

# Modernization of *Pesantren* Education in the Reform of Indonesia's Islamic Education System: A Systematic Literature Review

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## Abstract

As the oldest Islamic educational institutions in Indonesia, *pesantren* face transformative pressures from globalization, digitalization, and national education reform, yet existing scholarship on their modernization remains fragmented across separate dimensions. This study aims to identify the concept and typology of *pesantren* modernization, to analyze the forms of transformation within the *pesantren* education system, and to describe the implications of that modernization for the development of Islamic education in Indonesia. It employs a Systematic Literature Review guided by the PRISMA 2020 framework, searching six databases, namely Google Scholar, SINTA, Scopus, ScienceDirect, ERIC, and DOAJ, from which 24 of 263 identified articles met the inclusion criteria. The synthesis reveals that modernization proceeds across four interdependent dimensions, namely integrative curriculum, active-participatory learning methods, professional institutional management, and digital technology adoption, and that *pesantren* respond through three typologies: progressive adaptive, selective adaptive, and resistive. These findings imply improved graduate competencies, a strengthened social function, and the emergence of a hybrid model that holds tradition and modernity together. The study recommends a transformative-integrative model of *pesantren* education responsive to twenty-first-century needs.

## How to Cite:

Sriayu, R., Kamilah, S., Mahmud, M. E., Damopoli, M., & Elnurianda, F. (2025). Modernization of *Pesantren* Education in the Reform of Indonesia's Islamic Education System: A Systematic Literature Review. *Educazione: Journal of Education and Learning*, 3(1), 76–85.

## Article History

Received : July 2025

Revised : August 2025

Accepted : November 2025

## Keywords:

*Pesantren* Modernization; Islamic Education Reform; Systematic Literature Review; Prisma; Curriculum Transformation

## INTRODUCTION

*Pesantren* are the oldest and most deeply rooted Islamic educational institutions in the history of Indonesian Islamic civilization. For centuries they have served as centers for the transmission of religious knowledge, the formation of character, and agents of social change within their communities (Azra, 2019; Shapiah, 2024). Their endurance across colonial rule, national independence, and successive waves of educational reform attests to a distinctive capacity to absorb change without surrendering identity. Entering the twenty-first century, however, marked by the acceleration of globalization and the digital revolution, *pesantren* face transformative pressures that can no longer be set aside, and the scale of this shift is now measurable: of the more than 38,000 *pesantren* registered with the Ministry of Religious Affairs of the Republic of Indonesia (2023), roughly 60 percent already provide integrated formal education while the remainder retain a traditional, non-formal system.

Scholarship on this shift has matured considerably, yet it has done so in separate channels that rarely speak to one another. One line of inquiry has established that curricular change succeeds only where *pesantren* recalibrate modern content against their classical core rather than displacing it (Alid et al., 2022; Tanjung et al., 2025); a second has shown that the *kiai*, far from being an obstacle

to reform, is frequently its decisive catalyst when leadership turns adaptive (Apud & Akrom, 2020; Nurdin & Samudi, 2023); a third has documented how digital technology reshapes not merely teaching tools but the entire learning and administrative ecosystem (Kurniannur et al., 2026; Nugroho & Astutik, 2024); and a fourth has traced how state policy alternately constrains and enables institutional autonomy (Kosim et al., 2023; Mumtaz et al., 2024). Read individually, each strand is persuasive within its own boundary. Read together, however, they describe four facets of what is plainly a single, coupled process without ever integrating it. The cumulative portrait of *pesantren* modernization therefore remains fragmented, dimension by dimension, rather than synthesized.

This fragmentation points to a clear gap in the literature. Although the empirical base is substantial, studies that draw these dispersed findings into a comprehensive synthesis through a Systematic Literature Review remain scarce, and those that apply the PRISMA framework as an internationally recognized reporting standard are scarcer still (Page et al., 2021). The few reviews that do exist have typically relied on only two or three databases, a scope that limits the representativeness of their conclusions and risks privileging either nationally indexed or internationally indexed scholarship at the expense of the other. What is missing, in short, is a transparent and replicable synthesis broad enough to hold both bodies of evidence together.

