

FROM CLICKS TO EXCLUSIVITY: SOCIAL MEDIA ALGORITHMS AND RELIGIOUS POLARIZATION AMONG MADRASAH YOUTH IN JAKARTA

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Abstract

The growth of algorithm-driven social media has reshaped how Muslim youth in Indonesia access religious knowledge and form religious attitudes, raising concerns for religious moderation and social harmony in a plural society. This study examines the influence of social media algorithmic exposure on religious polarization among madrasah students and explores how this dynamic relates to authority, openness, and interfaith implications. Employing a mixed-methods sequential explanatory design, the quantitative phase surveyed 300 students from eight madrasahs (Madrasah Aliyah and Tsanawiyah) in East and North Jakarta selected through proportionate stratified random sampling, using a validated five-point Likert questionnaire (Cronbach's alpha = 0.86). The qualitative phase comprised in-depth interviews with twelve students and three Islamic Education teachers, which were analysed thematically and integrated with the survey results through a joint display. Simple linear regression showed a significant positive effect of algorithmic exposure on religious polarization ($\beta = 0.559$; $R^2 = 0.312$; $p < 0.001$). Students with higher exposure exhibited more exclusive attitudes and lower openness to differing views, while recommendation systems on YouTube and TikTok reinforced echo chambers and shifted religious authority from teachers toward digital figures. The study proposes the concept of “algorithmic religiosity” to describe a religious orientation shaped by the selection and amplification logic of platforms. Because the design is correlational and exposure was self-reported, the findings imply, rather than directly demonstrate, risks to interfaith openness; a concrete implication is embedding algorithmic literacy and religious moderation content within madrasah curricula, delivered in formats able to compete with the engagement logic of social media platforms.

Keywords: social media algorithms; religious polarization; Muslim youth; digital literacy; religious moderation

Abstrak

Perkembangan media sosial berbasis algoritma telah mengubah cara remaja Muslim Indonesia mengakses pengetahuan agama dan membentuk sikap keberagamaan, sehingga menimbulkan tantangan bagi moderasi beragama dan keharmonisan sosial dalam masyarakat yang plural. Penelitian ini menganalisis pengaruh paparan algoritma media sosial terhadap polarisasi keagamaan di kalangan siswa madrasah serta mengkaji keterkaitannya dengan otoritas, keterbukaan, dan implikasi antaragama. Dengan desain *mixed-methods sequential explanatory*, tahap kuantitatif mensurvei 300 siswa dari delapan madrasah (Aliyah dan Tsanawiyah) di Jakarta Timur dan Jakarta Utara yang dipilih melalui *proportionate stratified random sampling*, menggunakan kuesioner skala Likert lima tingkat yang telah divalidasi (Cronbach's $\alpha = 0,86$). Tahap kualitatif berupa wawancara mendalam terhadap dua belas siswa dan tiga guru Pendidikan Agama Islam, dianalisis secara tematik dan diintegrasikan dengan hasil survei melalui *joint display*. Regresi linier sederhana menunjukkan pengaruh positif yang signifikan dari paparan algoritma terhadap polarisasi keagamaan ($\beta = 0,559$; $R^2 = 0,312$; $p < 0,001$). Siswa dengan paparan tinggi menunjukkan sikap yang lebih eksklusif dan keterbukaan yang lebih rendah, sementara sistem rekomendasi YouTube dan TikTok memperkuat ruang gema dan menggeser otoritas keagamaan dari guru ke figur digital. Penelitian ini mengajukan konsep "keberagamaan algoritmik" untuk menjelaskan orientasi religius yang dibentuk oleh logika seleksi dan amplifikasi pada platform. Karena desain penelitian bersifat korelasional dan paparan diukur melalui laporan diri, temuan ini mengimplikasikan, bukan membuktikan secara langsung, adanya risiko terhadap keterbukaan antaragama; implikasi konkretnya adalah perlunya mengintegrasikan literasi algoritmik dan konten moderasi beragama ke dalam kurikulum madrasah dengan format yang mampu bersaing dengan logika keterlibatan pada platform media sosial.

Kata kunci: algoritma media sosial; polarisasi keagamaan; remaja Muslim; literasi digital; moderasi beragama

INTRODUCTION

The digital transformation of the past two decades has reshaped not only how people communicate, but also how the younger generation understands, experiences, and expresses religiosity. Social media has become a primary space where religious identity and authority are formed, negotiated, and contested, especially among the age group that has grown up alongside the technology. In Indonesia, the country with the world's largest Muslim population and at the same time a multicultural and multireligious society, the digital sphere plays a strategic role in shaping how citizens understand religious teachings and view other belief groups (Slama, 2018; Campbell & Evolvi, 2020). This issue is academically important because the dynamics of online religiosity extend beyond individual expressions of faith; they may also affect the quality of interfaith relations and social cohesion. As the consumption of online religious content increases, concern grows over digital religious polarization, namely the strengthening of groups whose views become increasingly exclusive, homogeneous, and less open to difference. Understanding how recommendation technologies shape the religious orientation of young people, therefore, becomes a question relevant to strengthening religious moderation and the harmony of a plural society. This urgency aligns with the religious moderation agenda that has become a national religious-policy priority in Indonesia, which positions young people as a strategic target for cultivating inclusive attitudes (Saifuddin, 2019).

To keep the argument analytically valid, this study carefully delimits the meanings of its key terms from the outset. Religious polarization is understood as a widening of attitudinal distance between belief positions, marked by exclusivity, that is, the conviction that one's own view is the most correct, accompanied by a declining willingness to accept differing views. The concept is distinguished firmly from religious conservatism, which refers to doctrinal firmness and need not entail rejection of other groups; from intolerance, which emphasizes active rejection of others; and from conflict, which requires evidence of actual intergroup behavior. This study measures attitudes and perceptions rather than conflict behavior, so that all claims are kept proportionate to the available evidence. This delimitation matters because the term polarization is often used too loosely, losing analytical sharpness and risking overstatement of findings.

The research focuses on madrasah students in East Jakarta and North Jakarta as the unit of analysis. This choice is relevant because madrasah students are digital natives who treat the internet and social media not merely as supplementary sources of information but as primary references for understanding religious teachings, following sermons, and forming attitudes toward issues of religiosity. The two regions were selected because they represent high social and religious heterogeneity, as well as intensive social media use among urban adolescents. East Jakarta is known as a densely populated area with the highest social media penetration in the capital, whereas North Jakarta exhibits coastal social dynamics and a diverse cultural and religious composition. The position of madrasah students is unique: they live within a plural society yet often receive religious information from a homogeneous, algorithmically curated digital space. Through personalized recommendation systems, platforms such as YouTube, TikTok, and Instagram filter content based on users' preferences and interaction history, thereby creating a highly selective information environment that may trigger echo chambers in the religious domain.

