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ALGORITHMIC RELIGIOUS LITERACY IN ISLAMIC RELIGIOUS EDUCATION: A HIGHER EDUCATION MODEL FOR MITIGATING THE ECHO CHAMBER EFFECT

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ABSTRAK

Perkembangan media digital berbasis algoritma telah mengubah cara mahasiswa mengakses, menafsirkan, dan membagikan informasi keagamaan. Perubahan ini menghadirkan tantangan pedagogis dalam Pendidikan Agama Islam, terutama melalui efek *echo chamber* yang membatasi paparan mahasiswa pada perspektif berbeda, memperkuat bias konfirmasi, dan berpotensi melemahkan sikap kritis serta toleran dalam memahami informasi keagamaan. Penelitian ini bertujuan merumuskan Model Literasi Keagamaan Algoritmik dalam Pendidikan Agama Islam di perguruan tinggi sebagai strategi mitigasi terhadap efek echo chamber. Penelitian menggunakan pendekatan kualitatif dengan desain studi kasus pada lima perguruan tinggi di Jakarta. Data dikumpulkan melalui wawancara mendalam dengan dosen Pendidikan Agama Islam dan pakar literasi digital, diskusi kelompok terfokus dengan mahasiswa pengguna aktif media digital, refleksi terbimbing, serta analisis dokumen pembelajaran dan literatur ilmiah. Data dianalisis secara tematik melalui triangulasi sumber dan metode. Temuan menunjukkan bahwa efek echo chamber tidak hanya tampak pada terbatasnya perspektif keagamaan mahasiswa, tetapi juga pada cara mereka menilai otoritas informasi, mempercayai sumber sehaluan, mengabaikan perspektif alternatif, dan mengalami kesulitan membedakan fakta, opini, bias, serta narasi keagamaan yang dikurasi secara algoritmik. Penelitian ini menghasilkan Model Literasi Keagamaan Algoritmik yang mencakup lima komponen: kesadaran algoritmik, verifikasi epistemik, refleksi bias diri, dialog lintas pandangan, dan etika digital Islami. Model ini menegaskan bahwa Pendidikan Agama Islam di perguruan tinggi perlu bergerak melampaui transmisi materi normatif menuju pembentukan religiositas digital yang kritis, reflektif, inklusif, dan moderat.

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Keywords:

Islamic Religious Education; algorithmic religious literacy; echo chamber; digital literacy; religious moderation.

ABSTRACTS

The development of algorithm-driven digital media has transformed the ways university students' access, interpret, and disseminate religious information. This transformation presents a pedagogical challenge for Islamic Religious Education, particularly through the echo chamber effect, which limits students' exposure to different perspectives, reinforces confirmation bias, and may weaken critical and tolerant attitudes in understanding religious information. This study aims to formulate the Algorithmic Religious Literacy Model in Islamic Religious Education at higher education institutions as a strategy for mitigating the echo chamber effect. The study employed a qualitative approach with a case study design involving five universities in Jakarta. Data were collected through in-depth interviews with Islamic Religious Education lecturers and digital literacy experts, focus group discussions with students who actively use digital media, guided reflections, and analysis of learning documents and scholarly literature. The data were analyzed thematically through source and method triangulation. The findings show that the echo chamber effect is reflected not only in students limited religious perspectives, but also in how they assess information authority, trust-like-minded sources, overlook alternative perspectives, and have trouble distinguishing facts, opinions, biases, and algorithmically curated religious narratives. This study proposes the Algorithmic Religious Literacy Model consisting of five components: algorithmic awareness, epistemic verification, self-bias reflection, cross-perspective dialogue, and Islamic digital ethics. The model affirms that Islamic Religious Education in higher education needs to move beyond the transmission of normative materials toward the formation of digital religiosity that is critical, reflective, inclusive, and moderate.

A. INTRODUCTION

Digital transformation has reshaped the religious landscape of contemporary society. The search for religious knowledge, participation in sermons, discussion of Islamic issues, and formation of religious identity no longer take place solely within families, educational institutions, mosques, pesantren, or religious organizations, but also through social media, search engines, video-sharing platforms, messaging applications, and digital communities. In Indonesia, the urgency of this issue is increasingly evident, as internet penetration reached 79.5% in 2024, with 221,563,479 internet users out of a total population of 278,696,200 according to the APJII survey (APJII, 2024). DataReportal also reported that Indonesia had 139 million social media users in January 2024, equivalent to 49.9% of the total population (Kemp, 2024). These figures indicate that digital media have become a highly influential social space in shaping the ways young people think, orient their values, and express their religiosity.