The present study addresses that gap, and its principal novelty lies in the breadth of its evidentiary base. Rather than confining the search to a handful of sources, this review extends it across six databases, namely Google Scholar, SINTA, Scopus, ScienceDirect, ERIC, and DOAJ. This design deliberately integrates nationally accredited Indonesian scholarship with internationally indexed research within a single synthesis, capturing perspectives that narrower reviews systematically omit. To our knowledge, no prior PRISMA-based review of *pesantren* modernization has combined this number of databases, which positions the study to produce a more representative and balanced account than the existing literature affords.

On this basis, the study pursues three objectives: to identify the concept and typology of *pesantren* modernization, to analyze the forms of transformation occurring within the *pesantren* education system, and to describe the implications of that modernization for the development of Islamic education in Indonesia. Pursuing these aims allows the review to move beyond a description of isolated reforms toward an integrated understanding of how tradition and innovation are negotiated within a single institutional ecosystem. In doing so, it offers a more holistic account of the modernization landscape than single- or dual-database reviews allow. It further contributes a synthesized evidentiary basis on which both future research and education policy concerning Indonesian Islamic education can build.

## RESEARCH METHOD

This study employed a Systematic Literature Review (SLR) guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 statement (Page et al., 2021). An SLR was chosen because it enables a transparent, replicable, and systematic synthesis of findings dispersed across heterogeneous sources (Xiao & Watson, 2019). The approach has been widely applied in studies of Islamic education and *pesantren*, including PRISMA-based reviews of the Islamic education literature (Alif et al., 2025).

In contrast to earlier SLR studies that typically relied on two or three databases, this review extended its search to six databases in order to maximize the representativeness of the retrieved literature. The databases were Google Scholar, SINTA, Scopus, ScienceDirect, ERIC, and DOAJ, selected to balance the broad coverage of Indonesian national journals with the rigor of internationally indexed venues. Table 1 summarizes the coverage and the specific keywords applied to each database.

**Table 1.** Databases and Search Terms

No.	Database	Coverage and Strength	Specific Keywords
1	Google	Broadest coverage; inclusive of	"modernisasi pesantren", "transformasi

Scholar	Indonesian SINTA journals	pesantren", "reformasi pendidikan Islam"
2	SINTA	Index of nationally accredited Indonesian journals (SINTA 1–6)
3	Scopus	Premium international peer-reviewed database
4	ScienceDirect	Elsevier journals (Cogent Education, Compare, and others)
5	ERIC	International education database (Institute of Education Sciences)
6	DOAJ	Directory of Open Access Journals; ensures open access

Search terms were set in both Indonesian and English. The primary terms were "pesantren modernization", "Islamic boarding school transformation", and "modernisasi pesantren"; supporting terms included "pesantren curriculum", "pesantren leadership", "pesantren digital", and "reformasi pendidikan Islam". The Boolean operators AND and OR were used to combine terms. The search was restricted to publications from 2020 to 2026, except for foundational methodological and theoretical references.

Articles were included if they: (a) were peer-reviewed and published in SINTA 1–4 journals or indexed in Scopus, DOAJ, or ERIC; (b) addressed the modernization, transformation, or reform of *pesantren* education in Indonesia; (c) were published between 2020 and 2026; (d) were available in Indonesian or English; and (e) were accessible in full text online. Articles were excluded if they were non-peer-reviewed, focused outside Indonesia, were duplicates, addressed only technical aspects without a broader transformation context, or remained inaccessible after three retrieval attempts.

Selection followed the four PRISMA 2020 stages: identification, screening, eligibility, and inclusion. The initial search identified 263 records (Google Scholar = 102, SINTA = 65, Scopus = 20, ScienceDirect = 32, ERIC = 24, DOAJ = 20). After the removal of 65 cross-database duplicates, 198 records remained. Title and abstract screening excluded 97 records, leaving 101 for full-text assessment. Of these, 77 were excluded for being outside the Indonesian context (28), lacking full-text availability (22), exhibiting low methodological quality or non-peer-reviewed status (18), and being duplicates missed at the first stage (9). A final corpus of 24 articles met all inclusion criteria. By primary index, the corpus comprised 16 SINTA articles (spanning SINTA 2 to SINTA 4), 3 Scopus or SSCI articles, 3 ERIC articles, and 2 ScienceDirect articles, with several articles additionally cross-indexed in DOAJ or ERIC. Screening and eligibility assessment were conducted by the authors, and disagreements were resolved through discussion until consensus was reached. The complete selection process is presented in Figure 1.