Studies over the past decade have mapped two complementary tendencies. First, scholarship on digital da'wah and digital religion shows that social media expands access to religious knowledge while shifting the structure of authority from ulama and formal institutions toward digital figures such as YouTube preachers and TikTok ustadz (Naamy, 2023; Zaid et al., 2022; Andok, 2024; Febrian, 2024; Fakhruroji, 2025). Akmaliah (2020) even shows that the contestation of authority in new media can erode the position of moderate Islam. Second, the literature on algorithmic personalization and polarization demonstrates that recommendation systems tend to amplify exposure to views aligned with users' prior beliefs and accelerate the formation of echo chambers (Cinelli et al., 2021; Sasahara et al., 2021; Santos et al., 2021; Törnberg, 2022; Geschke et al., 2019). In the Indonesian context, studies of digital religious moderation generally take the form of content analyses or literature reviews emphasizing social media as a vehicle for moderation campaigns (Rahmawati et al., 2023; Hardiyanto et al., 2023; Wahyudi, 2021).

Nevertheless, a gap remains. Studies of algorithmic polarization largely draw on Western political contexts and rarely empirically link recommendation mechanisms to religious polarization among Indonesian Muslim adolescents.

Conversely, studies of digital religion in Indonesia tend to be descriptive and qualitative and have not measured the relationship between the intensity of algorithmic exposure and the degree of religious exclusivity in a quantifiable way. Moreover, claims about implications for tolerance and interfaith relations are often asserted but seldom supported by a design that combines quantitative and qualitative evidence directly within a madrasah setting. As a result, it remains unclear how the logic of algorithmic selection operates in shaping students' religious attitudes, and to what extent such findings can be situated within the discourse of plural-society harmony. This gap calls for a study that not only measures the direction of the relationship but also explains the socio-cognitive process behind it. More specifically, the urban madrasah setting in Jakarta is important because it combines intensive digital exposure with a plural social life, yet it has rarely been the focus of algorithmic-polarization research based on primary data.

The novelty of this study lies in three respects. Methodologically, it combines surveys and interviews using a sequential explanatory design in an under-researched urban madrasah setting. Empirically, it provides measurable evidence of the influence of algorithmic exposure on religious polarization together with a qualitative explanation of its mechanisms. Conceptually, it proposes and elaborates on the notion of “algorithmic religiosity” as a religious orientation shaped by the selection and amplification logic of platforms, and distinguishes it from digital religion, networked religion, filter bubble, and echo chamber. Against this background, the study focuses on three questions: (1) to what extent social media algorithmic exposure influences the level of religious polarization among madrasah students; (2) how the socio-cognitive mechanisms of such exposure operate according to the experiences of students and teachers; and (3) what implications these dynamics hold for religious moderation and the harmony of a plural society. The expected contributions are empirical, conceptual, and policy-oriented, particularly for the development of algorithmic literacy and a religious moderation curriculum.

METHOD

This study employed a mixed-methods approach with a sequential explanatory design, combining quantitative and qualitative phases. The quantitative phase was conducted first to identify the pattern of relationships among variables, after which the qualitative phase explained and deepened the meaning of those statistical findings. This design was chosen because the phenomenon of algorithmic influence on religious polarization is complex and therefore requires analysis that is not only statistical but also interpretive (Johnson & Onwuegbuzie, 2004). The independent variable was social media algorithmic exposure (X) and the dependent variable was religious polarization (Y).

The research was carried out in East Jakarta and North Jakarta, DKI Jakarta Province, from February to April 2025. The two regions were purposively selected because they represent socio-religious diversity and high levels of digital access. East Jakarta is a densely populated area with the highest social media penetration in the

capital, while North Jakarta is a coastal area with a diverse cultural and religious composition; both are relevant for studying the formation of religious perceptions among urban Muslim adolescents.

The research subjects comprised students of Madrasah Aliyah (MA) and Madrasah Tsanawiyah (MTs). In the quantitative phase, 300 students from eight madrasahs (four MA and four MTs, two in each region) served as respondents. Sampling used a proportionate stratified random sampling technique with region and madrasah level as strata, so that the proportion of respondents reflected the population distribution. The target sample size of 300 was set with reference to common guidelines for simple regression analysis, which recommend roughly 50 to 100 cases for a single predictor to achieve adequate statistical power; the achieved sample size therefore comfortably exceeds this threshold. Respondents ranged in age from 13 to 18 years, with a relatively balanced gender composition. In the qualitative phase, twelve students and three Islamic Education (PAI) teachers were purposively selected based on the intensity of their social media use, their involvement in consuming digital religious content, and their willingness to participate. The eight madrasahs were selected to represent variation in status (public and private) and accreditation level, as well as field accessibility, so that the sample reflects the variety of characteristics of urban Madrasah. The respondent profile is summarized in Table 1.

Table 1.
Respondent Profile (N = 300)

Characteristic	Category	n	Percentage (%)
Gender	Male	138	46.0
	Female	162	54.0
Level	Madrasah Aliyah (MA)	156	52.0
	Madrasah Tsanawiyah (MTs)	144	48.0
Region	East Jakarta	165	55.0
	North Jakarta	135	45.0
Social-media intensity	Low	42	14.0
	Moderate	108	36.0
	High	150	50.0

Source: Primary data, 2025

The main instrument was a five-point Likert-scale questionnaire (1 = strongly disagree to 5 = strongly agree). Variable X was measured through 12 items representing the intensity of social-media use, dependence on automatic recommendations, and the diversity of content sources; variable Y was measured through 12 items covering religious exclusivity, openness to differing views, and normative judgment of others' practices. A sample item for X is "The content that appears on my timeline often matches the videos I watch," while a sample item for Y is "I prefer to hear firm and assertive sermons rather than moderate ones." Qualitative data were collected through semi-structured in-depth interviews (30–45 minutes) that were recorded with participants' consent and transcribed for analysis. The twelve items of each variable are distributed evenly across these indicators; complete list of

12 X items and 12 Y items is provided in the Appendix. For the categorical breakdowns reported later (low, moderate, and high exposure or polarization), each respondent's mean score was classified relative to the sample mean and standard deviation, with scores below M minus 1 SD classified as low, scores within one SD of the mean classified as moderate, and scores above M plus 1 SD classified as high.