In the context of university students, digital media serve as a fast, affordable, and easily accessible source of information. Students can obtain religious materials from various sources, including ulama, academics, da'wah activists, influencers, ideological communities, and anonymous accounts. However, open access to information does not always lead to broader perspectives. Digital media operate through algorithmic systems that personalize content based on search history, interaction patterns, preferences, viewing duration, and user engagement. As a result, the information appearing in digital spaces is not entirely neutral; rather, it has been selected, ranked, and recommended by systems designed to retain users' attention. In this situation, students are potentially not only information seekers but also objects of algorithmic curation mechanisms that shape their worldview (Dogruel, Masur, and Joeckel, 2022).

One significant consequence of this mechanism is the emergence of the *echo chamber*, a condition in which individuals are more frequently exposed to information, opinions, and narratives that align with their prior beliefs, while differing views become increasingly rare or even rejected. This concept is rooted in Sunstein's (2001) argument that digital society tends to form homogeneous communication spaces. The phenomenon is further reinforced by Pariser's (2011) concept of the *filter bubble*, namely the narrowing of information exposure as a result of algorithmic personalization. In the context of social media, Cinelli et al. (2021) show that *echo chambers* are associated with the clustering of users into homogeneous networks and the biased dissemination of information among like-minded groups. Thus, the *echo chamber* is not merely an individual psychological issue, but a socio-technological phenomenon shaped by the interaction between user preferences, social networks, and platform recommendation systems.

In religious issues, the *echo chamber* effect can be more sensitive than in other domains because it is related to belief, moral authority, group identity, and boundaries of truth. When students continuously consume religious content from similar sources, they risk experiencing a narrowing of religious perspectives. Content that aligns with prior beliefs is increasingly perceived as true, whereas differing religious views are easily suspected, rejected, or judged as deviant. In the context of religious learning, this condition can strengthen confirmation bias, limit openness to difference, and weaken students' ability to critically evaluate religious information. Recent research shows that awareness of confirmation bias is important in reducing susceptibility to misinformation and improving the evaluation of information truthfulness (Piksa et al.,

2024). This risk is also intensified by the fact that false or misleading information has been shown to spread faster and more widely than true information in digital spaces, as demonstrated by Vosoughi, Roy, and Aral (2018) in their study of the online spread of true and false news.

Nevertheless, studies on *echo chambers* should not be approached deterministically, as if every digital media user were inevitably trapped in a closed information space. Recent studies show that the effects of *filter bubbles* and *echo chambers* vary depending on the platform, algorithmic design, user behavior, social network structure, and the intensity of cross-group interaction. Fu et al. (2024), for example, shows that there is no single scientific consensus regarding the existence of *filter bubbles* across all categories of users and platforms. This debate indicates that the central problem is not merely the existence of algorithms, but users' low awareness of content personalization, weak information verification practices, and limited dialogue across different perspectives. Therefore, educational intervention becomes important, especially through the strengthening of digital literacy that goes beyond technical skills and includes critical awareness, digital ethics, and the ability to assess informational authority.

In the field of education, UNESCO positions media and information literacy as an essential competence for helping educators and learners think critically, use information responsibly, and understand the digital communication ecosystem holistically (UNESCO, 2021). In the Indonesian context, this need is consistent with the *Status of Digital Literacy in Indonesia 2022* report, which shows that the national digital literacy index remained in the medium category, at 3.54 on a scale of 1–5 (Kementerian Komunikasi dan Informatika and Katadata Insight Center, 2023). This data indicates that increased digital access is not automatically accompanied by mature digital literacy, particularly in the areas of information evaluation, communication ethics, digital safety, and digital culture.

Islamic Religious Education in higher education holds a strategic position in responding to these challenges. So far, Islamic Religious Education has often been understood as a space for transmitting normative teachings, shaping moral character, and strengthening students' spirituality. These functions remain important, but they are no longer sufficient if they are not connected to the changing ecology of religiosity in digital spaces. Students do not only need an understanding of Islamic teachings; they also need the ability to read how religious information is produced, selected, made viral, debated, and manipulated in digital environments. In other words, Islamic Religious Education needs to move beyond conventional religious literacy toward algorithmic religious literacy.

In this article, algorithmic religious literacy is understood as students' ability to understand, evaluate, and respond to religious information in digital spaces by recognizing the role of algorithms, confirmation bias, source authority, communication ethics, and the values of moderation in Islam. This concept does not merely emphasize the ability to use digital media, but also epistemic awareness of how religious truth claims are framed, perceived, and disseminated through algorithm-based media. Through this approach, students are expected not to be easily trapped in homogeneous consumption of religious information, not to immediately believe emotional or provocative narratives, and to be able to engage in cross-perspective dialogue in a courteous and argumentative manner.

