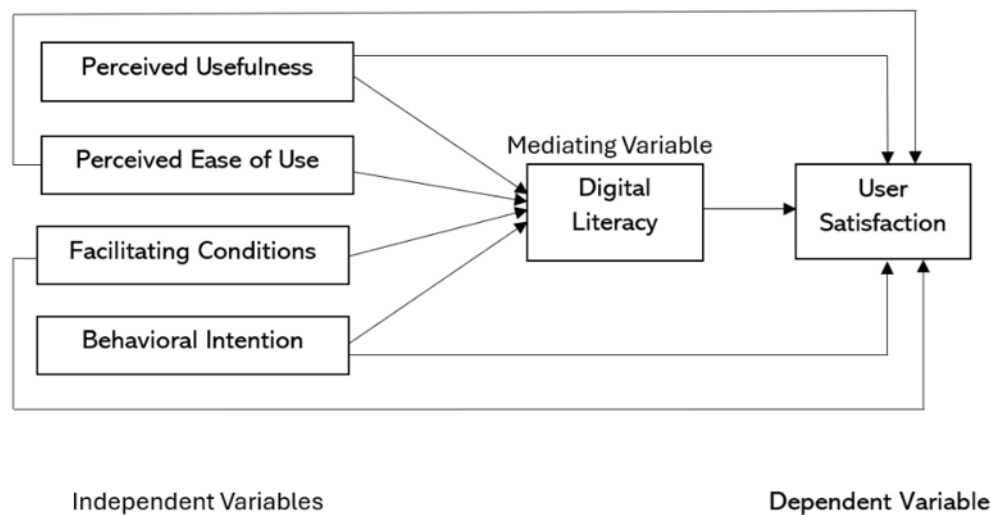


Figure 4: Proposed Theoretical Framework

METHODOLOGY

The target population in the study comprised of the professional librarians and the social media users of the Sabah State Library. Data collection methods based on questionnaires, interviews and observations. Using SPSS as the analysis tools and Roasoft Calculator to identify the sample size.

Research Design

Briefly, a research design is the action plan the researcher must follow to conduct the research. According to Creswell (2018), the research paradigm, methodologies, and methods are the three main mechanisms that play an important role in completing any research. Data must be gathered and analysed after identifying variables and constructing the research framework to achieve a conclusive solution to the research questions (Sekaran & Bougie, 2016). The research design in this study is shown in Figure 1 below.