Quantitative analysis was conducted using SPSS version 26. After the prerequisite tests of normality, linearity, and homoscedasticity were satisfied, the data were analysed using simple linear regression to test the effect of X on Y. Because X and Y were both collected through self-report from the same respondents at the same time, a Harman's single-factor test was performed to check for common method bias; the unrotated factor solution produced no single factor accounting for the majority of variance, indicating that common method bias was not a serious concern. Qualitative data were analysed using six-phase thematic analysis (familiarization, initial coding, searching for themes, reviewing themes, defining themes, and reporting), with codes developed independently by two members of the research team and reconciled through discussion until consensus was reached, so as to reduce the risk of single-coder bias. For mixed-methods integration, the quantitative and qualitative results were combined at the interpretation stage through a joint display that mapped each qualitative theme onto the statistical finding it explained, making the connection between the two types of data explicit.

The validity of the instrument was maintained through content validity by three experts in the fields of Islamic Education and Digital Communication, empirical validity using Pearson Product Moment correlation (threshold $r > 0.30$; all items proved valid, with corrected item-total correlations ranging from 0.45 to 0.66, and reliability with a Cronbach's Alpha coefficient of 0.86, indicating high internal consistency. In the qualitative phase, credibility was maintained through method and source triangulation, member checking, and researcher reflexivity, ensuring that interpretation was not biased by the researcher's personal views on religious issues.

The entire research process observed academic ethical principles and received formal ethical clearance from the Research Ethics Committee of Universitas Muhammadiyah Prof. Dr. Hamka prior to data collection. Each respondent received an explanation of the research aims and stated their willingness through informed consent, with assurances of confidentiality and the right to withdraw without consequence. Research permits were obtained from the Ministry of Religious Affairs offices in East Jakarta and North Jakarta, as well as from the principals of the madrasahs where the research took place.

FINDINGS

This section presents the findings in the order of the research questions. The first finding sets out the quantitative picture of the level of algorithmic exposure and religious polarization and the influence between them. The second examines item-level response patterns to indicate early signs of a filter bubble and exclusivity. The third presents interview results revealing the socio-cognitive mechanisms behind the

numbers. At the end of the section, the quantitative and qualitative findings are integrated through a joint display. A deeper theoretical interpretation is provided in the discussion section.

Of the 300 questionnaires distributed, all were returned and usable after completeness screening, so there were no meaningful missing data. In the qualitative phase, all fifteen participants, comprising twelve students and three Islamic Education teachers, completed the interviews. Accordingly, the quantitative picture presented below is based on complete data, while the qualitative findings represent all interview participants rather than a small subset.

Exposure Level, Polarization, and Regression Results

Descriptive statistics show that the mean for algorithmic exposure was in the high category, and for religious polarization, in the moderate-to-high category (Table 2). The mean score for content-consumption intensity was the highest, indicating that students spend a great deal of time consuming automatically recommended content.

Table 2.

Descriptive Statistics of Algorithmic Exposure and Religious Polarization (N = 300)

Variable	Mean	SD	Min	Max
Algorithmic Exposure (X)	3.84	0.61	2.10	5.00
Religious Polarization (Y)	3.67	0.58	2.00	5.00
Content Consumption Intensity	4.12	0.73	1.80	5.00

Source: Primary data, 2025

The data showed adequate variation on both variables. Algorithmic-exposure scores ranged from 2.10 to 5.00 with a standard deviation of 0.61, while religious polarization ranged from 2.00 to 5.00 with a standard deviation of 0.58, so there was no notable floor or ceiling effect. Most respondents fell in the moderate-to-high exposure category, and a similar pattern appeared for content-consumption intensity, which had the highest mean ($M = 4.12$). This descriptive picture indicates that consuming automatically curated content has become a routine part of most participants' daily lives.

By subgroup, the same general tendency appeared across both levels (MA and MTs) and both regions (East and North Jakarta): the means for algorithmic exposure and polarization fell within comparable categories, with small differences between subgroups that did not alter the direction of the relationship. Details per subgroup are presented in Table 3. This consistency across subgroups strengthens the reliability of the reported aggregate pattern.

Table 3.

Comparison of Scores Across Region and Level Subgroups

Subgroup	n	Mean exposure (X)	Mean polarization (Y)
MA – East Jakarta	86	3.90	3.74
MA – North Jakarta	70	3.81	3.63
MTs – East Jakarta	79	3.86	3.70
MTs – North Jakarta	65	3.77	3.58

Source: Primary data, 2025

When the scores were grouped into low, moderate, and high categories, the distribution showed that the high-exposure group was the largest proportion, followed by the moderate group, while the low group was relatively small. A similar pattern, though with a slightly more even proportion, appeared for religious polarization. This categorical distribution reinforces the picture that high exposure is common rather than exceptional among the participants, so that the relevance of the findings is not limited to a small number of students with extreme habits.

Before the regression, the basic assumptions were satisfied: the Kolmogorov–Smirnov test indicated normally distributed residuals ($p > 0.05$), the linearity test indicated a linear relationship between X and Y (Deviation from Linearity $p > 0.05$), and the homoscedasticity test (residual scatterplot and the Glejser test) found no symptoms of heteroscedasticity. The results of the simple linear regression are presented in Table 4.

Table 4.
Results of the Simple Linear Regression of the Effect Of X On Y

Component	Value
Standardized coefficient β	0.559
R^2	0.312
Adjusted R^2	0.309
F	135.21
Sig. (<i>p-value</i>)	< 0.001

Source: Primary data, 2025

Table 4 shows that algorithmic exposure had a positive and significant effect on religious polarization ($B = 0.53$, $SE = 0.05$, $\beta = 0.559$, $df = 1, 298$, $p < 0.001$). The coefficient of determination of 0.312 indicates that algorithmic exposure explained about 31.2% of the variance in religious polarization, with the remainder attributable to factors outside the model. The F value of 135.21, significant at $p < 0.001$, confirms that the regression model is fit for predicting religious polarization from algorithmic exposure. The standardized coefficient of 0.559 is moderate-to-strong by social-science conventions, meaning that a one-standard-deviation difference in algorithmic exposure is associated with an increase of more than half a standard deviation in polarization. Algorithmic exposure is therefore a consistent predictor, although most of the variance in polarization is still explained by factors outside the model such as the family environment, peers, and formal education. The direction and strength of this relationship are visualized in Figure 1, which presents the scatter plot along with a single regression line consistent with the tested model. The estimated regression equation is $Y = 1.51 + 0.56X$, consistent with the single line in Figure 1.