Previous studies have discussed *echo chambers* in relation to political polarization, disinformation, conspiracy theories, and social fragmentation. Cinelli et al. (2021) highlight the different characteristics of *echo chambers* across various social media platforms; Vosoughi, Roy, and Aral (2018) demonstrate the vulnerability of digital spaces to the spread of false information; while Pariser (2011) and Sunstein (2001) provide the conceptual foundations for information personalization and the homogenization of viewpoints. In the religious context, Rusmiati et al. (2025) show that *echo chambers* can intensify the narrowing of perspectives and exclusive tendencies in digital religiosity. However, that study remains within the domain of digital-religious communication. This article takes a different direction by positioning the *echo chamber* as a pedagogical issue in Islamic Religious Education in higher education. Thus, the focus of this article is not to repeat the analysis of religious exclusivism in digital spaces, but to formulate a model of algorithmic religious literacy as an educational strategy for developing critical awareness, information verification, self-bias reflection, cross-perspective dialogue, and Islamic digital ethics.

Based on this gap, this study aims to formulate the Algorithmic Religious Literacy Model in Islamic Religious Education in Higher Education for Mitigating the Echo Chamber Effect. This model is directed toward strengthening students' awareness of algorithmic personalization, their ability to verify religious information, their reflection on self-bias, their openness to difference, and their digital ethics grounded in Islamic values. The main contribution of this article lies in the development of a pedagogical framework that integrates digital literacy, religious literacy, and algorithmic awareness within Islamic Religious Education. Accordingly, Islamic Religious Education is positioned not only as a space for transmitting normative teachings, but also as a medium for cultivating critical, inclusive, and moderate digital religiosity.

B. METHOD

This study employed a qualitative approach with a case study design. This approach was selected because the study does not merely aim to describe the existence of the *echo chamber* effect, but also to understand how students experience, interpret, and respond to religious information curated by digital media. The case study design was used to examine the phenomenon contextually within Islamic Religious Education in higher education, particularly when religious learning encounters algorithms, confirmation bias, and the homogenization of digital information (Creswell and Poth, 2024; Yin, 2018).

The data in this study did not use a corpus of social media content from previous research. Instead, it relied on students' experiences, the perspectives of Islamic Religious Education lecturers, the views of digital literacy experts, and learning documents relevant to the higher education context. Thus, the unit of analysis in this study was not digital content as an object of communication, but the educational process through which students can be equipped to deal with algorithmic curation and the *echo chamber* effect in religious information.

The data sources consisted of primary and secondary data. Primary data were obtained through in-depth interviews, focus group discussions, and students guided reflections. The research informants included 12 students who actively used digital media, 6 Islamic Religious Education lecturers, and 2 digital literacy experts. Students were selected because they were the main subjects who directly experienced exposure

to religious information in digital media. Lecturers were selected because they hold pedagogical authority in Islamic Religious Education. Digital literacy experts were involved to strengthen the analysis of algorithms, information verification, and digital communication ethics. Secondary data were obtained from curriculum documents, Islamic Religious Education teaching materials, scholarly articles, digital literacy reports, and literature on *echo chambers, filter bubbles*, confirmation bias, and religious education in the digital era.

Informants were selected using purposive sampling based on relevance, depth of information, and diversity of perspectives. The criteria for student informants included having taken an Islamic Religious Education course, actively using social media, having accessed digital religious content, and being willing to participate in the focus group discussion. Variation among informants was maintained by considering differences in universities, study programs, intensity of digital media use, and the types of religious sources they commonly accessed. This strategy was used to ensure that the data did not merely capture homogeneous experiences, but also reflected variations in how students interacted with digital religious information (Campbell et al., 2020).

Data collection was conducted in three stages. The first stage involved mapping students' digital experiences through initial questions about their sources of religious information, social media consumption patterns, tendencies to follow like-minded accounts, and experiences in encountering different religious perspectives. The second stage involved semi-structured interviews with lecturers and experts to explore their perceptions of the urgency of digital literacy, algorithmic awareness, information verification, tolerance, and digital ethics in Islamic Religious Education. The third stage involved student focus group discussions containing initial and follow-up reflections after the introduction of the concepts of *echo chamber, filter bubble*, confirmation bias, and the principles of religious information verification. These reflections were not intended as a causal experiment, but as a qualitative technique for reading students' emerging awareness in interpreting their experiences of encountering religious information curated by digital media.

The interviews lasted between 60 and 90 minutes, while the focus group discussions lasted between 90 and 120 minutes in small groups. The entire process was conducted with the informants' consent through informed consent procedures. The data were recorded, transcribed verbatim, and rechecked to ensure accuracy. The identities of informants and institutions were anonymized to protect confidentiality, as the issues examined involved religious views, digital preferences, and students' social relations in digital spaces.

