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Negotiating Religious Moderation In The Digital Sphere: Digital Literacy, Gender Gaps, and Radicalism Exposure Among Pesantren Students

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Abstrak

Fenomena globalisasi digital telah memperkuat peran media daring dalam penyebaran berbagai paham, termasuk radikalisme, yang menimbulkan tantangan besar bagi pesantren sebagai pusat pendidikan Islam. Penelitian ini difokuskan untuk mengevaluasi tingkat literasi digital santri dalam menghadapi isu radikalisme, serta menganalisis variasi tingkat literasi tersebut berdasarkan wilayah dan jenis kelamin santri di 6 provinsi di Pulau Jawa. Metode penelitian yang digunakan adalah survei kuantitatif. Tahapan metodologi terdiri dari: (1) validasi dan reliabilitas instrumen literasi digital berbasis kerangka Kominfo; (2) penentuan populasi dan pemerataan sampel santri secara stratified random sampling di enam wilayah; (3) pengumpulan data melalui angket daring terkonstruksi; (4) pengolahan data secara sistematis melalui coding dan cleaning; dan (5) analisis statistik deskriptif, komparasi skor mean dan standar deviasi, serta kategorisasi skor untuk masing-masing variabel demografi dan gender. Hasil penelitian menunjukkan bahwa santri didominasi oleh kategori literasi digital "sedang" dan "tinggi" di seluruh wilayah. Berdasarkan jenis kelamin, santri perempuan lebih banyak pada kategori "tinggi" (31,5%) dibandingkan laki-laki (27,7%), sementara kategori "sedang" hampir seimbang pada kedua kelompok. Namun, kategori "rendah" dan "sangat rendah" tetap ada di semua kelompok dan wilayah, menunjukkan adanya tantangan literasi digital yang perlu diatasi. Implikasi penelitian ini menegaskan perlunya integrasi literasi digital ke dalam kurikulum dan budaya pendidikan pesantren yang responsif terhadap isu-isu aktual. Program literasi digital yang adaptif berpotensi membangun daya kritis santri, memperkuat ketahanan terhadap radikalisme daring, serta memperkuat moderasi beragama di era digital.

Kata Kunci: Literasi Digital, Moderasi Beragama, Pesantren, Radikalisme, Santri



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Abstract

The digital globalization phenomenon has strengthened the role of online media in the spread of various ideas, including radicalism, which poses a significant challenge for Islamic boarding schools as centers of Islamic education. This research aims to evaluate students' digital literacy in addressing radicalism and to analyze variation in literacy levels by region and gender across six provinces on the island of Java. The research method used is a quantitative survey. The methodological stages consist of: (1) validation and reliability of digital literacy instruments based on the Ministry of Communication and Information framework; (2) determination of the population and equitable distribution of student samples by stratified random sampling in six regions; (3) data collection through a constructed online questionnaire; (4) systematic data processing through coding and cleaning; and (5) descriptive statistical analysis, comparison of mean and standard deviation scores, and score categorization for each demographic and gender variable. The study's results indicate that students are predominantly categorized as having "Intermediate" and "high" digital literacy levels across all regions. By gender, female students were more likely to be in the "high" category (31.5%) than male students (27.7%), while the "Intermediate" category was almost equally represented in both groups. However, the "low" and "very low" categories persist across all groups and regions, indicating that digital literacy challenges remain to be addressed. The implications of this study emphasize the need to integrate digital literacy into the curriculum and culture of pesantren education in a way that is responsive to current issues. Adaptive digital literacy programs have the potential to develop students' critical thinking skills, enhance their resilience to online radicalization, and foster religious moderation in the digital era.

Keywords: *Digital Literacy, Islamic Boarding School, Moderation, Radicalism, Religious, Santri*

INTRODUCTION

Digital transformation has changed the ways religious knowledge is produced, accessed, circulated, and interpreted. In contemporary Islamic education, students no longer encounter religious teachings only through teachers, textbooks, sermons, or pesantren-based learning traditions. They also encounter religious messages through social media, video platforms, messaging applications, and informal online religious communities. This situation creates new opportunities for Islamic education, but it also raises new challenges. Islamic education is now expected to cultivate not only religious knowledge, but also critical thinking, ethical digital engagement, and the ability to interpret religious texts within their social and historical contexts. UNESCO (2017) emphasizes that education has an important role in preventing violent extremism by strengthening critical reflection, inclusive citizenship, and respect for diversity.

This phenomenon is highly relevant in Indonesia because digital media have become a major part of everyday life. The Indonesian Internet Service Providers Association reported that internet users in Indonesia reached 221.56 million people in 2024, with a national penetration rate of 79.5%. The same report also shows that Java is the most digitally connected region, with an internet penetration rate of 83.64% and a contribution of 58.76% of national internet users. These figures indicate that digital media have become a central arena for communication, learning, and religious interaction among Indonesian citizens, including Muslim youth and pesantren students. The rapid expansion of digital connectivity, therefore, requires stronger digital literacy, especially in educational environments that shape future religious actors and community leaders (Asosiasi Penyelenggara Jasa Internet Indonesia [APJII], 2024).

The expansion of digital connectivity has also intensified information overload. The internet provides access to educational resources, religious lectures, Islamic learning materials, and diverse interpretations of religious issues. At the same time, it exposes users to misinformation, disinformation, hoaxes, hate speech, conspiracy narratives, and manipulative religious content. Am and Weimann (2020) argue that extremist communication in the digital space often uses persuasive narratives and emotional framing to attract sympathy. Similar concerns have also been raised by studies showing that hoaxes and provocative content may contribute to hostility, intolerance, and radical attitudes when users cannot verify information and evaluate digital sources critically (Hidaya et al., 2019; Magdalena & Wardani, 2017; Silva & Capellan, 2019).

This study uses the term 'radicalism' in a specific, operational sense. Radicalism is not understood as strict religiosity, theological conservatism, or strong commitment to Islamic teachings. It refers to a pattern of religious understanding and communication that legitimizes exclusion, hostility, coercion, or violence against individuals, groups, or the state based on ideological claims. Schmid (2013) distinguishes radical ideas from violent extremism, but he also notes that radical ideas become a concern when they justify violence or reject peaceful civic coexistence. In line with this position, this study defines radical content as digital religious narratives

that contain exclusionary, anti-civic, intolerant, or violence-justifying elements (Schmid, 2013; UNODC, 2018).

Operationally, radical content in this study is identified through several indicators. These include the justification of violence in the name of religion, the rejection of national commitment, intolerance toward different religious or intra-religious groups, takfiri or dehumanizing narratives, calls to support extremist movements, and the use of conspiracy, hatred, or fear to construct hostility toward out-groups. These indicators clarify the conceptual boundary of this research. The study does not equate radicalism with ordinary religious piety, strong Islamic identity, or conservative religious practice. Its focus is limited to digital religious narratives that weaken peaceful coexistence, civic commitment, and non-violent religious engagement (Schmid, 2013; UNODC, 2018).

Digital literacy becomes important in this context because it shapes how students access, verify, interpret, and respond to religious information. Law et al. (2018) define digital literacy as a set of competencies that includes information and data literacy, communication and collaboration, content creation, safety, problem solving, and operational skills. Vuorikari et al. (2022) also emphasize that digital competence includes knowledge, skills, and attitudes that enable citizens to engage with digital technologies critically, safely, and responsibly. In the Indonesian context, digital literacy is understood as the ability to understand, evaluate, and disseminate information through digital platforms. This competence involves not only technical ability, but also cognitive, ethical, and evaluative work (Center for Digital Society, 2021; In'amurrohman, 2019; Irhandayaningsih, 2020; Prastyo, 2022).