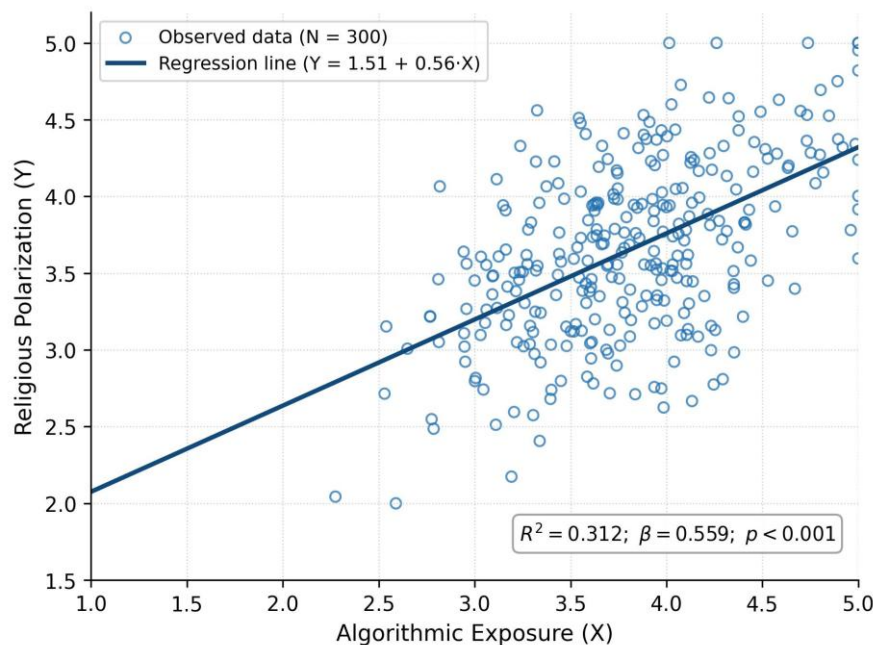


Figure 1. Scatterplot of algorithmic exposure and religious polarization with a single regression line (SPSS data processing, 2025)

Figure 1 shows a positive linear pattern: the higher the algorithmic exposure, the higher the tendency toward religious polarization. The scatter shows that at low exposure levels, polarization scores vary widely, whereas at high exposure levels, the scatter narrows toward higher polarization scores. This visual consistency reinforces the result in Table 4 and shows no outliers that meaningfully affect the direction of the relationship.

These quantitative results answer the first research question by showing a positive and significant effect, but do not yet explain how that effect takes shape in students' experience. For that reason, participants with high exposure scores became the primary reference in the subsequent qualitative phase, so that the numbers in this section serve as a foundation that was then deepened through interviews. The presentation of findings thus moves from a measured general pattern toward the mechanisms that are experienced, in line with the logic of the sequential explanatory design.

Item-Level Response Patterns

Item-level analysis reinforced this picture. On the algorithmic-exposure variable (Table 5), the item about the match between content and viewing history obtained the highest mean, followed by the perception that the platform understands users' religious preferences. By contrast, the item about seeking alternative sources obtained a relatively lower value, which serves as an early indication of a filter bubble. Table 5 presents representative items from the 12 exposure items; the complete list is available in the Appendix.

Table 5.
Mean response per item for algorithmic exposure (X)

Statement item (X)	Mean	SD	Interpretation
X1. The content on my timeline matches the videos I watch.	4.32	0.67	Algorithm reinforces preferences
X2. I automatically follow the next recommended video.	3.98	0.72	High dependence on recommendations
X3. I rarely look for sources outside my timeline.	3.54	0.81	Early indication of a filter bubble
X4. The platform understands what I like about religion.	4.01	0.69	Internalization of algorithmic personalization

Source: Primary data, 2025.

Overall, three of the four exposure items obtained means above 3.9, indicating a high degree of exposure to automatic recommendations and the internalization of platform personalization. By contrast, item X3, which measured the search for alternative sources, obtained the lowest value ($M = 3.54$), indicating a tendency among participants to remain within the platform's content rather than seeking references beyond it.

On the religious-polarization variable (Table 6), the items on preference for assertive sermons and on claims to the truth of one's own view obtained the highest values, while the normative judgment of others' practices was at a moderate level. This pattern indicates a tendency toward exclusivity that increases with higher exposure. As with Table 5, Table 6 presents representative items from the 12 polarization items; the full list is in the Appendix.

Table 6.
Mean response per item for religious polarization (Y)

Statement item (Y)	Mean	SD	Interpretation
Y1. My religious view is the most correct compared to others.	3.88	0.66	Increasing exclusivity
Y2. I am uncomfortable with different religious views.	3.71	0.75	Moderate openness
Y3. I prefer assertive sermons over moderate ones.	3.92	0.70	Preference for confrontational content
Y4. I often judge others' religious practices as improper.	3.55	0.84	Normative polarization

Source: Primary data, 2025.

On the polarization variable, the items on preference for assertive sermons (Y3; $M = 3.92$) and the claim to the truth of one's own view (Y1; $M = 3.88$) obtained the highest values, while the normative judgment of others' practices (Y4; $M = 3.55$) was at a moderate level. This pattern shows that exclusivity appeared stronger in attitudes toward one's own beliefs and in content-format preferences than in direct judgment of other groups. These item-level findings are consistent with the aggregate picture in Table 2 and provide an empirical basis for tracing the mechanism through the qualitative data.

Read together, the X and Y item patterns show a consistent connection: the highest-rated exposure items (X1 and X4, measuring content match and personalization) pair with the highest-rated polarization items (Y1 and Y3, measuring self-truth claims and preference for assertive content), while the lowest-rated exposure item (X3, seeking alternative sources) pairs with the relatively lower-rated polarization item (Y4, normative judgment of others). This directional alignment reinforces the regression result in Table 4 and suggests that exposure intensity moves in tandem with the degree of exclusivity at the item level, not only at the composite score level.

QUALITATIVE FINDINGS

Thematic analysis of interview transcripts from 12 students and 3 teachers yielded 4 main themes consistent across participants (interview excerpts below are translated from Indonesian). The analysis proceeded through six phases, from familiarization to reporting, with codes reviewed to maintain consistency. The four themes recurred among most student informants and were corroborated by teachers' accounts, so they are regarded as representative of the dominant pattern rather than as selectively chosen illustrative quotations. The themes below are presented as findings; their theoretical interpretation is developed in the discussion section. To preserve anonymity, student informants are coded S1–S12 and teachers G1–G3, with school level and region indicated without disclosing personal identity.