The data were analyzed using reflexive thematic analysis. The analysis process involved repeated reading of the transcripts, coding relevant units of meaning, grouping codes into categories, formulating themes, reviewing relationships among themes, and developing conceptual interpretations. This approach was used because it allows qualitative data to be interpreted systematically while still preserving the contextual meanings of participants' experiences (Braun and Clarke, 2021; Byrne, 2022). The initial codes included sources of religious information, homogeneity of exposure, trust in like-minded sources, difficulty distinguishing facts and opinions, algorithmic awareness, information verification, self-bias, cross-perspective dialogue, and digital tolerance. The final themes were then used to formulate the components of the Algorithmic Religious Literacy Model in Islamic Religious Education.

Data trustworthiness was ensured through source triangulation, method triangulation, and member checking. Source triangulation was conducted by comparing data from students, lecturers, and experts. Method triangulation was carried out by connecting the results of interviews, focus group discussions, student reflections, and document analysis. Member checking was conducted by asking selected informants to confirm summaries of the main findings. This strategy was used to ensure that the interpretation did not rely solely on the researcher's perspective, but remained grounded in the experiences, views, and contexts of the informants (Korstjens and Moser, 2018).

Through this design, the study provides an empirical basis for formulating a model of algorithmic religious literacy. The model is not positioned as a statistical generalization, but as a conceptual construction based on qualitative data to strengthen Islamic Religious Education in higher education in addressing the *echo chamber* effect.

C. RESULT AND DISCUSSION

Findings

The findings indicate that the *echo chamber* effect among students is not only associated with limited exposure to information, but also with how students assess religious authority, understand differences in viewpoints, and verify information in digital spaces. Based on interviews with Islamic Religious Education lecturers, student focus group discussions, guided reflections, interviews with digital literacy experts, and analysis of learning documents, this study identified five main themes: students' limited algorithmic awareness, the narrowing of religious perspectives, the need to integrate digital literacy into Islamic Religious Education, the importance of self-bias reflection and cross-perspective dialogue, and the formulation of the Algorithmic Religious Literacy Model.

1. Students' Awareness of Algorithmic Curation

The focus group discussion results show that some students were not fully aware that religious information appearing on social media had been curated by algorithmic systems. They tended to perceive social media feeds as natural and neutral information spaces that broadly represented social reality. In fact, the content that appears is influenced by search history, viewing habits, the accounts users follow, comments, likes, and interactions with communities. This finding is consistent with studies showing that personalization and algorithmic recommendation systems can shape users' exposure to information and affect their awareness of alternative viewpoints (Du, 2023).

Students' initial reflections revealed that the *echo chamber* was often not recognized as a problem. Students felt comfortable within like-minded information spaces because the content they encountered aligned with their beliefs and preferences. This sense of comfort made them less likely to question why certain narratives repeatedly appeared, why different viewpoints were rarely visible, and why particular sources seemed more convincing than others.

After being introduced to the concepts of *echo chamber, filter bubble*, confirmation bias, and religious information verification, students began to realize that digital media are not merely channels of information but also curated spaces that influence how they understand religion. This change is not interpreted as causal evidence in the sense of an experimental design, but as a qualitative indication that

strengthening digital-religious literacy can help students reinterpret their digital experiences more critically.

Thus, the first finding confirms that the main issue is not a lack of access to religious information, but limited awareness of the digital structures that regulate information exposure. In the context of Islamic Religious Education, this indicates the need for learning that addresses not only the substance of Islamic teachings, but also how religious information is produced, selected, personalized, and disseminated through digital platforms.

2. The Narrowing of Religious Perspectives in Digital Spaces

The student FGDs show that the *echo chamber* effect appears in four main forms: limited perspectives, stronger trust in like-minded sources, difficulty accepting different viewpoints, and weak ability to distinguish facts, opinions, and religious bias. Students who frequently interact with homogeneous digital communities tend to feel that their group's viewpoint represents the most accurate expression of religious teaching. Conversely, different viewpoints are more easily suspected, regarded as less authoritative, or judged as inconsistent with group identity.

This narrowing of perspective does not always appear as an explicit rejection of difference. Among some students, its effect is more subtle, such as declining interest in reading alternative sources, limited habits of comparing the views of ulama or academics, and a tendency to accept emotionally framed information. This condition shows that the *echo chamber* operates not only through algorithms, but also through the psychological need for certainty, security, and recognition within like-minded communities. Such a pattern is in line with the view that *echo chambers* are formed through the interaction of platform structures, information diffusion, and users' tendency to cluster around shared narratives (Cinelli et al., 2021)

In the context of religious information, this condition is significant because religion is closely related to moral authority and identity. Religious information received without verification can influence students' attitudes toward differences in schools of thought, religious organizations, Islamic perspectives, or other religious communities. Therefore, Islamic Religious Education needs to function as a pedagogical space that trains students to read diverse perspectives critically, proportionally, and ethically.