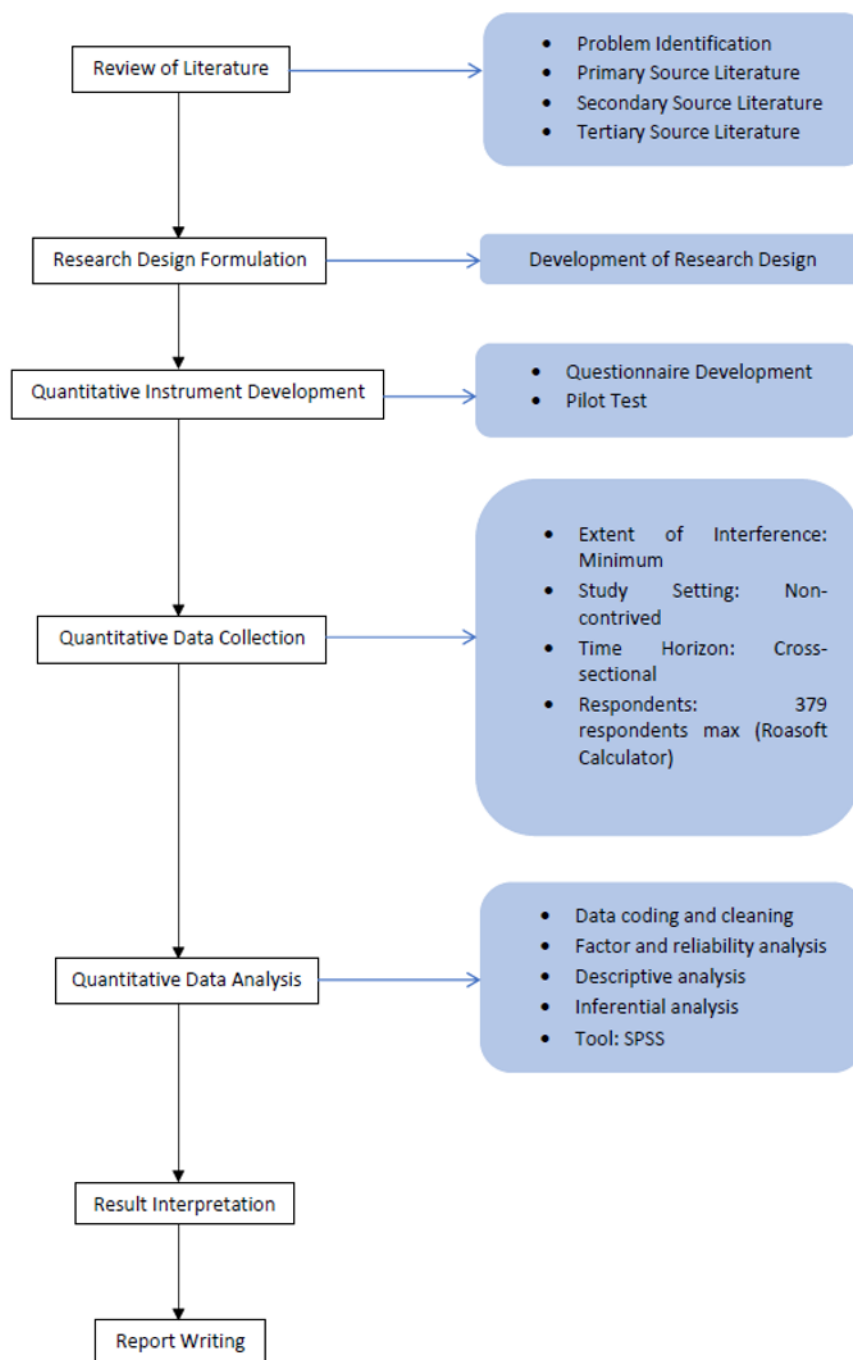


Figure 1

Population and Sampling of the Study

In this study, the researcher focuses on the WhatsApp service user at Sabah State Library, Headquarters as other branches have not actively used the platform in their services. Figure 2

below shows the Sabah State Library statistic on the WhatsApp reference service record for year 2025.