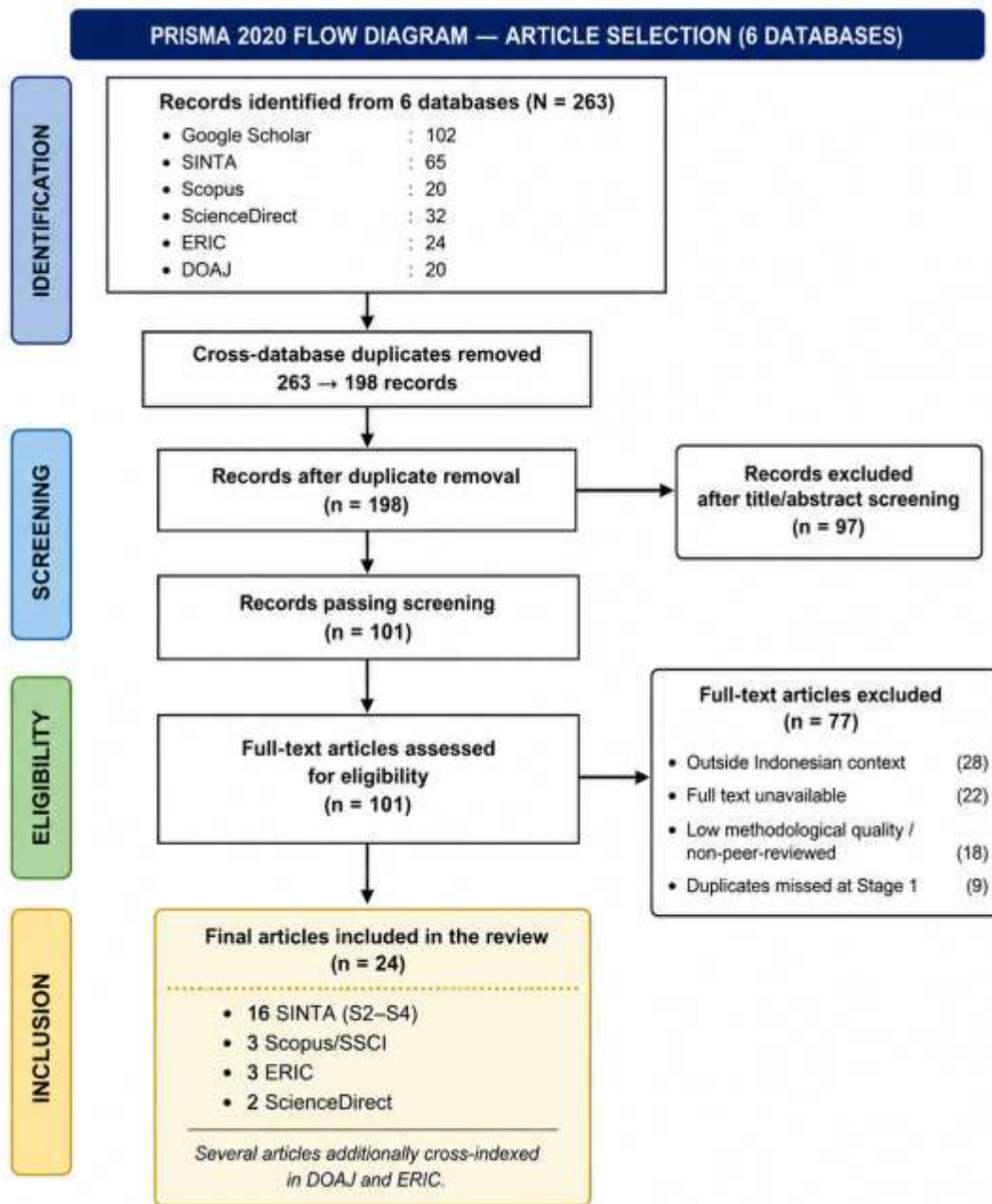


Figure 1. Article Selection Flow Based on PRISMA 2020 (Six Databases)

## RESULT AND DISCUSSION

### Result

#### Study Characteristics

The systematic search across six databases identified 263 records, of which 24 articles satisfied all inclusion criteria and formed the final analytical corpus. The corpus drew from heterogeneous sources spanning both nationally accredited Indonesian journals (SINTA) and internationally indexed venues (Scopus, SSCI, ERIC, DOAJ), allowing the synthesis to capture perspectives that single-database reviews typically omit.