3. Lecturers' Perceptions of the Integration of Digital Literacy into Islamic Religious Education

Interviews with Islamic Religious Education lecturers revealed a strong awareness that digital literacy needs to be integrated into religious learning. The lecturers viewed that students today do not learn religion only from the classroom, but also from social media, video-sharing platforms, podcasts, messaging applications, and online communities. Therefore, Islamic Religious Education cannot be limited to mastery of normative materials; it must also equip students with the ability to assess sources, examine context, understand bias, and interact ethically in digital spaces. This finding is relevant to UNESCO's view that media and information literacy should strengthen critical thinking, responsible information use, and understanding of the digital communication ecosystem (UNESCO, 2021).

However, the findings also show a gap between lecturers' awareness and curricular readiness. Some lecturers have attempted to incorporate digital literacy issues

into their teaching, but such efforts remain individual and have not been institutionally systematized. The main constraints include limited teaching materials, the absence of specific guidelines, restricted instructional time, and uneven lecturer training on digital literacy and social media algorithms.

This condition indicates that mitigating the *echo chamber* effect cannot be assigned solely to students. Higher education institutions need to provide institutional support through the development of semester learning plans, teaching materials, digital case studies, religious information verification assignments, and lecturer training. In this way, algorithmic religious literacy can become an integral part of Islamic Religious Education, rather than an informal addition outside the curriculum.

4. Perspectives of Digital Literacy Experts

Interviews with digital literacy experts identified three core competencies that need to be strengthened in addressing the *echo chamber*: critical thinking about information, algorithmic awareness, and the ethics of digital dialogue. Digital literacy should not be understood merely as the ability to use technological devices, but as the ability to understand how information operates, who produces it, how it is disseminated, and what interests may accompany it. This perspective is relevant to the concept of information disorder, which distinguishes between misinformation, disinformation, and malinformation in explaining the complexity of information problems in digital spaces (Wardle and Derakhshan, 2017).

In the religious context, these competencies need to be expanded into algorithmic religious literacy. Students should not merely be encouraged to "use social media wisely"; they also need to understand how algorithms shape their exposure to religious information, how confirmation bias operates, and how religious authority should be assessed more carefully in digital spaces. With this awareness, students can distinguish between content popularity and knowledge validity, between narrative virality and argumentative depth, and between religious opinion and scholarly or authoritative references.

The experts' perspectives also emphasize that digital literacy must be connected to values. In Islamic Religious Education, these values can be formulated through the principles of *tabayyun*, communication ethics, fairness in judgment, respect for difference, and public benefit. Thus, algorithmic religious literacy is not only a technical-cognitive competence, but also an ethical-spiritual competence.

5. Students' Strategies for Addressing Echo Chambers

The student FGDs showed that, after understanding the concept of the *echo chamber*, students began to formulate several strategies to reduce its impact. These strategies included seeking information from diverse sources, verifying information before believing or sharing it, engaging in discussion with people who hold different views, and recognizing personal bias in evaluating information.

These strategies can be grouped into three domains. The first is the cognitive domain, which involves the ability to check sources, compare information, and assess religious authority. The second is the social domain, which refers to the willingness to engage in dialogue with different viewpoints without adopting a defensive attitude. The third is the reflective domain, which involves the ability to recognize one's own biases and avoid treating like-minded views as the only legitimate truth.

This finding is important because it shows that students possess reflective potential to move beyond homogeneous information spaces. However, this potential requires pedagogical guidance. Without a structured learning design, students' awareness may remain at the level of conceptual knowledge and fail to develop into critical habits in everyday digital life.

6. Formulation of the Algorithmic Religious Literacy Model

Based on these findings, this study formulates the Algorithmic Religious Literacy Model in Islamic Religious Education. The model consists of five interrelated components.

First, algorithmic awareness. Students need to understand that religious content on social media does not appear randomly but is personalized through algorithmic systems that read users' preferences and digital behavior.

Second, epistemic verification. Students need to be trained to examine the sources, authority, context, and validity of religious information before accepting or disseminating it. In Islamic Religious Education, this competence can be linked to the principle of *tabayyun*.

Third, self-bias reflection. Students need to recognize that every individual has a tendency to accept information that aligns with prior beliefs. This reflection is important so that students do not easily absolutize like-minded views.

Fourth, cross-perspective dialogue. Islamic Religious Education needs to provide discussion spaces that allow students to engage with differences in an argumentative, respectful, and non-defensive manner.

Fifth, Islamic digital ethics. Students need to connect digital literacy with the values of *adab*, justice, moderation, responsibility, and public benefit in digital communication. In the Indonesian context, the value of religious moderation is relevant because it emphasizes balanced, tolerant, and non-extreme religious attitudes within a plural society (Subchi et al., 2022).

The following table summarizes the components of the model.