Digital literacy is closely related to religious moderation. Students with stronger digital literacy are expected to be better able to distinguish credible religious sources from manipulative content. They are also more likely to identify hate-based narratives, recognize ideological framing, and avoid impulsive dissemination of unverified religious messages. In this sense, digital literacy functions as a cognitive and ethical filter that supports moderate religious reasoning. The Ministry of Religious Affairs of the Republic of Indonesia (2019) defines religious moderation through four main indicators: national commitment, tolerance, anti-violence, and accommodation of local culture. These indicators provide an analytical basis for

examining whether students' religious attitudes are inclusive, civic, peaceful, and culturally responsive.

The relationship between digital literacy and religious moderation can be understood through an integrative conceptual framework. Digital literacy is positioned as a critical competence that enables santri to access information, verify sources, evaluate online religious narratives, communicate responsibly, and maintain digital safety. Religious knowledge is positioned as an interpretive resource that can strengthen resilience when it is contextual, dialogical, and ethically oriented. Religious moderation is positioned as an attitudinal and ethical orientation reflected in national commitment, tolerance, anti-violence, and accommodation of local culture. Vulnerability to online radicalism is understood as the tendency to accept, justify, or disseminate religious narratives that contain exclusionary, anti-civic, or violence-justifying elements. In this framework, digital literacy and religious knowledge are expected to strengthen religious moderation and reduce vulnerability to radical content. Gender is examined as a comparative factor that may shape differences in access, competence, and interpretation (Law et al., 2018; Kementerian Agama RI, 2019; Schmid, 2013; Vuorikari et al., 2022).

The urgency of this study is grounded in the strategic position of pesantren students. Pesantren are not only institutions of Islamic learning, but also spaces of moral formation, social discipline, religious authority, and community leadership. Santri are often assumed to have stronger religious knowledge than students in general educational settings. However, religious knowledge alone does not automatically produce resilience against online radicalism. Emawati et al. (2025) show that pesantren are not entirely immune to the circulation of radical narratives. In digital environments, resilience also requires the ability to evaluate digital sources, identify ideological manipulation, compare religious interpretations, and respond ethically to controversial religious content.

This study focuses on pesantren students on the island of Java for several scientific reasons. Java has the largest concentration of pesantren and the highest level of digital connectivity in Indonesia. It also contains diverse pesantren traditions, including salaf, khalaf, modern, urban, peri-urban, and rural pesantren. This diversity provides a complex empirical setting for examining how santri encounter, interpret,

and respond to religious content in digital spaces. Java is also a central arena of Indonesian Islamic public discourse, where pesantren authority, social media da'wah, youth digital culture, and political-religious narratives interact intensively. These conditions make Java a relevant site for analyzing the relationship between digital literacy, religious moderation, and vulnerability to online radicalism among santri (APJII, 2024; Kementerian Agama RI, 2024).

Gender is another important dimension in this study. Digital literacy is not always distributed equally among male and female users. Rizkinaswara (2020) noted that women's access to the internet and digital technology remains lower than men's in several contexts. The Indonesian Digital Literacy Status Report also shows differences between male and female respondents in digital skills, digital ethics, and digital safety. These differences may influence how male and female santri access religious information, assess online religious authority, and respond to radical or intolerant content. For this reason, gender comparisons are important for understanding whether digital literacy and resilience toward online radicalism differ between male and female pesantren students (Kemenkominfo & Katadata Insight Center, 2022).

This study aims to analyze how pesantren students on the island of Java negotiate religious moderation in the digital space. The primary focus is to examine the level of digital literacy among santri in identifying, evaluating, and responding to religious content that may contain radical elements. The study also examines religious moderation as an analytical construct measured through national commitment, tolerance, anti-violence, and accommodation of local culture. It compares digital literacy between male and female students to identify gender-based differences. It also investigates the relationship between students' religious knowledge and their vulnerability or resilience to exposure to online radicalism.

Recent scholarship has increasingly examined pesantren in relation to digital transformation, media literacy, religious moderation, and the prevention of radicalism. Fitri et al. (2022) showed that pesantren can develop media literacy through social media management, media teams, literacy workshops, and anti-hoax training. Mustofa et al. (2023) examined the transformation of pesantren learning traditions through hybrid religious education and online ngaji practices. Ni'mah et

al. (2024) discussed the internalization of religious moderation through digital literacy in Islamic educational settings. Fanaqi et al. (2025) examined information literacy as a tool for countering radicalism among santri. Their study shows that pesantren-based counter-narratives may reframe the meanings of jihad and da'wah, strengthen national insight, and promote digital media literacy.

Other recent studies have also expanded the discussion. Ma'arif et al. (2025) highlighted the need to strengthen Islamic teachers' digital competence through a fiqh-based approach oriented toward religious moderation. Khafidin et al. (2025) demonstrated that Islamic digital literacy and digital religious identity can influence santri religious behavior through attitudes toward technology and pesantren culture. These studies indicate that pesantren are no longer isolated from digital transformation. They are actively negotiating the relationship among religious authority, digital culture, media competence, and the need to prevent the spread of radical narratives in online environments.

Although these studies have provided important insights, several research gaps remain. First, studies such as Fitri et al. (2022) and Ma'arif et al. (2025) still tend to focus on institutional strategies, teacher competence, or pesantren media management rather than measuring santri's digital literacy as an empirical variable. Second, research on religious moderation often emphasizes normative values, while the connection between moderation and digital literacy competencies remains underdeveloped, as Ni'mah et al. (2024) note. Third, studies on pesantren and radicalism have begun to address counter-radicalism through literacy-based approaches, yet radicalism is rarely defined operationally through explicit indicators of digital content (Fanaqi et al., 2025). Fourth, although Khafidin et al. (2025) examined Islamic digital literacy and santri religious behavior, gender differences in digital literacy and vulnerability to radical narratives remain underexplored. These limitations highlight the need for a study that integrates digital literacy, religious moderation, gender comparisons, religious knowledge, and vulnerability to online radicalism within a single empirical framework.

The novelty of this study lies in its integrative approach. It does not treat digital literacy merely as technical competence, nor does it treat religious moderation only as a normative educational value. Instead, it connects digital literacy with

religious moderation and online radicalism through a clear conceptual model. Digital literacy is examined as a critical capacity that enables santri to evaluate online religious narratives. Religious moderation is examined as an attitudinal and ethical orientation that shapes students' responses to difference, national commitment, violence, and local culture. Vulnerability to online radicalism is examined through explicit indicators of radical content. This approach allows the study to explain how pesantren students negotiate religious authority, digital information, and moderate religious attitudes in contemporary Indonesia.

This study contributes to the literature in three ways. First, it provides empirical evidence on the digital literacy of santri in Java, a region that is both highly connected digitally and central to pesantren-based Islamic education. Second, it strengthens the analytical relationship between digital literacy and religious moderation by linking both concepts to the problem of online radicalism. Third, it offers a gender-sensitive understanding of how male and female santri may differ in digital competence, religious interpretation, and vulnerability to radical narratives. Through these contributions, the study advances a more integrated understanding of religion, technology, education, and radicalism in the context of contemporary Islamic boarding schools.