In brief, the themes of echo-chamber reinforcement and limited access to alternative views appeared among almost all high-exposure student informants; the theme of authority shifting toward digital figures appeared among the majority; while the themes of complexity reduction and resistance to moderation appeared consistently, though with varying intensity. This distribution of occurrences shows that the four themes are not isolated cases but rather a recurring, mutually reinforcing pattern, and thus warrant their place as the main findings explaining the quantitative relationship.

Echo-Chamber Reinforcement and the Algorithm as a Shaper of Belief

Students with high exposure reported that the content appearing tended to be uniform, thereby reinforcing pre-existing beliefs. Some equated frequency of appearance with truth. This pattern was expressed by most student informants, who described their feeds as spaces that consistently affirmed their initial beliefs and rarely presented rebuttals. Some described this experience as comfortable because they

always encountered like-minded content, while a few began to notice the uniformity yet still found it hard to break out of it.

"The algorithm seems to know what I'm looking for. It's always the same videos, so I feel that must be what's right." (S3, MA, East Jakarta)

"If it shows up often, it must be true. There's no way it's wrong if it keeps getting recommended." (S7, MTs, North Jakarta)

The Shift of Religious Authority Toward Digital Figures

A number of students stated that they trusted religious figures on social media more than formal learning sources at school. Some compared digital figures directly with their classroom teachers and judged the former more convincing because they were concise, easy to digest, and felt emotionally close. However, not all students placed digital figures above teachers; some still regarded teachers as the reference for matters considered complex and used digital content mainly for quick, practical needs.

"I trust ustadz on TikTok more because the explanation gets straight to the point, not long-winded like at school." (S2, MA, North Jakarta)

"TikTok ustadz are more engaging and get straight to the point, so I'm more convinced by their opinions." (S5, MTs, East Jakarta)

Complexity Reduction and Resistance to Moderation

The short-video format encouraged a preference for concise messages, while content emphasizing tolerance was often avoided as insufficiently assertive. This preference for the concise format was accompanied by complaints that moderate content often felt heavy and preachy, so it was rarely watched to the end. This tendency aligns with the response pattern on item Y3 and shows that the appeal of the format helps determine the reception of a religious message, not merely the content of its argument.

"I like short videos because they hit home right away. If it's long, I skip it." (S4, MA, East Jakarta)

"If the sermon is too tolerant, I skip it. Not assertive enough." (S9, MTs, North Jakarta)

Inability to Access Alternative Views

Students admitted that they found it difficult to encounter differing views on their feeds, indicating a strong filter bubble. Some students even stated that they were unaware their feed had been filtered and assumed that what appeared represented the full range of existing views. When asked to recall the last time they encountered a view that challenged their beliefs, most struggled to provide an example, reinforcing the inference that exposure to alternative perspectives was indeed minimal.

"On my feed there's no content with differing opinions. Only one school of thought shows up." (S6, MA, North Jakarta)

Islamic Education teachers reinforced this pattern, noting that some students tend to treat religious teaching as a concise message to be accepted immediately and to refer more often to digital content than to formal learning sources. All three teachers expressed similar concerns that their role as religious references has begun to compete with that of digital figures who are more popular among students.

Teachers' Perspective on the Shift of Religious Reference

Interviews with three Islamic Education teachers reinforced and complemented the findings from the students' side. All three observed that students increasingly come to class with references drawn from digital content, and that such references are often fragmentary and assertive without adequate context. The teachers also recounted the difficulty of competing with content that is concise and entertaining, whereas a complete explanation demands time and patience that students do not always welcome. One teacher linked this tendency to a declining willingness among students to accept differing opinions in classroom discussion.

"Children nowadays draw conclusions so quickly. Once they've seen it on social media, it's hard to get them to consider the other side." (G1, MA teacher, East Jakarta)

These teacher observations place the quantitative finding in the context of everyday learning and show that the impact of algorithmic exposure extends beyond students' personal attitudes to affect classroom dynamics and the relationship between teachers and students as sources of religious authority.

Qualitatively, the four themes are interrelated and form a single chain: the repetition of content affirms belief; that affirmation strengthens trust in digital figures; the preference for the concise format filters out moderate narratives; and the limited access to differing views closes the space for correction. It is this chain that links the numbers in the quantitative part with the experiences reported by participants.

As a balancing note, cases were also found that did not fully follow the general pattern. A small number of students reported conscious efforts to seek differing views, following several cross-perspective accounts, or discussing content with teachers and parents. The presence of these balancing cases affirms that algorithmic reinforcement is not an absolute force and can be offset by critical disposition and social support. This finding also strengthens the reading that the relationship found is probabilistic rather than deterministic, and provides an empirical basis for optimism that educational intervention can shift students' content-consumption patterns.

To make the connection between quantitative and qualitative explicit, Table 7 maps each qualitative theme onto the quantitative finding it explains. This mapping makes the integration not merely a juxtaposition but a mutual explanation: the numbers show that a relationship exists, while the themes explain how that relationship takes shape in participants' experience.

Table 7.
Joint Display Integrating the Quantitative and Qualitative Findings

Quantitative finding	Explanatory qualitative theme	Integrative meaning
$\beta = 0.559$; $R^2 = 0.312$ ($X \rightarrow Y$ significant)	Echo-chamber reinforcement; algorithm as shaper of belief	The influence is not merely informational but reaches the cognitive dimension
High X1 & X4 (match & personalization)	Shift of authority toward digital figures	Authority is judged by frequency of appearance and closeness, not scholarship
High Y3 (preference for assertive content)	Resistance to moderation	Engagement logic prioritizes confrontational content
Relatively low X3 (rarely seeking other sources)	Inability to access alternative views	Indication of a filter bubble that limits the diversity of references

Source: Authors' analysis, 2025.

A row-by-row reading of Table 7 clarifies this connection. The significant $X \rightarrow Y$ relationship is explained by echo-chamber reinforcement, so the statistical effect acquires experiential meaning. The high content-match and personalization items (X1 and X4) are explained by the shift of authority toward digital figures, showing that closeness and frequency of appearance become the basis for judging legitimacy. The high preference for assertive content (Y3) is explained by resistance to moderation, while the low search for alternative sources (X3) is explained by limited access to differing views. The joint display thus does not merely juxtapose two kinds of data but links each numerical finding with the mechanism that explains it.

Overall, the findings show a consistent pattern: high algorithmic exposure is associated with greater exclusivity, and the interviews explain that this pattern operates through content repetition, shifts in authority, complexity reduction, and limited access to alternative views. The convergence among the regression results, item patterns, and qualitative themes strengthens confidence that the relationship found is not an artifact of a single data type but a pattern stable across sources. The theoretical interpretation of this pattern, including its placement within the frameworks of media ecology and digital religion, is developed in the discussion section.