Table 1. 1. Components of the Algorithmic Religious Literacy Model in Islamic Religious Education

No.	Model Component	Competency Focus	Rate
1.	Algorithmic awareness	Understanding content personalization and digital curation	Students read social media as a curated space, rather than as a neutral information environment
2	Epistemic verification	Examining the sources, authority, context, and validity of information	Students apply the principle of *tabayyun* in receiving and sharing religious information

3	Self-bias reflection	Recognizing confirmation bias and the comfort of like-minded communities	Students do not easily absolutize the views of their own group
4	Cross-perspective dialogue	Engaging with different perspectives argumentatively and respectfully	Students develop tolerance, empathy, and academic openness
5	Islamic digital ethics	Connecting digital literacy with *adab*, moderation, and responsibility	Students build critical, courteous, and moderate digital religiosity

Source: Source: Processed by the researchers, 2024

This model positions Islamic Religious Education as a space for cultivating digital religiosity. In other words, religious learning does not merely function to transmit normative teachings, but also to develop students' ability to evaluate information, understand digital mechanisms, manage differences, and uphold communication ethics within an algorithm-driven digital ecosystem.

Analysis/Discussion (1000-1500 words)

Authors The findings of this study affirm that the *echo chamber* effect cannot be reduced to a merely technological problem. Rather, it is a socio-technical phenomenon formed through the interaction of algorithmic design, user preferences, social network structures, cognitive bias, and educational practices that have not yet fully responded to changes in the digital ecology. Recent studies show that *echo chambers* on social media are shaped by homophily, biased information diffusion, platform architecture, and users' interaction patterns (Cinelli et al., 2021). In this study, these dynamics are situated in the more specific context of Islamic Religious Education in higher education. In this context, the *echo chamber* does not only concern what students see on social media, but also how they construct religious authority, assess the credibility of religious information, and develop attitudes toward difference.

The data show that students often feel comfortable within like-minded digital communities. This comfort carries an epistemic risk because information that appears repeatedly and receives strong support from a community may be perceived as the most valid information. In algorithmically curated media environments, such repetition is not neutral. It is shaped by systems that personalize content based on users' previous interactions, interests, and patterns of engagement. Recent studies on algorithm literacy emphasize that users need both awareness of algorithmic processes and knowledge of how algorithmic systems shape digital experience (Dogruel, Masur, and Joeckel, 2022). Therefore, students' limited awareness of algorithmic curation may lead them to interpret repeated religious content as an objective representation of religious reality, rather than as a selected and personalized digital construction.

This finding is also related to confirmation bias. Students' belief in a particular religious narrative is not always formed through argumentative examination, but may emerge through repetition, group reinforcement, and limited exposure to alternative

perspectives. Recent research shows that awareness of confirmation bias can help reduce susceptibility to misinformation and improve users' ability to evaluate the truthfulness of information (Piksa et al., 2024). In the context of this study, students do not necessarily reject truth or difference, but often lack sufficient critical tools to distinguish between content popularity, emotional appeal, group approval, and epistemic validity. Therefore, mitigating the *echo chamber* effect requires more than increasing access to information; it requires reflective reasoning and the ability to evaluate religious information critically.

At this point, digital literacy needs to be understood more broadly than the technical ability to use digital devices. UNESCO (2021) positions media and information literacy as a competence that enables learners to think critically, use information responsibly, and understand the digital communication ecosystem. However, the findings of this study indicate that general digital literacy alone is not sufficient for dealing with religious information. Religious information carries dimensions of authority, normativity, emotion, identity, and moral commitment. Students need not only to know how to assess digital sources, but also to understand how religious arguments are framed, how religious authority is constructed in digital spaces, and how group bias influences the reception of religious narratives.

This is where the concept of algorithmic religious literacy becomes relevant. This concept connects digital literacy, religious literacy, and algorithmic awareness within a single pedagogical framework. Recent research on religious digital literacy in Islamic higher education shows that students use various digital platforms to access religious information and that campus-based religious digital literacy can help students respond to information disruption and religious radicalism more critically (Usman et al., 2023). In this article, algorithmic religious literacy extends this discussion by emphasizing that students need to read two layers simultaneously: the content of religious information and the algorithmic structures that mediate its circulation.

The findings of this study should also be read through the concept of *information disorder*. Wardle and Derakhshan (2017) distinguish information disorder into misinformation, disinformation, and malinformation. This framework helps explain that the problem of religious information in digital spaces does not always take the form of deliberately fabricated falsehood. Some information may be partially true but detached from its context; some may be emotionally framed to reinforce group sentiment; while other information may be intentionally produced to create division. In this situation, the Islamic principle of *tabayyun* has strong epistemic relevance. *Tabayyun* does not merely mean verifying the truth of information, but also requires moral caution before accepting, judging, and disseminating information that may affect others.