KUMULATIF STATISTIK PERTANYAAN RUJUKAN MELALUI WHATSAPP 2025

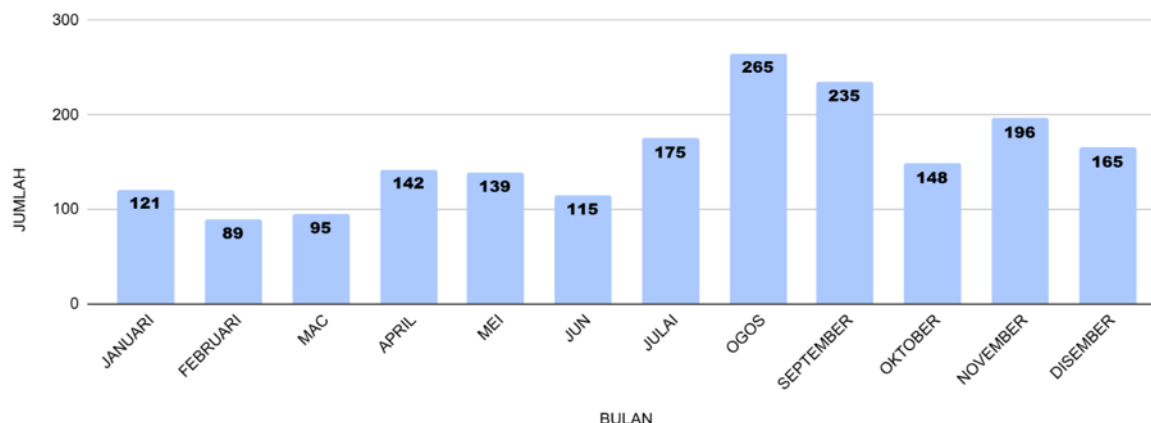


Figure 2

Based on the statistic, total users for year 2025 is 1,885 and this study is using this number as the population to calculate sample size. Therefore, a three-hundred twenty sample size (320) is required. The sample size was calculated using the Raosoft sample size calculator with a 5% precision rate, 95% confidence level, and 50% distribution response. The sample size calculator is shown in Plate 1 below.

Population Size

1885

Margin of Error (%)

5

Confidence Level

95%

Response Distribution (%)

50

Results (Forward)

Required Sample Size (infinite population): 385

Adjusted Sample Size (finite population): 320

Multi-Confidence Table

Based on your Margin of Error and Response Distribution.

Confidence Level	Z-score	Sample Size (∞ population)	Sample Size (finite pop)
80%	1.2816	165	152
85%	1.4395	208	187
90%	1.6449	271	237
95%	1.9600	385	320
99%	2.5758	664	491

Plate 1

Data Analysis

The quantitative approach was used in this study. The statistical analyses include descriptive statistics, independent-sample t-test, reliability analysis, confirmatory factor analysis, common method bias analysis, Pearson's coefficient correlation, and multiple regression analysis. Based on the findings discussed, this research outcome supports all the hypotheses proposed during the earlier stages of this research. The six hypotheses were tested, and positive outcomes were proven, with four independent variables that have significant relationships with user satisfaction. All the independent variables were significantly mediated by digital literacy to user satisfaction. The data analysis is outlined as follows:

Response Rate

Four hundred (400) sets of questionnaires were distributed among the respondents, all WhatsApp service users in Sabah State Library, Headquarters. Data were entered with a return rate of 96.3% (385 of responded questionnaires were returned out of 400). The data was screened to ensure no errors in data entry by detecting any 'out of range values' using the 'Descriptive' and 'Frequencies' commands. All the responses are completed without any missing values. There is a consensus that a response rate of 70% and above is necessary to ensure that the obtained sample is sufficiently representative of the target population from which its member is drawn (Patel et al., 2003).

Table 1: Response Rate

Type of Distribution Method	Total Distributed		Total Returned		Total Usable	
	No.	%	No.	%	No.	%
Sabah State Library WhatsApp	200	50	185	46.3	185	46.3
Physical in Sabah State Library	200	50	200	50	200	50
Total	400	100	385	96.3	386	96.3

As exhibited in Table 1, the highest rate was from the physically distributed in Sabah State Library (n=200) or 50%, distributed via Sabah State Library, Headquarters WhatsApp service (n=185) or 46.3%, similar to the usable responses. Altogether, there were 385 usable questionnaires, yielding 96.5% of the total questionnaires being distributed. Thus, the rate exceeds the required sample size of 320, as Barlett et al. (2001) recommended. All questionnaires were returned on schedule or within six weeks.

Reliability of Variables

The researcher computes the Cronbach's alpha for each component. As shown in Table 2, the values of Cronbach's alpha are higher than 0.7 for all items. It is important to note that all reliability measures have exceeded the minimum value of 0.7, as Nunally (1978) recommended. DeVellis discusses the importance of reliability in scale development and suggests that a Cronbach's alpha of 0.7 is a widely accepted minimum standard for reliability (DeVellis, 2016). George and Mallery provide a rule of thumb for interpreting Cronbach's alpha values: > 0.9 – Excellent, > 0.8 – Good, > 0.7 – Acceptable, > 0.6 – Questionable, > 0.5 – Poor, and < 0.5 – Unacceptable (George & Mallery, 2016).