Three patterns characterized the corpus. First, publication clustered heavily in the most recent years, with the majority of studies appearing between 2023 and 2026, indicating that pesantren modernization is an actively expanding research front rather than a settled field. Second, the corpus was methodologically diverse, combining qualitative case studies, comparative designs,

policy analyses, and prior reviews, which permitted triangulation across study types. Third, although all studies addressed the Indonesian context, several adopted a comparative regional frame that situated Indonesian *pesantren* against Islamic educational institutions elsewhere in Southeast Asia. Table 2 summarizes the characteristics of the included studies.

**Table 2.** Characteristics of the 24 Included Studies

No.	Author (Year)	Database	Focus / Theme	Design	Key Finding
1	Alid et al. (2022)	SINTA	Curriculum modernization (IQF-based)	Qualitative	Salaf curriculum can be aligned to the national qualification framework
2	Tanjung et al. (2025)	SINTA	Curriculum modernization	Comparative	Contextual adaptation determines transformation success
3	Kurniannur et al. (2026)	SINTA	<i>Tahfidz</i> curriculum	Qualitative	Competency-based <i>tahfidz</i> yields competitive yet spiritually grounded graduates
4	Ni'am & Arafah (2024)	SINTA	Formalization of pesantren education	Qualitative	Tension between national standardization and pesantren identity
5	Nurdin & Samudi (2023)	SINTA	<i>Kiai</i> leadership / learning	Qualitative	Adaptive <i>kiai</i> leadership catalyzes modernization
6	Apud & Akrom (2020)	SINTA	<i>Kiai</i> leadership (Industry 4.0)	Qualitative	Leadership sustains tradition amid technological change
7	Hasanah et al. (2024)	Scopus / SSCI	Comparative reform (SE Asia)	Comparative	Indonesian <i>pesantren</i> show the highest transformation diversity
8	Kosim et al. (2023)	Scopus / ERIC	Islamic education policy	Policy analysis	Shift from domestication to accommodation drives modernization
9	Budiharso & Suharto (2022)	ScienceDirect	Management paradigm	Qualitative	Globalization compels curriculum and governance reconstruction
10	Hanif et al. (2024)	ScienceDirect	Leadership practice (East Java)	Qualitative	Structural weakness persists in the instructional dimension
11	Prabowo (2024)	Scopus	Accountability (financial)	SLR	Financial transparency is the least fulfilled prerequisite
12	Roqib (2021)	ERIC	Social mobility	Qualitative	Modernized <i>pesantren</i> raise <i>santri</i> social mobility
13	Wicaksono et al. (2023)	ERIC / DOAJ	Historical transformation	Historical	Transformation is a long continuum from colonial era to democracy
14	Malla et al. (2023)	ERIC	Digital literacy of <i>ustadz</i>	Qualitative	Teacher digital literacy is critical to method transformation
15	Nugroho & Astutik (2024)	SINTA	Digital transformation	Qualitative	Technology reshapes the entire learning ecosystem
16	Mumtaz et al. (2024)	SINTA 2	Pesantren policy (Law 18/2019)	Policy analysis	Tension between public funding and <i>kiai</i> autonomy
17	Zaini et al. (2022)	SINTA	Curriculum management	Qualitative	Management professionalization determines success
18	Nihayatuzzain (2025)	SINTA	Leadership transformation	Case study	Salaf <i>pesantren</i> can shift to participatory leadership
19	Ma'shum & Muhyi (2025)	SINTA 4	Visionary leadership in digital transformation	Qualitative case study	Visionary <i>kiai</i> leadership enables digital integration without sacrificing Islamic values
20	Bulhayat (2025)	SINTA	Identity in globalization	Conceptual	Cultural resistance is the most reported barrier
21	Hairul Puadi	SINTA	Reorientation of	Conceptual	Selective adaptation preserves