METHOD

Approaches and Types of Research

This research employs a quantitative approach, utilizing the survey method. The survey was conducted by distributing a questionnaire to students to assess their digital literacy regarding radicalism. The questionnaire used in this study adheres to the Ministry of Communication and Informatics' standard for assessing digital literacy, which has subsequently been tailored to address concerns related specifically to radicalism.

Research Respondents

The respondents in this study were pesantren students from six provinces on the island of Java, namely West Java, Banten, DKI Jakarta, Central Java, the Special Region of Yogyakarta, and East Java. The study employed purposive sampling, selecting respondents based on characteristics directly relevant to the research

objectives. The pesantren were selected by considering provincial representation, institutional accessibility, and variation in pesantren characteristics. The participating institutions comprised 12 pesantren, including 6 salaf/traditional pesantren and 6 modern pesantren, located in urban and rural areas. This variation was intended to capture the diversity of pesantren environments in Java and to avoid limiting the study to a single institutional model.

The respondents were recruited through coordination with pesantren administrators, teachers, or student supervisors who acted as institutional gatekeepers. After obtaining permission from each pesantren, the researchers distributed the questionnaire to students who met the inclusion criteria. These criteria included being an active santri, studying in a pesantren located in one of the six provinces on Java, and being male or female. The questionnaire was distributed online through Google Forms. Participation was voluntary, and respondents were informed of the study's purpose before completing the questionnaire. Santri were selected as research subjects because they represent an educated, young Muslim generation with formal exposure to religious learning and are active users of digital media.

Data Collection Methods

Quantitative data were collected using a structured, closed-ended questionnaire developed around the four pillars of digital literacy. The instrument was adapted from a standardized questionnaire issued by the Ministry of Communication and Information of the Republic of Indonesia, which has been empirically tested and demonstrates established levels of validity and reliability. The use of this instrument ensured methodological rigor and consistency in measuring respondents' digital literacy competencies.

Data collection was conducted via an online survey to facilitate broad, efficient participation. The questionnaire was distributed via Google Forms to students at Pesantren across Java, allowing respondents to complete the survey remotely. This approach was deemed appropriate given the study's geographical scope and the digital context under investigation. Online distribution also enabled systematic data management while ensuring accessibility for participants who are familiar with digital platforms.

Measurement Procedure

The initial questionnaire consisted of 30 items, arranged into the four pillars of digital literacy: Digital Skills, Digital Ethics, Digital Security, and Digital Culture. The digital literacy level indicator scores are measured on a Likert scale from 1 to 4. Each answer was assigned a weight, specifically a score of 1 (one) for the "Disagree or Never" (TS) answer, a score of 2 (Two) for the "Agree or Sometimes" (CS) answer, and a score of 3 (Three) for the "Agree or Often" (S) answer. For the Strongly Agree or Always (SS) answer, a score of 4 (Four) was given.

Validity and Reliability Tests

Measuring the level of digital literacy of Pesantren students on the issue of radicalism using a research instrument in a questionnaire. The theoretical basis for the questionnaire is grounded in the four pillars of digital literacy, as outlined by the Ministry of Communication and Information of the Republic of Indonesia. The reference questionnaire from the Ministry of Communication and Informatics was then modified by linking it to questions on radicalism. The procedure for calculating validity, reliability, and normality tests was repeated (Kemenkominfo, 2022).

The variable of this study is digital literacy with 4 (four) indicators: digital skills, digital ethics, digital safety, and digital culture. Each of these indicators consists of 4 (four) sub-indicators, and each sub-indicator is reduced to 2 question items, so that the total items in this research questionnaire consist of 32 question items. This questionnaire consists of various statements related to the experience of accessing the digital world in relation to the issue of radicalism. There are four answer options provided for each statement. Responses were measured on a four-point Likert scale to assess the extent to which each statement reflected respondents' experiences. The scale ranged from TS (does not suit me at all or never) to SS (very much suits me or very often), with intermediate categories CS (suits me to a certain degree or sometimes) and S (quite often or to a considerable extent). This scale was employed to encourage clear response differentiation and reduce neutral bias in participants' answers.

Based on the validity test results in SPSS, three items were found to be invalid: Questions 7, 9, and 11. Question item number 7 obtained a sig value of 0.115, question item number 9 obtained a sig value of 0.401, and question number 11

obtained a sig value of 0.175. All three have a sig value greater than 0.05 (≥ 0.05), so they are declared invalid. The invalid question item will not be used in the data collection for hypothesis determination. Of the 32 question items prepared for this study, three were invalid: items 7, 9, and 11. Thus, the question items in the hypothesis test totaled 29.

The reliability and validity of the questionnaire were assessed using SPSS. Reliability refers to the consistency of a measurement instrument in producing stable results across repeated applications. In this study, instrument reliability was evaluated using Cronbach's Alpha, as the questionnaire employed a multi-level Likert scale. A Cronbach's Alpha value of 0.70 or higher is generally considered acceptable; values above 0.80 indicate high reliability, and values exceeding 0.90 reflect excellent reliability. The reliability analysis produced a Cronbach's Alpha coefficient of 0.906. This result indicates that the questionnaire demonstrates excellent internal consistency and is highly reliable for measuring digital literacy among pesantren students.

Data Analysis Techniques: Determining the Level of Digital Literacy

The categorization of resilience levels in this study utilizes the Norm Reference Assessment. The Norm-Referenced Assessment generally indicates a person's ranking relative to the group taking the test. It is an evaluation conducted in relation to group norms. The values obtained by respondents are compared with those of other respondents included in the same group. What is meant by "norm" in this case is the capacity or achievement of the group, while "group" can refer to several respondents in a rayon, province, or region (Pangastuti & Munfa'Ati, 2018). The results of the calculation serve as a reference for assessment and are relative, varying with fluctuations in the average value and the standard deviation at that time.

The level of digital literacy was determined through descriptive statistical analysis, specifically by calculating the mean and standard deviation. The mean was used to determine the average score of respondents, reflecting the overall level of digital literacy within the study population. It was determined by aggregating all individual respondent scores and dividing the sum by the total number of respondents.

The standard deviation was calculated to measure the dispersion of respondents' scores around the mean. This statistic indicates the extent to which individual scores deviate from the average, providing insight into the consistency or variability of digital literacy levels among pesantren students. These measures collectively provide a clear, systematic representation of the data distribution.

The determination of students' digital literacy levels regarding radicalism is based on their total questionnaire scores. Digital literacy levels are categorized using the Norm-Reference Assessment formula outlined in Table 1 below.

Table 1. Norm-Reference Assesment

Category	Norm Formula	Score Range
Very High	$X > M + 1,5SD$	$X > 109$
High	$M + 0,5SD < X \leq M + 1,5SD$	100-109
Intermediate	$M - 0,5SD < X \leq M + 0,5SD$	90-100
Low	$M - 1,5SD < X \leq M - 0,5SD$	80-90
Very Low	$X \leq M - 1,5SD$	$X \leq 80$

RESULT AND DISCUSSION

Digital Literacy Concept

Nearly two decades ago, Gilster defined digital literacy as "the ability to understand and use information in a variety of formats from a variety of sources when presented through a computer" (Gilster, 1997). At this time, the development of the internet is still in its early stages. More than a decade later, the internet has permeated all walks of life. Fieldhouse & Nicholas (2008) emphasized that terms such as literacy and fluency reflect the behavior of internet users in accessing and evaluating information scattered across cyberspace. Digital literacy, analogous to the fundamental processes of reading and writing, encompasses analytical activities that integrate color, motion, and audiovisual components, alongside diverse forms of multimodal content. Just as literate individuals navigate printed texts through reading and writing, technologically proficient users can both consume and generate digital composites. The development of digital literacy has become an essential skill, as digitalization has infiltrated all facets of contemporary life (H. A. Spires et al., 2018).