Table 2: Summary of Reliability Statistics

Variables	Number of items in a component	Cronbach's Alpha
Digital Literacy	3	0.712
Perceived Usefulness	6	0.769
Perceived Ease of Use	6	0.786
Facilitating Condition	4	0.750
Behavioural Intention	3	0.800
User Satisfaction	3	0.837

Descriptive Analysis for Each Variable

Table 3: Descriptive Statistics

	N	Range	Mean	Std. Deviation	Variance
ALL_DL	385	3.67	4.0147	.72812	.530
ALL_PU	385	4.00	4.0974	.65548	.430
ALL_PEU	385	3.67	4.0810	.65264	.426
ALL_FC	385	4.00	3.8409	.75982	.577
ALL_BI	385	4.00	3.8519	.70157	.492
ALL_US	385	4.00	3.6476	.84860	.720
Valid N (listwise)	385				

Table 3 displays the descriptive analysis for each variable. To rate the level of high and low, this study uses (Sözen & Güven, 2019) shown in Table 4.23, which proposed that on the Likert Scale, a value number from 1-2 ranged from 1.00 to 2.60 is considered as low; 2.61 to 3.40 which value number 3 is Medium; and more than 4 – 5 is high as the range scored 3.41 to 5.00. The scoring range is shown in Table 4.19 below. Similarly, Winarti et al. (2019) interpret Likert scale responses with a slightly different range, categorizing 1-1.80 as "Strongly Disagree," 1.81-2.60 as "Disagree," 2.61-3.40 as "Neutral," and 3.41-4.20 as "Agree," and 4.21-5.00 as "Strongly Agree". Therefore, based on that measurement, the level of digital literacy among users of Sabah State Library is considered high, as the mean is 4.0147. The scoring range is more than 4. Similarly, the perceived usefulness and perceived ease of use are also considered high, as the scoring range is 4.0974 and 4.0810. On the other hand, the facilitating condition factor gets a scoring range of 3.8409, which is still considered high because it is between 3.41 and 5.00. Hence, all other factors in this study also have a high scoring range between 3.41 to 5.00, with behavioural intention at a 3.8519 score and user satisfaction at 3.6476.

Correlation of Variables

Table 4: Correlation of Variables

		ALL_DL	ALL_PU	ALL_PEU	ALL_FC	ALL_BI	ALL_US
ALL_DL	Pearson Correlation	1	.647**	.353**	.431**	.419**	.325**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	385	385	385	385	385	385
ALL_PU	Pearson Correlation	.647**	1	.381**	.387**	.408**	.342**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	385	385	385	385	385	385
ALL_PEU	Pearson Correlation	.353**	.381**	1	.717**	.681**	.483**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	385	385	385	385	385	385
ALL_FC	Pearson Correlation	.431**	.387**	.717**	1	.765**	.736**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	385	385	385	385	385	385
ALL_BI	Pearson Correlation	.419**	.408**	.681**	.765**	1	.657**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	385	385	385	385	385	385
ALL_US	Pearson Correlation	.325**	.342**	.483**	.736**	.657**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	385	385	385	385	385	385

** . Correlation is significant at the 0.01 level (2-tailed).

Table 4 shows the correlation between all the variables. The correlation after factor analysis was performed using the Pearson Correlation Coefficient. The result showed that the factors are correlated with weak to strong correlations. The results indicated that digital literacy and user satisfaction were weakly correlated with the correlation coefficient ($p < 0.00$, $r = 0.325$) as the range is between 0.20 – 0.39, which is considered a weak correlation (Evans, 1996), as shown in Table 4.25 below. Results also show that perceived usefulness was weakly correlated with user satisfaction with a correlation coefficient ($p < 0.00$, $r = 0.342$). Besides that, digital literacy and perceived ease of use also show a weak correlation with the correlation coefficient ($p < 0.00$, $r = 0.353$). Meanwhile, perceived usefulness and perceived ease of use reveal a weak correlation with the correlation coefficient ($p < 0.00$, $r = 0.381$). Similarly, facilitating conditions and perceived usefulness also shows a weak correlation with the correlation coefficient ($p < 0.00$, $r = 0.387$). On the other hand, all other factors show moderate to strong correlation, with the strongest correlation being the behavioural intention and facilitating condition with a correlation coefficient ($p < 0.00$, $r = 0.765$).