	(2022)		pesantren		core identity
22	Anwas et al. (2025)	SINTA 2	Technology-friendly pesantren	Qualitative	Measurable gains in learning effectiveness
23	Shofwani et al. (2025)	SINTA 2 / DOAJ	Digital management transformation	Qualitative (historical case study)	Digital management applications produce a hybrid governance model
24	Arianto et al. (2025)	SINTA 2 / DOAJ	Cultural politics & regulatory response	Qualitative case study	Cultural politics and communication strategies preserve institutional autonomy amid regulation

**Typologies of Pesantren Response to Modernization**

The corpus supported a threefold classification of how *pesantren* respond to modernization, forming a continuum from full engagement to deliberate restraint. These typologies were not imposed a priori but emerged from the thematic coding of institutional behavior across the studies.

The *progressive adaptive* type denotes institutions that proactively pursue comprehensive transformation, integrating formal schooling, competency-based curricula, and digital technology while retaining their traditional core; *Pesantren* Salafiyah Syaf'iyah Sukorejo, Darul Arqam Muhammadiyah, and Sunan Pandanaran exemplify this pattern (Nugroho & Astutik, 2024; Tanjung et al., 2025). The *selective adaptive* type describes institutions that modernize in a measured way, retaining tradition as their core identity while adopting modern elements selectively; many *salafiyah pesantren* that preserve the *kitab kuning* yet introduce formal class systems fall here (Hairul Puadi, 2022; Nurdin & Samudi, 2023). The *resistive* type comprises institutions that consciously decline or greatly slow modernization on the grounds that change threatens the integrity of tradition; this type, though diminishing, retains its own social legitimacy in certain communities (Apud & Akrom, 2020; Bulhayat, 2025; Roqib, 2021).

**Dimensions of Transformation**

Across the corpus, transformation consistently operated along four interrelated dimensions: curriculum, learning method, institutional management, and technology. These dimensions did not function in isolation but constituted a single, coupled ecosystem of change.

Curriculum was the most frequently examined dimension, addressed in seventeen of the twenty-four studies. The dominant trajectory moved from a *kitab kuning* centered model toward an integrative curriculum combining religious learning with modern science and, increasingly, entrepreneurship and twenty-first-century skills (Alid et al., 2022; Kurniannur et al., 2026; Tanjung et al., 2025). The learning-method dimension, examined in fourteen studies, showed a shift from *sorogan* and *bandongan* toward dialogic, problem-based, and digitally mediated pedagogy, with teacher digital literacy repeatedly identified as the decisive enabling condition (Malla et al., 2023; Nugroho & Astutik, 2024). The management dimension, covered in twelve studies, traced a movement from charismatic toward professional, data-informed governance, in which financial transparency emerged as the most frequently unmet prerequisite (Hanif et al., 2024; Prabowo, 2024; Zaini et al., 2022). The technology dimension, addressed in eleven studies, indicated that digital adoption had moved beyond a supplementary tool to reshape the entire learning and administrative ecosystem, with community-based solutions proving more effective than generic platforms (Nugroho & Astutik, 2024; Syaikhu & Masduki, 2025). Table 3 maps these dimensions against the three typologies.

**Table 3.** Matrix of Pesantren Transformation by Typology and Dimension (Synthesis of 24 Studies)

Dimension	N Studies	Progressive Adaptive	Selective Adaptive	Resistive
Curriculum	17	Full integration: religion + science + entrepreneurship	Partial integration with <i>kitab kuning</i> as core	Exclusive <i>kitab kuning</i>
Learning method	14	Active and digital pedagogy; <i>sorogan</i> retained	Mixed modern and traditional	Exclusive <i>sorogan</i> and <i>bandongan</i>

Management	12	Professional, system and data based	Semi-professional; <i>kiai</i> as primary decision-maker	Fully centralized on the <i>kiai</i>
Technology	11	Broad adoption: LMS, applications, social media	Limited adoption for administration	Minimal or no technology
Leadership	10	Democratic and participatory	Selectively adaptive <i>kiai</i>	Centralized charismatic
Learning assessment	8	Standardized and competency-based	Combined formal and informal	Informal, based on <i>kiai</i> judgment