Accordingly, Islamic Religious Education can offer a contribution that general digital literacy does not fully provide, namely the integration of critical competence with ethical-spiritual responsibility. In the Islamic tradition, the pursuit of knowledge cannot be separated from adab, honesty, justice, and public benefit. Therefore, epistemic verification in this model does not only ask, "Is this information true?" but also "Who is the source?", "What is the context?", "What are its consequences?", and "Does its dissemination bring benefit or intensify prejudice?" These questions make algorithmic religious literacy an educational practice that connects critical reasoning with digital morality.

The finding on the importance of cross-perspective dialogue also shows that Islamic Religious Education needs to become a dialogical learning space. Digital spaces often reduce students' encounters with different viewpoints because users interact more frequently with like-minded communities and are repeatedly exposed to similar religious narratives. UNESCO's media and information literacy framework emphasizes the importance of critical inquiry, responsible communication, and engagement with diverse sources of information (UNESCO, 2021). In this sense, Islamic Religious Education needs to construct the classroom as a safe, rational, and ethical space for dialogue. Students should be trained not only to defend their opinions, but also to listen, test arguments, understand context, and revise their views when confronted with stronger reasons.

However, dialogue is insufficient without self-reflection. The findings show that students need to recognize how their preferences, emotions, affiliations, and digital habits shape the way they receive religious information. Self-bias reflection helps students realize that they do not merely "use" digital media, but are also shaped by the logic of digital media. This awareness is important because *echo chambers* often operate through comfort: users feel free to choose information, although their choices have been influenced by personal preferences, community pressure, and recommendation systems. Thus, self-bias reflection becomes a way to unsettle the epistemic comfort that makes students feel sufficiently informed by like-minded views.

From an institutional perspective, the findings regarding lecturers indicate that innovation in algorithmic religious literacy requires systemic support. If algorithmic religious literacy depends only on lecturers' personal initiatives, it will remain sporadic and difficult to sustain. Higher education institutions need to integrate it into semester learning plans, teaching materials, digital case studies, content verification assignments, assessment rubrics, and lecturer training. This direction is consistent with the idea that media and information literacy should be embedded in educational practice rather than treated as a merely technical skill (UNESCO, 2021). In this way, the proposed model does not remain a normative idea, but can be translated into a learning design.

This model also strengthens the agenda of religious moderation. Recent research on religious moderation among Indonesian Muslims shows that moderation is important for maintaining harmony and preventing intolerance and religious extremism (Subchi et al., 2022). In digital spaces, religious moderation cannot be taught merely as an abstract concept. It needs to be translated into concrete abilities: verifying information before sharing it, avoiding hasty judgment of different groups, resisting provocative speech, understanding the context of difference, and maintaining *adab* in online debate. In other words, religious moderation in the digital era requires algorithmic religious literacy as one of its pedagogical prerequisites.

Compared with previous studies that have largely discussed echo chambers as issues of digital communication, political polarization, or disinformation, this study contributes to the pedagogical domain of Islamic Religious Education. This article does not stop at diagnosing that the *echo chamber* narrows religious perspectives, but offers a mitigation framework through five competencies: algorithmic awareness, epistemic verification, self-bias reflection, cross-perspective dialogue, and Islamic digital ethics. These five competencies are mutually reinforcing. Algorithmic awareness helps students understand media structures; epistemic verification trains precision in knowledge evaluation; self-bias reflection cultivates intellectual humility; cross-

perspective dialogue broadens social horizons; and Islamic digital ethics anchors the entire process in the values of *adab*, justice, moderation, and public benefit.

Thus, the findings of this study expand the function of Islamic Religious Education in higher education. Islamic Religious Education does not only serve as a space for transmitting normative teachings, but also as an arena for cultivating digital religious reasoning that is critical, reflective, dialogical, and responsible. In the algorithmic era, religious students need more than religious knowledge; they also need the capacity to read the digital ecosystem that shapes how religion is understood and practiced. This is the central position of the Algorithmic Religious Literacy Model: to make Islamic Religious Education more adaptive to digital change without losing its ethical-spiritual orientation.

CONCLUSION

This study formulated the Algorithmic Religious Literacy Model in Islamic Religious Education at higher education institutions as a pedagogical strategy for mitigating the echo chamber effect among university students. The findings show that the echo chamber effect is reflected not only in students' limited exposure to different viewpoints, but also in their tendency to trust like-minded religious sources, overlook alternative perspectives, and have trouble distinguishing facts, opinions, biases, and algorithmically curated religious narratives.

The study confirms that students require digital-religious competencies that go beyond technical digital literacy. These competencies include awareness of algorithmic personalization, the ability to verify religious information, reflection on self-bias, dialogical engagement with different viewpoints, and digital ethics grounded in Islamic values. The findings also indicate that Islamic Religious Education lecturers recognize the urgency of integrating digital literacy into religious learning, although its implementation still faces constraints related to curriculum design, teaching materials, lecturer training, and institutional support.