The theory presented by Spires and Bartlett classifies the various intellectual processes related to digital literacy into three categories: (a) discovering and consuming digital content, (b) creating digital content, and (c) communicating digital

content (H. Spire & Bartlett, 2012). An overview of the intellectual process of digital literacy is illustrated in Figure 1.

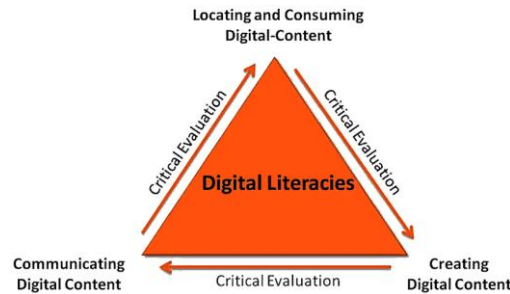


Figure 1. Digital Literacy Intellectual Process
Source: Spire dan Bartlett (2012)

Digital literacy skills entail an individual's ability to identify appropriate sources of information, produce digital content proficiently, communicate judiciously, and do so in accordance with ethical standards. In evaluating digital literacy, the reference is the four pillars of the digital literacy curriculum developed by the Ministry of Communication and Information of the Republic of Indonesia, which are articulated into 30 indicators. These indicators are formulated based on four fundamental pillars: digital skills, digital ethics, digital security, and digital culture. The formation of these indicators is grounded in principles for using information in the digital realm. Moreover, the Ministry of Communication and Information has aligned the development of these indicators with the G20 Toolkit for Measuring Digital Skills and Digital Literacy: Framework and Approach, which is updated annually (Kemenkominfo, 2022).

The four pillars comprise the framework for developing the digital literacy curriculum and serve as a foundational reference in this study, namely: 1) Digital Skill or digital proficiency, defined as the ability to operate digital operating systems and software, thereby enabling individuals to acquire knowledge, understanding, and practical skills in their use. 2) Digital Ethics, also referred to as digital ethics, pertains to an individual's competence to act in accordance with digital ethical governance, fostering self-awareness, exemplifying appropriate behavior, and adjusting conduct within the digital realm. Digital ethics also encompasses the ability to critically evaluate acquired information and exercise prudent judgment when sharing it. 3)

Digital Safety or digital security represents the ability of digital users to recognize and be aware of personal data protection in the digital environment, and to analyze and implement protective measures for personal data during digital interactions. 4) Digital Culture, or digital culture, refers to the capability of individuals to recognize and cultivate national insights based on the principles and philosophy of the nation, namely Pancasila and Bhinneka Tunggal Ika, in engaging with the digital world and utilizing ICT. On a global scale, this study uses a conceptual framework developed by the Ministry of Communication and Information to assess digital literacy levels. To address the issues raised, particularly those related to radicalism and misinformation, subsequent adjustments were made.

Distribution of respondents by region

This research was conducted in the Java Island region, comprising six provinces: West Java, Banten, DKI Jakarta, Central Java, the Special Region of Yogyakarta, and East Java. The total number of respondents in this study was 677. The distribution of respondents by region is presented in Table 2 below.

Table 2. Distribution of respondents by region

No	Province	Quantity	Percentage (%)
1	DKI Jakarta	95	14.03 %
2	West Java	124	18.32 %
3	Banten	95	14.03 %
4	Central Java	209	30.87 %
5	DI Yogyakarta	80	11.82 %
6	East Java	74	10.93 %
	Total	677	100.00 %

Table 2 presents the frequency and percentage of respondents by province on the island of Java. The number of research respondents was spread across six provinces with relatively varied compositions. The province with the highest number of respondents is Central Java, with 211 respondents, accounting for 30.87% of the total. The province with the most respondents is West Java, with 124 respondents (18.32 percent), followed by DKI Jakarta and Banten, each with 95 respondents (14.03 percent). Meanwhile, DI Yogyakarta contributed 80 respondents (11.82 percent), while East Java had the fewest respondents, at 74 (10.93 percent).

Distribution of Respondents by Gender

This study involved student respondents, both male and female, in roughly equal numbers. The male respondents totaled 318, whereas the female respondents comprised 361. The distribution of respondents by gender is presented in Table 3 as follows.

Table 3. Distribution of Respondents by Gender

No	Province	Male (n)	Female (n)	Total	Percentage (%)
1	DKI Jakarta	41	54	95	14.03
2	West Java	63	61	124	18.32
3	Banten	42	53	95	14.03
4	Central Java	97	112	209	30.87
5	DI Yogyakarta	39	41	80	11.82
6	East Java	36	38	74	10.93
Total		318	359	677	100.00

Table 3 shows that the overall sample comprised 677 respondents, of whom 318 were males and 359 were females. The total proportion shows a mild dominance of women, namely 53.03 percent compared to 46.97 percent of men. Central Java Province contributed the most significant sample, with 209 respondents, accounting for 30.8 percent of the total. West Java followed with 124 respondents (18.32 percent). The other three provinces each contributed between 10.93% and 14.03%. This study involved 95 respondents from DKI Jakarta (14.03%), 95 respondents from Banten (14.03%), and 80 respondents from DI Yogyakarta (11.82%). The province with the fewest number of respondents is East Java, with 74 respondents (10.93 percent).

When analyzed by gender composition in each province, variations in gender patterns are observed. In DKI Jakarta, women are more numerous, comprising 54 out of 95 respondents (56.8 percent). A similar pattern occurred in Banten (55.8% of women) and Central Java (53.58% of women). West Java exhibits a balance almost equal to a slight male dominance, with 50.8 percent of the population being men. DI Yogyakarta and East Java exhibit an almost balanced composition, with approximately 48–51 percent of the population comprising males and females, respectively.

Mean

The analysis of students' digital literacy levels regarding radicalism was conducted to gain an empirical understanding of their ability to comprehend,

evaluate, and respond to information about radicalism in the digital space. This analysis process includes three main steps. *First*, the average (mean) was calculated to determine the overall trend in respondents' digital literacy. The average score reflects the middle of the distribution and describes the level of students' digital ability in the context of radicalism.

Second, the standard deviation was calculated to measure the variation, or spread, of scores around the average. The standard deviation helps assess the homogeneity or heterogeneity of students' digital skills. *Third*, based on the average and standard deviation, the digital literacy level is assigned according to the Norm Reference Assessment (PAN) formula. This category classifies students' digital literacy levels into five categories: very high, high, intermediate, low, and very low. These steps provide a basis for assessing the extent to which students possess critical and adaptive digital skills in addressing issues of radicalism in the digital space.