DISCUSSION

The most important issue emerging from these findings is that the religious polarization of madrasah adolescents is not merely a product of individual ideological choice but is also shaped by the technological structures that govern the distribution of information. The significant relationship between algorithmic exposure and polarization ($\beta = 0.559$; $R^2 = 0.312$), explained by four qualitative themes, indicates that the platform's selection logic shapes how students judge truth and authority. This situates the problem of religious polarization not only in the domains of theology and education but also in information technology governance, thus demanding an

explanatory framework that goes beyond a purely normative approach. This section interprets the findings within the frameworks of media ecology, algorithmic ethics, and digital religion, then develops the concept of algorithmic religiosity, and finally weighs its contribution and implications for the harmony of a plural society.

Algorithmic Exposure and the Strengthening of Exclusivity

The moderate but significant influence of algorithmic exposure on exclusivity aligns with McLuhan (1964) media-ecology framework, which regards media not merely as a channel but as an environment that shapes the structure of perception. In this logic, the algorithm is not a neutral tool; it governs the intensity, frequency, and context of the information a user receives and thus helps shape what is regarded as true and worth attending to. Floridi (2019) describes the algorithm as a moral infrastructure that indirectly determines relevance and truth, while Gorwa et al., (2020) warns that engagement-oriented design can amplify inequities without principles of fairness, accountability, and transparency. This reading helps explain why a moderate coefficient of determination ($R^2 = 0.312$) remains substantively meaningful: the algorithm need not be the sole determinant to play an important role, since its influence works cumulatively and repeatedly through daily exposure that users scarcely notice. In other words, the power of the algorithm lies not in the magnitude of a single instance of influence but in its continuity, which constantly shapes the cognitive environment of students' religiosity. This ecological reading also explains why one-off interventions, such as a single counseling session, struggle to offset daily exposure; what is needed is the formation of enduring habits and critical capacities so that students can navigate an information environment that continually directs their attention.

These findings both reinforce and contextualize the empirical literature on algorithmic polarization. The studies of Cinelli et al. (2021), Santos et al., (2021) and Sasahara et al., (2021) show that recommendation systems accelerate the formation of echo chambers, while Törnberg (2022) links digital media with affective polarization through partisan sorting. The patterns in Tables 5 and 6, high content match (X1) and a preference for assertive content (Y3), indicate a similar mechanism in the religious domain. This study's contribution to that body of literature is contextual: whereas most evidence on algorithmic polarization derives from the political domain in Western societies, these findings show that the same selection logic can operate in the religious domain among Indonesian Muslim adolescents. The study thus extends the applicability of prior findings to a different domain and setting, while affirming that religious content, because of its ties to identity and truth claims, may be more vulnerable to algorithmic amplification than ordinary content. Nonetheless, it must be emphasized that this study's evidence is attitudinal and correlational, not experimental; the findings are therefore read as a strong association rather than as causal evidence of conflict. This clarification also addresses the criticism that the term "conflict" may exceed the available evidence, so the study's title and claims were moderated to "exclusivity." Furthermore, the high preference for assertive content (Y3) indicates that the affective dimension plays an important role: content that

arouses emotion tends to attract greater engagement and is therefore amplified more widely by recommendation systems. This reading aligns with Törnberg (2022) thesis that polarization in the digital era is often affective, rooted in feelings toward other groups rather than in differences of ideas, so that moderation efforts targeting only the cognitive aspect risk overlooking the emotional appeal that fuels algorithmic amplification.

These results also clarify that the relationship is not entirely one-directional. As Bail et al. (2018) show, exposure to opposing views does not always reduce polarization and may even strengthen it, while Bakshy et al. (2015) and Barberá et al. (2015) underscore the role of individual choice alongside algorithmic curation. The exclusivity of madrasah students is therefore best understood as the result of an interaction between prior preferences and algorithmic reinforcement, not technological determination alone. Geschke et al. (2019) call this layered interaction a triple-filter bubble at the cognitive, social, and technological levels. Emphasizing this interaction matters to prevent the study from falling into technological determinism: the data show that the item on seeking alternative sources (X3) was relatively low, which may be read as a combination of a psychological tendency to seek affirmation (confirmation bias) and a platform architecture that facilitates that tendency. This two-way understanding leaves room for intervention, for if polarization were entirely determined by technology, educational efforts would be futile; conversely, because disposition also plays a part, strengthening literacy and critical attitudes has the potential to alter consumption patterns.

These findings can also be read through the notion of data voids (Golebiewski & Boyd, 2019), namely information gaps easily filled by low-quality or partisan content when trusted references are scarce. In adolescents' religious domain, the scarcity of moderation content that is attractive in its format creates a similar gap, filled by assertive and simplistic narratives. Bozdog (2020) adds that managing diverse networks demands active effort that users seldom undertake, while Guess et al. (2019) caution that vulnerability to problematic content is uneven and depends on literacy and digital habits. These three perspectives reinforce the reading that the exclusivity found is not merely an individual matter but a result of an unequal information ecosystem that demands intervention on both the supply and consumption sides of content.

The Shift of Authority and the Digital Religious Ecology

The theme of authority shift reinforces the study of digital religion. Campbell (2013) and Campbell & Evolvi (2020) show that digital media transform the structure of authority and give rise to a networked religion that is flexible and not bound to formal institutions. In the Indonesian context, several studies document how figures such as YouTube *ustadz* and TikTok preachers gain legitimacy through popularity and emotional closeness (Naamy, 2023; Zaid et al., 2022; Andok, 2024; Febrian, 2024; Slama, 2018; Fakhruroji, 2025). Students' statements that they "trust TikTok *ustadz* more" affirm Akmaliah (2020) findings on the contestation of authority that can shift the position of moderate Islam. Campbell (2013) and Sunarwoto (2020) add that the

digital religious space is materially mediated, so that the form and format of delivery help determine how a message is received. This study's findings reinforce that line of argument while giving it an empirical basis in the Madrasah setting, which has more often been discussed normatively than measured.

What distinguishes these findings is their direct linkage to algorithmic logic. Students do not merely shift authority but judge validity based on frequency of appearance and visual appeal: "if it shows up often, it must be true." This is the meeting point of media ecology and algorithmic ethics: the machine-curated environment shapes a new religious epistemology in which credibility is measured by engagement metrics rather than scholarly depth. Complexity reduction through the short format and resistance to moderation narratives show that argumentative, lengthy material on tolerance loses out to content that is emotionally "moving." These findings extend the study of digital religious authority, which has so far focused more on which figures rise to prominence, by adding the dimension of why and how such figures gain legitimacy, namely through a visibility mechanism determined by the algorithm. For madrasah education, this shift poses a structural challenge: teachers do not merely compete with other figures but with a distribution system that by design prioritizes high-emotion content. The three teachers' sense that their position is being eroded reinforces the reading that pedagogical authority now confronts a platform-business logic operating in rhythms and formats different from those of formal learning.