FINDINGS AND DISCUSSION

The findings of this study reveal that perceived usefulness, perceived ease of use, facilitating conditions, and behavioural intention significantly influence users' satisfaction toward the Sabah State Library WhatsApp service. Among these factors, facilitating conditions and

behavioural intention demonstrated the strongest relationship with user satisfaction, indicating that access to appropriate ICT infrastructure, internet connectivity, digital devices, support, and users' willingness to continue engaging with the platform are crucial determinants of satisfaction. Perceived ease of use showed a moderate relationship with satisfaction, suggesting that although users generally find WhatsApp is somehow manageable to use, satisfaction is also influenced by other factors such as content quality, engagement, and digital experience. Meanwhile, perceived usefulness recorded the weakest relationship with satisfaction, implying that users may view the library's WhatsApp service primarily as an informational or social platform rather than a tool that directly enhances productivity or work performance. The study also confirmed that digital literacy mediates the relationship between all independent variables and user satisfaction, demonstrating that digitally literate users are better able to navigate, engage with, and benefit from the library's social media services. Despite challenges related to the digital divide, geographical disparities, and inconsistent ICT infrastructure in Sabah, the findings indicate that the community remains highly motivated to improve digital literacy and adopt digital technologies. Furthermore, the study highlighted issues such as inactive library social media management, limited content engagement, and insufficient promotion of the WhatsApp service, which may affect users' perceptions and satisfaction. Overall, the study concludes that improving facilitating conditions, strengthening digital literacy, and maintaining active, user-centred social media engagement are essential strategies for enhancing user satisfaction with the library's WhatsApp services.

Research Contribution

This contribution focuses on theory development and the enhancement of existing theories through logical reasoning and supporting evidence. A theoretical framework is established to explain the underlying causes of the research problem. Understanding users' expectations is crucial for libraries to improve services and meet user satisfaction. As a user-centered study, this research will analyze expectations and perceptions from the users' viewpoint. The findings will assist the library in creating guidelines for effectively using social media platforms as tools for information dissemination.

Enhancement of Library Services

The study can provide insights into how WhatsApp can improve the delivery of library services, such as book reservations, event notifications, and information dissemination, making it easier for users to access library resources in a convenient and timely manner.

Improved User Engagement

By understanding the effectiveness of WhatsApp as a communication tool, the study can contribute to better user engagement strategies, helping the library connect more actively with its users through personalized and direct messaging.

Development of a Communication Framework

The research could lead to the development of a communication framework or best practices for libraries in using WhatsApp for outreach, providing guidelines for other libraries in Sabah and beyond on how to effectively integrate the platform into their communication strategy.

Addressing the Digital Divide

The study may contribute to addressing the digital divide by exploring how WhatsApp, as a widely used and accessible application, can bridge the gap between tech-savvy users and those with limited access to more sophisticated technology platforms.

Informing Policy and Management Decisions

The findings could guide library management and policymakers in making informed decisions about resource allocation, digital literacy training, and the adoption of social media tools to enhance library services.

Contributing to Social Media Research in Libraries

The research could add to the growing body of literature on social media usage in libraries, specifically focusing on WhatsApp, which is under-researched compared to other platforms like Facebook and Twitter.

User Satisfaction and Feedback Mechanism

The study can explore user satisfaction with WhatsApp as a communication tool, offering insights into how the platform can be tailored to meet user preferences, thus improving overall library user experience.

CONCLUSION

In summary, social media has become an essential communication and promotional tool for public libraries today. This chapter discussed various issues related to social media, including privacy concerns, digital literacy, the digital divide, and inactive library social media platforms. The researcher aims to explore and assess users' satisfaction with public library social media. By the conclusion of this study, the researcher will explain how the findings can benefit public libraries in general, with a particular focus on the Sabah State Library, as the study specifically examines public libraries in Sabah, Malaysia. The research objectives and questions are user-centered, providing valuable insights for the library's reference and improvement.

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