Conceptually, the mean indicates the extent to which respondents tend to give similar assessments of digital literacy indicators. This includes the ability to search, understand, evaluate, and use digital information critically and ethically. The mean indicates the general tendency of a group to exhibit a particular value for a variable being measured, in this case, the level of digital literacy among students.

The mean is calculated to determine the general trend in students' digital literacy levels regarding radicalism. The mean value provides an overview of the middle of the entire respondent score distribution and describes the overall level of students' digital ability. Based on the research results, the number of respondents was 677, and the total score was obtained by summing the scores for each questionnaire item. The results of the calculation show that:

$$\bar{X} = \frac{\sum X_i}{N} = 95,25$$

With a theoretical score range of 29 (lowest) to 116 (highest), a mean of 95.25 indicates that, overall, students demonstrate a comparatively high level of digital literacy regarding radicalism. This implies that most students demonstrate proficiency in comprehending, recognizing, and assessing digital information related to radicalism on social media.

The high average value also indicates that students are not only able to access information effectively but also to assess the credibility of sources, distinguish between factual and manipulative information, and avoid the spread of content that could trigger radicalization. In the context of pesantren education, these findings show the effectiveness of religious institutions in instilling a critical yet moderate attitude in the digital world.

Standard Deviation

The standard deviation was calculated to quantify the extent of variation in students' digital literacy scores around the mean. This measure is essential for assessing the degree of homogeneity or heterogeneity in respondents' digital competencies. Based on data collected from 677 participants, the analysis yielded a mean score of 95.25, which serves as the reference point for interpreting the distribution of scores through the standard deviation:

$$S = \sqrt{\frac{\sum(X_i - 94,76)^2}{677}} = 9,74$$

The results showed a standard deviation of 9.74. This value indicates that most respondents' scores are close to the average value. Thus, it can be concluded that students' digital literacy skills are homogeneous. This finding suggests a high degree of homogeneity in students' digital literacy levels. Such homogeneity reflects a relatively uniform capacity among students to access, analyze, and evaluate digital information, particularly content related to issues of radicalism in the online environment.

The level of digital literacy on the issue of radicalism

Digital literacy is an important factor in shaping students' critical attitudes towards the spread of radical narratives in the digital space. The ability to sort information, understand sources, and interpret digital content rationally and contextually is a primary indicator of digital literacy. The level of students' digital literacy regarding radicalism as a whole is shown in Table 4 below.

Table 4. Digital Literacy Level

Category	Total	Percentage (%)
Very High	8	1.2
High	201	29.7
Intermediate	312	46.1

Low	89	13.1
Very Low	67	9.9
Total	677	100 %

The results of the literacy score calculation for students on the issue of radicalism, presented in Table 5, indicate that the majority of students fall into the "Intermediate" category, accounting for 46.1%. However, the number of students in the "High" category is also quite dominant, accounting for 29.7%. Notably, 1.2% of students are recorded to have a digital literacy level in the "Very High" category. However, based on the calculation results, it also appears that there are still students with a digital literacy level in the "Low" category, accounting for 13.1% (67 students), and approximately 9.9% are in the "Very Low" category.

The distribution of digital literacy levels in addressing radicalism shows a diverse pattern. The majority of students were classified in the "Intermediate" category, accounting for 46.1% of the total respondents. This finding suggests that most students possess sufficient understanding and basic skills to access, study, and critically use digital information. However, the proportion of students with digital literacy scores at the "High" level is also quite significant, at 29.7%. This group represents individuals who have effectively applied digital literacy skills, especially in the face of potentially radical online content.

The presence of students in the "Very High" category indicates the most advanced digital literacy achievements, including the internalization of critical thinking competencies, digital safety, and comprehensive digital media ethics. On the other hand, there are still students who are at a "Low" (13.1%) or even a "Very Low" (9.9%) level of digital literacy. The existence of this group underlines that the challenges of digital literacy in the pesantren environment have not been fully resolved. The lack of digital competence in this group indicates a higher risk of exposure to radical content and hoaxes, as well as a limited ability to evaluate information critically.

The polarization of students' digital literacy levels towards the issue of radicalism reflects the dynamics of the digital literacy education process in Islamic boarding schools. The dominance of the Intermediate category and the high proportion of students at a high level can be interpreted as a form of success of Islamic

boarding schools in building digital literacy capital. However, the presence of low- and very-low groups underscores the importance of strengthening the digital literacy curriculum, providing intensive training, and adopting a more inclusive, adaptive learning approach tailored to students' needs. The digital literacy developed in Islamic boarding schools is not only aimed at mastering technology, but also at cultivating critical thinking skills, promoting internet ethics, and utilizing media as a moderate and peaceful means of da'wah.

Digital Literacy Level on the Issue of Radicalism by Region

This research was conducted on the island of Java, involving students from the six provinces: Banten, DKI Jakarta, Central Java, the Special Region of Yogyakarta, and East Java. The level of digital literacy by region is illustrated in Table 5.

Table 5. Digital Literacy Levels by Region

Province	Very High	High	Intermediate	Low	Very Low	Total
Banten	1	28	45	13	9	95
DKI Jakarta	1	28	45	13	9	95
Jawa Barat	2	37	57	16	13	124
Jawa Tengah	2	62	96	27	21	209
Daerah Istimewa Yogyakarta (DIY)	1	24	37	10	8	80
Jawa Timur	1	22	32	10	7	74
Total	8	201	312	89	67	677

The percentage of students' digital literacy levels regarding radicalism by region is presented in Table 6.

Table 6. Percentage of Digital Literacy per Region

Province	Very High (%)	High (%)	Intermediate (%)	Low (%)	Very Low (%)	Total
Banten	1.1	29.5	47.4	13.7	9.5	100
DKI Jakarta	1.1	29.5	47.4	13.7	9.5	100
Jawa Barat	1.6	29.8	46.0	12.9	10.5	100
Jawa Tengah	1.0	29.7	45.9	12.9	10.0	100

Daerah Istimewa Yogyakarta	1.3	30.0	46.3	12.5	10.0	100
Jawa Timur	1.4	29.7	43.2	13.5	9.5	100

The level of digital literacy among students regarding radicalism, as shown in Tables 5 and 6, indicates that West Java Province has the highest number of students possessing a very high level of digital literacy. However, the area with the lowest digital literacy rate is also home to students from West Java Province. The category of students' literacy level towards the issue of radicalism in the "Intermediate" category dominates in all provinces on the island of Java. The majority of students from Banten Province fall into the Intermediate category, accounting for 47.4%, with the remaining 9.5% categorized as very low. The percentage of students in the Intermediate category is similar to that in DKI Jakarta. Each province on the island of Java has a level of digital literacy regarding radicalism that is almost equivalent, categorized as "Very High" and "Very Low".

The level of students' digital literacy regarding radicalism in Java's provinces shows interesting dynamics. It offers several important insights for strengthening digital literacy policies in the pesantren environment. Based on the analysis in Tables 5 and 6, West Java Province holds the highest number of students in the "very high" category of digital literacy. However, in line with this, West Java also has the highest number of students in the "very low" category. This condition indicates a polarization of digital literacy levels in the province, which, on the one hand, demonstrates great potential in producing students with very high digital skills. However, there are still significant groups that tend to lag in critical digital understanding and skills.