Based on these findings, this study proposes five interrelated components of the Algorithmic Religious Literacy Model: algorithmic awareness, epistemic verification, self-bias reflection, cross-perspective dialogue, and Islamic digital ethics. These components show that mitigating the echo chamber effect in Islamic Religious Education cannot rely merely on moral appeals for students to use digital media wisely. It needs to be translated into structured learning designs that train students to understand how algorithms work, assess religious sources critically, apply the principle of tabayyun, manage differences constructively, and uphold adab in digital communication.

The main contribution of this study lies in the development of a pedagogical framework that integrates digital literacy, religious literacy, and algorithmic awareness within Islamic Religious Education. The model positions Islamic Religious Education not only as a space for transmitting normative religious teachings, but also as a medium for cultivating critical, reflective, dialogical, and responsible digital religiosity. Practically, the model can inform the development of semester learning plans, digital case-based teaching materials, religious information verification assignments, cross-

perspective discussions, and learning activities that strengthen religious moderation in digital spaces.

This study is limited by its qualitative design and its focus on five universities in Jakarta; therefore, the findings are not intended for statistical generalization. Future research should test the model using quantitative, experimental, or quasi-experimental approaches in more diverse higher education contexts. Further studies may also develop instruments for measuring algorithmic religious literacy and examine the influence of specific platforms, such as TikTok, YouTube, Instagram, Telegram, and X, on students' religious understanding. As an ongoing research agenda, the next stage should focus on developing and testing an Islamic Religious Education learning module based on algorithmic religious literacy in higher education classrooms.

REFERENCES

APJII. "APJII Jumlah Pengguna Internet Indonesia Tembus 221 Juta Orang." February 7, 2024. Accessed April 1, 2025. https://apjii.or.id/berita/d/apjii-jumlah-pengguna-internet-indonesia-tembus-221-juta-orang.

Cinelli, Matteo, Gianmarco De Francisci Morales, Alessandro Galeazzi, Walter Quattrociocchi, and Michele Starnini. "The Echo Chamber Effect on Social Media." *Proceedings of the National Academy of Sciences* 118, no. 9 (2021): e2023301118. https://doi.org/10.1073/pnas.2023301118.

Dogruel, Leyla, Philipp K. Masur, and Sven Joeckel. "Development and Validation of an Algorithm Literacy Scale for Internet Users." *Communication Methods and Measures* 16, no. 2 (2022): 115–133. https://doi.org/10.1080/19312458.2021.1968361.

Fu, Chenbo, Qiushun Che, Zhanghao Li, Fengyan Yuan, and Yong Min. "Heavy Users Fail to Fall into Filter Bubbles: Evidence from a Chinese Online Video Platform." *Frontiers in Physics* 12 (2024): 1423851. https://doi.org/10.3389/fphy.2024.1423851.

Kementerian Komunikasi dan Informatika, and Katadata Insight Center. *Status Literasi Digital di Indonesia 2022*. Jakarta: Kementerian Komunikasi dan Informatika, 2023. https://cdn1.katadata.co.id/media/microsites/litdik/ReportSurveiStatusLiterasiDigitalIndonesia2022.pdf.

Kemp, Simon. "Digital 2024: Indonesia." *DataReportal*. February 21, 2024. Accessed July 1, 2026. https://datareportal.com/reports/digital-2024-indonesia.

Pariser, Eli. *The Filter Bubble: What the Internet Is Hiding from You*. New York: Penguin Press, 2011.

Piksa, Michal, Karolina Noworyta, Aleksander Gundersen, Jonas Kunst, Mikołaj Morzy, Jan Piasecki, and Rafał Rygula. "The Impact of Confirmation Bias Awareness on

Mitigating Susceptibility to Misinformation." *Frontiers in Public Health* 12 (2024): 1414864. https://doi.org/10.3389/fpubh.2024.1414864.

Rusmiati, Elis Teti, Filda Angellia, and Radja Erland Hamzah. "Echo Chamber dan Eksklusivisme Beragama di Ruang Digital." *WACANA: Jurnal Ilmiah Ilmu Komunikasi* 24, no. 1 (2025): 266–276. https://doi.org/10.32509/wacana.v24i1.4541.

Sunstein, Cass R. *Republic.com*. Princeton, NJ: Princeton University Press, 2001.

UNESCO. *Media and Information Literate Citizens: Think Critically, Click Wisely! Media and Information Literacy Curriculum for Educators and Learners*. Paris: UNESCO, 2021. https://unesdoc.unesco.org/ark:/48223/pf0000377068.

Vosoughi, Soroush, Deb Roy, and Sinan Aral. "The Spread of True and False News Online." *Science* 359, no. 6380 (2018): 1146–1151. https://doi.org/10.1126/science.aap9559.