Algorithmic Religiosity as a Conceptual Contribution

This study proposes the concept of algorithmic religiosity, namely a religious orientation shaped by continual interaction with the selection and amplification logic of digital platforms, in which the truth, authority, and acceptability of a religious view are judged on the basis of algorithmic visibility rather than scholarly legitimacy. The concept needs to be distinguished carefully from neighbouring ideas. Unlike digital religion (Campbell, 2013), which highlights the transformation of religious practice in new spaces, algorithmic religiosity emphasizes the active role of recommendation architecture in selecting and amplifying content. Unlike networked religion, which foregrounds network connectivity, this concept highlights machine curation. Unlike the filter bubble and echo chamber (Pariser, 2011; Sunstein, 2017), which focuses on information isolation, algorithmic religiosity points to an epistemological change in how the truth of religion is judged. Finally, unlike mediated religious authority, which emphasizes figures, this concept emphasizes the platform logic underlying them. In other words, whereas the earlier concepts explain where and by whom digital religiosity takes place, algorithmic religiosity explains through what mechanism belief is selected, reinforced, and judged for validity. The concept is also distinguished from algorithmic polarization, which highlights the clustering of political or ideological attitudes produced by recommendations; algorithmic religiosity focuses specifically on the domain of religious belief and authority, where truth claims are sacred, so that their amplification carries distinct social implications.

Thus, algorithmic religiosity is not merely a new label but a framework that integrates three layers of explanation, the media environment (McLuhan), moral infrastructure (Floridi), and the transformation of authority (Campbell), to explain how platforms help compose the religious cognition of young people. To make it empirically testable, the concept is proposed together with several observable markers: (1) judging truth on the basis of the frequency with which content appears; (2) preferring authority that is highly visible rather than authority whose scholarly credibility has been tested; (3) the narrowing of religious references to the scope fed by the platform; and (4) the rejection of content that demands more complex cognitive processing. These markers appear convergent with the data patterns: marker (1) corresponds to items X1, X4, and Y1 together with the theme of echo-chamber reinforcement; marker (2) corresponds to items X2 and X4 together with the theme of authority shift toward digital figures; marker (3) corresponds to item X3 together with the theme of inability to access alternative views; and marker (4) corresponds to item Y3 together with the theme of resistance to moderation. This explicit correspondence, rather than a general claim of convergence, provides the concept with an initial empirical basis that is distinguishable from the neighboring constructs discussed above. The concept is proposed cautiously as a conceptual contribution that still requires further testing through larger samples and more varied designs, rather than as a settled final theory.

Contribution and Implications for the Harmony of a Plural Society

Empirically, the study provides measurable evidence, along with a qualitative explanation, of how algorithmic exposure is associated with religious exclusivity in the under-researched urban madrasah setting. Methodologically, integration through a joint display shows the explicit connection between numbers and experience, answering the common criticism that many mixed-methods studies merely attach two kinds of data without truly integrating them. Conceptually, the notion of algorithmic religiosity enriches the study of digital religion in Indonesia by shifting the focus from a mere description of online religious practice toward an analysis of the role of technological architecture in shaping religious epistemology. For policymakers, this contribution implies that strengthening religious moderation among young people requires treating algorithmic literacy as a basic competency, on par with literacy in reading religious texts, since both now determine how students acquire and evaluate religious knowledge.

The implications for interfaith harmony must be stated proportionately. The study's data come from a sample of Muslim adolescents and measure attitudes rather than interfaith behavior directly. The link to interfaith relations is therefore presented as an implication rather than a demonstrated result. Even so, that implication is relevant to the scope of harmony: when the digital space is dominated by exclusive narratives, the potential for misunderstanding and stereotyping of other groups may increase (Hardiyanto et al., 2023; Wahyudi, 2021). Conversely, when a diversity of perspectives is present in a balanced way, social media has the potential to become a space for dialogue that strengthens social cohesion (Rahmawati et al., 2023; Saifuddin,

2019). These findings clarify that strengthening religious moderation cannot rest solely on a normative approach but must take into account the technological structures that shape the information ecosystem of adolescents (Sunarwoto, 2020; Hefni, 2020).

More specifically, this study's contribution to the *Harmoni* agenda lies in sharpening three core concepts. First, religious moderation: the findings show that moderation cannot be instilled doctrinally alone, because the algorithmic environment actively filters out moderate narratives (Hefni, 2020; Mubarak & Sunarto, 2024). Second, interfaith openness: the declining willingness to accept differing views, though measured on intra-Muslim attitudes, is a precondition for attitudes toward other groups, so the narrowing of perspective may erode the readiness for cross-faith dialogue. Third, social cohesion: following the framework of Chan et al. (2006), which places trust and willingness to cooperate across groups at the core of cohesion, and Putnam's (2007) caution that diversity without social bridges can lower social capital, a fragmented digital ecosystem threatens cohesion unless balanced by literacy and cross-group encounter. By linking these three concepts to the algorithmic mechanism, this study provides an empirical basis for a harmony discourse that has so far remained largely normative.

Furthermore, this implication shifts the emphasis of the moderation strategy from merely supplying correct content toward improving how content is distributed and consumed. If the platform logic prioritizes engagement, then argumentative, lengthy moderation content will always lose out without a format adaptation. Strengthening harmony in the digital era, therefore, demands collaboration among three parties: educational institutions that equip students with algorithmic literacy, religious content creators who can package inclusive messages attractively, and platforms willing to balance the diversity of recommendations. Without intervention at this technological layer, normative efforts risk only touching the surface, without changing the information environment that shapes students' attitudes day to day.

The practical implications can be formulated for four stakeholders. For madrasahs, algorithmic literacy should be integrated as a basic competency that equips students to recognize how recommendations work and to trace alternative sources (Livingstone & Helsper, 2007). For Islamic Education teachers, the role of facilitators who dialogically engage with students' digital content, rather than merely delivering material, needs strengthening. For the Ministry of Religious Affairs, religious moderation should be translated into content that is adaptive to platform formats and disseminated with strategies that account for engagement logic. For digital platforms, demands for algorithmic transparency and accountability become relevant, in line with the discourse on platform governance and algorithmic content moderation that emphasizes openness and public responsibility (Gorwa, 2019; Gorwa et al., 2020). These four implications underscore that strengthening harmony requires layered intervention, from the classroom to technological design.