Generally, the "Intermediate" digital literacy category is the most prevalent in all provinces on the island of Java. The majority of students from Banten, DKI Jakarta, West Java, Central Java, the Special Region of Yogyakarta, and East Java are concentrated in this category, with relatively similar percentages. For example, most students from Banten and DKI Jakarta fall into the Intermediate category, each accounting for 47.4%, underscoring a relatively even distribution of digital literacy across urban and suburban areas. The proportion of students in the "very low" category is also distributed almost evenly across provinces, averaging 9% to 10%. This suggests that the challenges of digital literacy in Islamic boarding schools are

structural and cross-regional, requiring a systemic, integrative policy approach. The phenomenon that all provinces on the island of Java have students in the "very high" and "very low" categories, with almost equal percentages, also confirms the variation in internal abilities within the student community.

Digital Literacy Level on the Issue of Radicalism Based on Gender

The level of digital literacy in this study was also analyzed based on gender. Based on the questionnaire results, the digital literacy level regarding radicalism among male students was calculated, as presented in Table 7 below.

Table 7. Digital Literacy Levels by Gender

Gender	Very High	High	Intermediate	Low	Very Low	Total
Male	5 (1.6%)	88 (27.7%)	149 (46.9%)	49 (15.4%)	27 (8.5%)	318
Female	3 (0.8%)	113 (31.5%)	163 (45.4%)	40 (11.1%)	40 (11.1%)	359

The results of categorizing students' digital literacy levels regarding radicalism by gender show a relatively consistent distribution between the male and female groups. In the table above, the majority of the 318 male respondents were in the "Intermediate" category (46.9%), followed by the "High" (27.7%) and "Low" (15.4%) categories. Meanwhile, among the 359 female respondents, the largest proportion was in the "Intermediate" category (45.4%), followed by the "High" (31.5%) and "Low" (11.1%) categories. The percentage in the "Very High" category remains tiny in both groups (1.6% for males and 0.8% for females), while students with "Very Low" digital literacy are found at 8.5% among males and 11.1% among females.

This type of distribution indicates that, in general, both male and female students possess a level of digital literacy that can be categorized as quite good, with a dominance in the Intermediate and high categories. The construction of this data also indicates that there is no extreme disparity between the two gender groups. However, female students are slightly more likely than men to be in the "High" and "Very Low" categories. This phenomenon can reflect the success of inclusive digital literacy education in the pesantren environment. However, it also highlights the need to strengthen interventions for groups at low risk of digital literacy, regardless of gender or background.

Based on the categorization results, female students have a higher proportion in the "High" category (31.5%) than male students (27.7%). Meanwhile, the majority of students from both groups are male and female, categorized as "Intermediate" (46.9% male, 45.4% female). In the "Very High" category, the percentage of male students (1.6%) was slightly higher than that of female students (0.8%), but the overall numbers were minimal in both groups. For the "Low" and "Very Low" categories, the percentage for men is still slightly larger in the "Low" category than for women, while in the "Very Low" category, the number is slightly larger than for men.

In general, female students are more dominant in the 'High' digital literacy category, while male students are slightly more balanced between the 'High' and 'Intermediate' categories. These findings indicate that female students in this population tend to have a higher level of digital literacy, particularly in the upper category. These results align with several studies that have found that women can demonstrate digital literacy abilities comparable to, or even exceeding, those of men in the context of education and internet use. However, at the highest level, women are still relatively few and do not differ significantly from men.

The Urgency of Religious Moderation

Mapping students' digital literacy levels to the issue of radicalism in Islamic boarding school education on the island of Java yielded findings that are both important and complex, requiring critical interpretation. The main finding of this study is that the majority of students, both male and female, are concentrated in the "Intermediate" and "High" categories. The proportion of female students in the "High" category reached 31.5%, exceeding the proportion of men of 27.7%, while in the "Intermediate" category, the composition of men and women was almost balanced. This aligns with the results of a digital literacy survey in Islamic educational institutions, which indicate that basic and secondary digital literacy remains dominant. In contrast, critical literacy maturity has not yet become mainstream.

The polarization between the "Very High" and "Very Low" categories in several provinces, especially West Java, indicates that there is a heterogeneity in the quality of literacy among students, as well as showing that efforts to equalize the quality of digital education have not been entirely successful (T. Hartono &

Widyaningsih, 2022). On the other hand, the finding that the proportion in the low category remains at 15.4% for men and 11.1% for women highlights the importance of strategic interventions to narrow the digital skills gap, which affects students' resilience to online radicalism.

In analyzing sacred texts and Islamic teachings on violence, this study's results emphasize the importance of a hermeneutical and contextual understanding. As explained in the previous sub-chapter, the spread of radicalism primarily relies on the literal use of verses or hadiths without considering historical context, the spirit of peace, and Islamic social ethics (Emawati et al., 2025). The immature practice of digital literacy risks getting caught up in narrow religious narratives, especially verses that talk about war, jihad, or law enforcement, which radical groups often quote in part. A study by Wibisono et al. (2019) concluded that the narrative of radicalism thrives in an atmosphere of identity polarization, as well as an exclusive focus on understanding religious texts (Wibisono et al., 2019)

Sufficient digital skills, especially in the high or very high category, allow students to approach sacred texts critically, distinguishing between the contextualized substance of teachings and practices. Integrative Islamic education can build external and internal resilience in Islamic boarding schools against religious radicalism, particularly when digital literacy is supported by an understanding of ethics, multiculturalism, and interreligious dialogue (Astuti & Sukataman, 2023). Systematic digital literacy training is undoubtedly necessary to enhance critical reasoning, online information verification, and open and dynamic interpretations of religious texts.

The policy implication of this study's results is the importance of strengthening a moderate Islamic-based digital literacy curriculum across the pesantren ecosystem. Strengthening teachers' roles, providing technology facilities, offering gender-based digital literacy training, and developing contemporary interpretation modules should be implemented systematically. A study by McElreath et al. (2020) shows that more than 70% of current radicalization among the younger generation now occurs in the digital space. Hence, students' resistance to radicalism narratives is highly dependent on the maturity of digital literacy and comprehensive mastery of Islamic textual discourse (McElreath et al., 2020).

Findings on students' digital literacy levels indicate that religious moderation is a pressing need to address the complexity of the increasingly open digital space. The concentration of students in the "Intermediate" and "High" literacy categories shows the initial capacity to access and understand religious information. However, it does not fully guarantee the maturity of critical and reflective attitudes. In such conditions, religious moderation serves as a normative framework that guides the application of digital literacy, ensuring it extends beyond technical mastery to encompass the ability to weigh diverse interpretations, scientific authorities, and ethical considerations related to differences within Islam.

The urgency of religious moderation is even greater when it is associated with findings of digital literacy heterogeneity and the presence of student groups in the low category. This group is relatively more vulnerable to the narrative of radicalism propagated by literal readings of religious texts, regardless of historical or social context. Religious moderation provides the principles of balance, justice, and respect for humanity that allow sacred texts to be understood proportionately (Kementrian Agama RI, 2019). Thus, moderation serves not only as a theological stance but also as a cognitive strategy to prevent the reduction of Islamic teachings to violent legitimacy or identity exclusivism.

In the context of pesantren education policies, religious moderation has a strategic role as a bridge between strengthening digital literacy and resilience to online radicalism (Samho, 2022). The integration of moderate values into the digital literacy curriculum enables students to develop critical reasoning that aligns with Islamic ethics, multiculturalism, and social responsibility. (Muhdi & Halim, 2023). Therefore, religious moderation cannot be reduced to mere normative discourse, but must be grounded in operational practice to form students who can participate constructively in the digital space while maintaining the integrity of Islamic teachings in the context of a pluralistic and dynamic society (Dodego & Witro, 2020).

This research underscores the significance of the national agenda in promoting religious moderation and digital literacy as a strategic pillar of Islamic education, in response to the dynamics of technological disruption and the escalation of radicalism in the digital sphere. The findings regarding variation in students' digital literacy levels indicate that technical skills alone are insufficient without a value

framework to guide the contextual and inclusive interpretation of religious texts. In this case, religious moderation serves as a normative foundation that bridges the mastery of digital literacy with a balanced, civilized, and benefit-oriented understanding of Islam.

Digital literacy strategies grounded in peaceful values, Islamic ethics, and social responsibility can enhance students' resilience against oversimplified, exclusive, extreme narratives (Muhdi & Halim, 2023). The integration of digital literacy with the principles of contextual hermeneutics allows students to distinguish between religious normative messages and ideological constructions that are manipulated in online spaces. Thus, digital literacy empowerment not only shapes cognitive skills but also fosters the spiritual and social maturity necessary to respond to global challenges critically, ethically, and constructively.

CONCLUSION

The level of students' digital literacy regarding radicalism in the Java Island region indicates that the majority fall into the "Moderate" category. The proportion of female students in the "High" category is slightly higher than that of males, indicating a tendency towards strong digital literacy and a reasonably even gender distribution. On the other hand, the "Low" and "Very Low" categories persist in both groups, indicating that significant challenges remain in deepening digital skills and countering radicalization. The main implications of this study highlight the importance of strengthening digital literacy in the design of the Islamic boarding school curriculum. The study's results found that integrating digital literacy not only enhances students' skills in accessing and filtering information but also builds resilience against propaganda and radical content in the digital space.

This research is also expected to have an impact on how pesantren respond to the challenges of technological literacy, social media, and digital-based learning demands. The results confirm that Islamic boarding schools must actively instill digital and social cultural understanding as a complement to traditional religious education. Strong digital literacy has implications for students' skills in tracing and evaluating information, in building digital works grounded in religious knowledge, and in expanding the space for da'wah to the broader community. With continuous

evaluation and online and offline supervision, pesantren are expected to build an inclusive, adaptive learning ecosystem that supports the development of students' knowledge and character, enabling them to face the challenges of globalization and the digital era.

REFERENCES

- Am, A. Ben, & Weimann, G. (2020). Fabricated Martyrs: The Warrior-Saint Icons of Far-Right Terrorism. *Perspectives on Terrorism*, 14(5), 130–147. <https://www.jstor.org/stable/26940043>
- Annur, C. M. (2023). Penetrasi Internet di Asia Tenggara (Juli 2022). Databoks.Katadata.Co.Id. <https://databoks.katadata.co.id/datapublish/2023/09/06/penetrasi-internet-indonesia-peringkat-ke-8-di-asean-siapa-teratas>
- Asosiasi Penyelenggara Jasa Internet Indonesia. (2024, February 7). Pengguna internet di Indonesia tembus 221 juta orang. <https://apjii.or.id/berita/d/apjii-jumlah-pengguna-internet-indonesia-tembus-221-juta-orang>
- Astuti, A., & Sukataman, S. (2023). Dasar-Dasar Manajemen Pesantren. *Cakrawala Jurnal Manajemen Pendidikan Islam Dan Studi Sosial*, 7(1), 23–32. <https://doi.org/10.33507/cakrawala.v7i1.1068>
- Center For Digital Society. (2021). Literasi Digital Sebagai Kompetensi Dasar Untuk Kehidupan Pasca Pandemi.
- Dodego, S. H. A., & Witro, D. (2020). The Islamic Moderation And The Prevention Of Radicalism And Religious Extremism In Indonesia. *Dialog*, 43(2), 199–208. <https://doi.org/10.47655/dialog.v43i2.375>
- Emawati, Muthiah, A., Zuhriyah, L., Widyasanti, N. S., & Marzuki, I. (2025). Religious Inclusiveness in Schools: An Integrative Exploration of Educational Realities in Radicalism Red Zone Areas. *Edukasia Islamika*, 10(2), 163–180. <https://doi.org/10.28918/jei.v10i2.11632>
- Fanaqi, C., Nurwaidi, A.-N. A., & Wahyuni, A. S. (2025). Digital literacy as a tool for countering radicalism among Islamic boarding school students (Santri). *Profetik: Jurnal Komunikasi*, 18(1), 58–72. <https://doi.org/10.14421/pjk.v18i1.3167>

- Fieldhouse, M., & Nicholas, N. (2008). Digital Literacy as Information Savvy: The Road to Information Literacy. In M. Knobel & C. Lankshear (Eds.), *Digital Literacies Concepts, Policies and Practices*. Peter Lang Publishing.
- Fitri, F., Fitri, A. N., & Ni'mah, N. (2022). Strategy of Fadhlul Fadhlān Pesantren in developing media literacy. *Santri: Journal of Pesantren and Fiqh Sosial*, 3(2), 191–206. <https://doi.org/10.35878/santri.v3i2.521>
- Gilster, P. (1997). *Digital literacy*. Wiley and Computer Publishing.
- Hartono, D. (2016). Persepsi Santri Pondok Pesantren Langitan Tuban Tentang Radikalisme Di Indonesia. *Kajian Moral Dan Kewarganegaraan*, 2(4), 327–336.
- Hartono, T., & Widyaningsih, S. (2022). Integrasi Literasi Digital dalam Pendidikan Islam: Studi Empiris di Pesantren. *Literasi*, 13(1), 13–27. [https://doi.org/10.21927/literasi.2022.13\(1\).13-27](https://doi.org/10.21927/literasi.2022.13(1).13-27)
- Hidaya, N., Alaydrus, S. S., Qalby, N., & Darmayanti, A. (2019). Pengaruh Media Sosial Terhadap Penyebaran Hoax Oleh Digital Pengaruh Media Sosial Terhadap Penyebaran Hoax. January.
- In'amurrohman, F. (2019). Kesyubhatan Tik: Sisi Gelap Dan Terang Penggunaan Tik Pada Literasi Digital Pondok Pesantren. *Medika Teknika : Jurnal Teknik Elektromedik Indonesia*, 1(1). <https://doi.org/10.18196/mt.010105>
- Irhandayaningsih, A. (2020). Pengukuran Literasi Digital Pada Peserta Pembelajaran Daring di Masa Pandemi COVID-19. *Anuva: Jurnal Kajian Budaya, Perpustakaan, Dan Informasi*, 4(2), 231–240. <https://doi.org/10.14710/anuva.4.2.231-240>
- Jafar, T. F., Sudirman, A., & Rifawan, A. (2019). Ketahanan Nasional Menghadapi Ancaman Lone Wolf Terrorism Di Jawa Barat. *Jurnal Ketahanan Nasional*, 25(1), 73. <https://doi.org/10.22146/jkn.41244>
- Kementerian Agama Republik Indonesia. (2019). *Moderasi beragama*. Badan Litbang dan Diklat Kementerian Agama Republik Indonesia. <https://balitbangdiklat.kemenag.go.id/berita/buku-moderasi-beragama>
- Kementerian Agama Republik Indonesia. (2024). Jumlah pondok pesantren menurut tipe. Satu Data Kementerian Agama Republik Indonesia. <https://satudata.kemenag.go.id/dataset/detail/jumlah-pondok-pesantren->