CONCLUSION

This study concludes that social media algorithmic exposure has a positive and significant effect on the religious polarization of madrasah students ($\beta = 0.559$; $R^2 = 0.312$; $p < 0.001$), and that this effect operates through four mechanisms revealed in the interviews: echo-chamber reinforcement, the shift of authority toward digital figures, the reduction of message complexity, and limited access to alternative views. These four mechanisms form a single mutually reinforcing chain, and integration through the joint display shows that each qualitative theme coherently explains a particular quantitative finding. In answer to the research questions, the religious polarization of madrasah adolescents is not merely an individual ideological choice but a construction also shaped by the selection and amplification logic of digital platforms interacting with users' prior dispositions. The convergence of evidence from the regression results, item-level response patterns, and qualitative themes strengthens confidence that this pattern is stable across data sources and not an artifact of a single method.

The study's main contributions are empirical, methodological, and conceptual. Empirically, it provides measurable evidence alongside a contextual explanation in the urban madrasah setting, which has rarely been studied using primary data. Methodologically, the mixed-methods integration through a joint display shows the explicit connection between the quantitative and qualitative findings rather than a mere juxtaposition of the two data types. Conceptually, the study proposes the notion of algorithmic religiosity to explain how recommendation architecture shapes religious orientation, along with markers that can be tested in subsequent research. Its implications affirm the importance of algorithmic literacy as part of a religious-moderation strategy; for the harmony of a plural society, the findings serve as a reminder that the quality of interfaith relations in the digital era is also determined by technological structures, not solely by a normative approach to religious education. Strategies for strengthening social cohesion, therefore, need to extend to platform governance and content development, not stop at conveying values in the classroom.

These conclusions are qualified by several limitations. The correlational design does not permit causal claims, and a measure of attitudes is not a measure of interfaith behavior; claims about interfaith relations are therefore presented as implications, not as directly demonstrated results. The sample is limited to Muslim adolescents in two regions of Jakarta, so generalizations should be approached with caution. Algorithmic exposure was measured through self-report rather than actual digital traces, which makes it susceptible to perception bias and to participants' limited ability to introspect on the workings of an algorithm that is largely invisible. Finally, this study did not directly measure cross-faith behavior or interaction, so its implications for interfaith relations remain inferential and require testing in studies involving participants of different faiths.

Building on these limitations, future research is recommended to use digital trace analysis, longitudinal or experimental designs, expansion across faiths and regions, and trials of algorithmic-literacy interventions in madrasahs to assess their

effectiveness in reducing exclusivity and strengthening openness, thereby enabling more convincing policy impact assessment. Developing an instrument capable of separating the contribution of prior disposition from algorithmic reinforcement would also strengthen the accuracy of the effect estimate. With such a future agenda, the notion of algorithmic religiosity can be tested more robustly, and its contribution to strengthening religious moderation and the harmony of a plural society can be established on a firmer empirical foundation.

Based on these findings, four practical recommendations follow for the relevant stakeholders. For madrasahs, an algorithmic literacy module should be integrated into Islamic Education (PAI) learning, covering how recommendation systems work, an introduction to the filter bubble, and practice in tracing alternative sources, with insertion points aligned with relevant basic competencies. For PAI teachers, training should equip them to act as facilitators who discuss students' digital religious content dialogically and reflectively, including comparing assertive and moderate narratives. For the Ministry of Religious Affairs and Islamic educational institutions, the production of visually engaging, inclusive moderation content should be encouraged to compete within platforms' engagement logic. For digital platforms, transparency and the diversity of recommendations should be strengthened through collaboration with educational institutions and the government to ensure the system does not reinforce polarization. Ultimately, this study affirms that safeguarding the religious harmony of the digital generation demands equal attention to the content of the message and to the machine that distributes it.

AI DISCLOSURE

The authors used an artificial intelligence (AI) tool, namely a language model, solely to assist with language editing, structural tidying, and readability checking of the manuscript. All substance, data, analysis, and conclusions are the full responsibility of the authors, who reviewed and edited every output. The AI tool is not listed as an author because authorship requires responsibility and accountability for the content of the work.

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Appendix. Research Instrument and Item Statistics

The tables below present the complete instrument together with item statistics (mean, standard deviation, and corrected item-total correlation r).

Table A1. Algorithmic exposure (X) items and item statistics

No.	Item statement (X)	Mean	SD	r
X1	The content on my timeline matches the videos I watch.	4.32	0.67	0.62
X2	I automatically follow the next recommended video.	3.98	0.72	0.58
X3	I rarely look for sources outside my timeline.	3.54	0.81	0.49
X4	The platform seems to understand my religious preferences.	4.01	0.69	0.66
X5	I spend more than three hours a day on social media.	3.95	0.74	0.55
X6	Religious content appears on my feed without my searching for it.	3.98	0.66	0.61
X7	I tend to watch religious videos similar to one another.	3.88	0.70	0.57
X8	I like or follow accounts that match my views.	3.79	0.77	0.53
X9	Recommendations make it easy to find content I agree with.	3.92	0.68	0.60
X10	I rarely encounter religious views different from mine online.	3.61	0.83	0.47
X11	I trust content that appears repeatedly on my feed.	3.70	0.79	0.51
X12	I seldom verify religious content against other sources.	3.58	0.80	0.45

Source: Primary data, 2025

Table A2. Religious polarization (Y) items and item statistics

No.	Item statement (Y)	Mean	SD	r
Y1	My religious view is the most correct compared to others.	3.88	0.66	0.63
Y2	I feel uncomfortable with religious views different from mine.	3.71	0.75	0.57
Y3	I prefer assertive sermons over moderate ones.	3.92	0.70	0.64
Y4	I often judge others' religious practices as improper.	3.55	0.84	0.48
Y5	Groups that differ from mine are usually mistaken.	3.60	0.80	0.52
Y6	It is hard for me to accept differing interpretations.	3.66	0.78	0.55
Y7	I am reluctant to discuss religion with those who differ.	3.52	0.82	0.49
Y8	Firmness matters more than tolerance in religious matters.	3.74	0.73	0.58
Y9	I feel more at ease among people who share my views.	3.83	0.69	0.54
Y10	Moderate content feels less convincing to me.	3.58	0.81	0.50
Y11	I rarely reconsider my religious opinions.	3.49	0.85	0.46
Y12	Differences of religious opinion often feel threatening.	3.55	0.83	0.51

Source: Primary data, 2025