menurut-tipe

- Kemenkominfo. (2022). Status Literasi Digital di Indonesia 2022. Kominfo, November, 205–207. <https://www.c2es.org/content/renewable-energy/>
- Khafidin, Z., Ihsan, I., Masrukhin, M., Nurfaizal, Y., & Barros, A. (2025). Digital ethno-religious determinants of santri religious behavior: Technology attitudes as a mediator and pesantren culture as a moderator. *Edukasia: Jurnal Penelitian Pendidikan Islam*, 20(2), 221–246. <https://doi.org/10.21043/edukasia.v20i2.33841>
- Law, N., Woo, D., de la Torre, J., & Wong, G. (2018). A global framework of reference on digital literacy skills for indicator 4.4.2 (Information Paper No. 51). UNESCO Institute for Statistics. <https://unesdoc.unesco.org/ark:/48223/pf0000265403>
- Little, R., Ford, P., & Girardi, A. (2021). Online Self-Radicalisation: A Case Study of Cognitive Vulnerabilities for Radicalization to Extremism and Single Actor Terrorism. *Journal of Intellectual Disabilities and Offending Behaviour*, 12(3–4), 112–123. <https://doi.org/10.1108/JIDOB-03-2021-0006>
- Magdalena, M., & Wardani, S. (2017). Manipulasi Bahasa Dalam Teror Kabar Bohong (Hoax). *Sintesis*, 11(2), 87–94.
- McElreath, D. L., LeMire, J. A., & Jensen, C. D. (2020). Radicalization and Recruitment in Digital Spaces: Youth, Vulnerability and Resilience. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3750463>
- Ma'arif, M. J., Khoiriyah, S., & Anwar, S. (2025). Pesantren and digital literacy: Fiqh-based assessment of Islamic teachers' competency in strengthening religious moderation. *Edukasia Islamika*, 10(2), 181–209. <https://doi.org/10.28918/jei.v10i2.12117>
- Muhdi, A., & Halim, F. (2023). The Role of Pesantren and Its Literacy Culture in Strengthening Moderate Islam in Indonesia. *Edukasia Islamika*, 8(2), 205–226.
- Mustofa, M. Y., Mas'ud, A., & Elizabeth, M. Z. (2023). Hybrid pesantren in Indonesia: Analyzing the transformation of Islamic religious education in the digital age. *Al-Tadzkiyyah: Jurnal Pendidikan Islam*, 14(1), 79–104.

<https://doi.org/10.24042/atjpi.v14i1.16928>

- Ni'mah, N., Fitri, F., & Adlan, I. (2024). Internalization of religious moderation values through digital literacy at madrasah. *Islamic Review: Jurnal Riset dan Kajian Keislaman*, 13(2), 99–110. <https://doi.org/10.35878/islamicreview.v13i2.1266>
- Prastyo, A. T. (2022). Model Budaya Literasi Digital pada Pondok Pesantren Berbasis Perguruan Tinggi di Masa Covid-19. *LITERASI (Jurnal Ilmu Pendidikan)*, 13(1), 13. [https://doi.org/10.21927/literasi.2022.13\(1\).13-27](https://doi.org/10.21927/literasi.2022.13(1).13-27)
- Pangastuti, R., & Munfa`Ati, K. (2018). Penilaian Acuan Norma, Penilaian Acuan Patokan, Kriteria Ketuntasan Minimal Di Madrasah Ibtidaiah An-Nur Plus Junwangi Krian Sidorajo Jawa Timur. *Jurnal Pendidikan Islam Tingkat Dasar (Al-Awlad)*, Vol. 8(No. 2), 202–217.
- RI, T. P. K. A. (2019). *Moderasi Beragama*. Kementerian Agama RI.
- Rizkinaswara, L. (2020). Literasi Digital Kurangi Kesenjangan Akses Digital Perempuan. <https://Aptika.Kominfo.Go.Id/>.
- Samho, B. (2022). Urgensi “Moderasi Beragama” Untuk Mencegah Radikalisme Di Indonesia. *Sapientia Humana: Jurnal Sosial Humaniora*, 2(01), 90–111. <https://doi.org/10.26593/jsh.v2i01.5688>
- Schmid, A. P. (2013). Radicalisation, de-radicalisation, counter-radicalisation: A conceptual discussion and literature review. *Terrorism and Counter-Terrorism Studies*, 4(2). <https://doi.org/10.19165/2013.1.02>
- Silva, J. R., & Capellan, J. A. (2019). A Comparative Analysis of Media Coverage of Mass Public Shootings: Examining Rampage, Disgruntled Employee, School, and Lone-Wolf Terrorist Shootings in the United States. *Criminal Justice Policy Review*, 30(9), 1312–1341. <https://doi.org/10.1177/0887403418786556>
- Spaaij, R., & Hamm, M. S. (2015). Key Issues and Research Agendas in Lone Wolf Terrorism. *Studies in Conflict and Terrorism*, 38(3), 167–178. <https://doi.org/10.1080/1057610X.2014.986979>
- Spires, H. A., Medlock, Paul, C., & Kerkhoff, S. N. (2018). Digital Literacy for the 21st Century. January, 12–21. <https://doi.org/10.4018/978-1-5225-7659-4.ch002>

- Spires, H., & Bartlett, M. (2012). *Digital Literacies and Learning: Designing a Path Forward*. Friday Institute White Paper Series. NC State University.
- UNESCO. (2017). *Preventing violent extremism through education: A guide for policy-makers*. United Nations Educational, Scientific, and Cultural Organization. <https://unesdoc.unesco.org/ark:/48223/pf0000247764>
- United Nations Office on Drugs and Crime. (2018). *Radicalization and violent extremism*. Education for Justice University Module Series: Counter-Terrorism, Module 2. <https://www.unodc.org/e4j/en/terrorism/module-2/key-issues/radicalization-violent-extremism.html>
- Vuorikari, R., Kluzer, S., & Punie, Y. (2022). *DigComp 2.2: The digital competence framework for citizens: With new examples of knowledge, skills, and attitudes*. Publications Office of the European Union. <https://doi.org/10.2760/115376>
- Wibisono, S., Louis, W. R., & Jetten, J. (2019). *Radicalism and Extremism: A Systematic Review of Behavioral Models*. *Frontiers in Psychology*, 10, 2560. <https://doi.org/10.3389/fpsyg.2019.02560>
- Widyaningsih, R. (2019). *Deteksi Dini Radikalisme* (1st ed.). Unsoed Press. https://www.researchgate.net/publication/333967877_Deteksi_Dini_Radikalisme
- Widyaningsih, R., Sumiyem, & Kuntarto. (2017). *Kerentanan Radikalisme agama dikalangan anak muda*. *Prosiding Seminar Nasional dan Call for Papers “Pengembangan Sumber Daya Perdesaan dan Kearifan Lokal Berkelanjutan”*, 6, 1553–1562. <https://doi.org/10.1088/1755-1315/255/1/012049>
- Yanti, M., & Yusnaini. (2018). *The Narration of Digital Literacy Movement in Indonesia*. *Jurnal Informasi Kajian Ilmu Komunikasi*, 48(2), 243–255.