## Discussion

This review set out to clarify the concept and typology of *pesantren* modernization, to map the forms of transformation occurring within *pesantren* education, and to describe the implications of that transformation for Islamic education in Indonesia. Synthesis of the twenty-four included studies yielded three principal findings. First, modernization is not a single trajectory but a dialectical process that produces three institutional responses along a continuum: progressive adaptive, selective adaptive, and resistive. Second, transformation proceeds simultaneously across four interdependent dimensions, namely curriculum, learning method, institutional management, and technology, which together constitute a single ecosystem of change rather than isolated reforms. Third, this transformation carries substantive implications for graduate quality, the social function of *pesantren*, and the emergence of a distinctly Indonesian hybrid model of Islamic education.

Read together, these findings indicate that *pesantren* modernization is best understood not as the adoption of modern components onto a traditional base, but as a negotiated process in which tradition itself functions as the organizing principle of change. The persistence of the *kitab kuning* as a curricular core even within progressive adaptive institutions, and the retention of *sorogan* alongside digital pedagogy, show that modernization succeeds precisely where it is anchored in, rather than opposed to, the inherited identity of the institution. This directly addresses the study's first and second objectives: the typologies are not measures of how "modern" an institution has become, but expressions of how each *pesantren* calibrates the relationship between continuity and change.

The decisive interpretive thread running through the corpus is that this calibration is conditioned less by internal capacity than by the external policy and socio-cultural ecosystem. The comparative evidence that Indonesian *pesantren* exhibit greater transformational diversity than their counterparts elsewhere in Southeast Asia (Hasanah et al., 2024), together with the historical account of the state's shift from domestication toward accommodation (Kosim et al., 2023), suggests that the three typologies are in large part products of a decentralized governance environment that grants institutions wide autonomy. In other words, the diversity of responses is a structural outcome, not merely an aggregate of individual institutional choices. This reframing answers the study's third objective by locating the implications of modernization within a policy context rather than within institutions alone.

The finding that adaptive *kiai* leadership catalyzes transformation aligns closely with prior work positioning leadership as the pivot of institutional change (Apud & Akrom, 2020; Ma'shum & Muhyi, 2025; Nurdin & Samudi, 2023), and the evidence that even *salaf* institutions can move toward participatory governance without forfeiting religious identity (Nihayatuzzain, 2025) reinforces the view that tradition and reform are not mutually exclusive. Likewise, the centrality of teacher digital literacy as a precondition for effective method transformation (Malla et al., 2023) converges with studies showing that technology adoption without corresponding capacity-building yields little pedagogical gain.

The corpus is not uniformly convergent, however, and these tensions are analytically productive. While several studies frame technology adoption as broadly transformative (Nugroho & Astutik, 2024), others temper this optimism by documenting persistent structural weaknesses, particularly in the instructional dimension of leadership (Hanif et al., 2024) and in financial

transparency as the least fulfilled prerequisite of accountable governance (Prabowo, 2024). Similarly, the formalization of *pesantren* education through national policy is read by some as an opportunity and by others as a source of tension between public funding and institutional autonomy (Mumtaz et al., 2024). Rather than weakening the synthesis, these divergences confirm that modernization is contested terrain whose outcomes depend on the conditions under which it is pursued.

The contribution of this review extends beyond *pesantren* studies into the broader discourse on transformative education and learning. By demonstrating that durable educational transformation is one that integrates new competencies while preserving the value base that gives an institution its legitimacy, the synthesis offers a model of transformative learning that is rooted rather than rootless. The hybrid model emerging from Indonesian *pesantren*, in which entrepreneurship, digital literacy, and critical thinking are cultivated alongside spiritual and textual depth, exemplifies how transformative education can produce learners who are simultaneously globally competitive and locally anchored. For faith-based and tradition-rich educational systems elsewhere, this reframes transformation as an act of continuity rather than rupture, and positions *pesantren* not as a late adopter of modern education but as a generative site for theorizing how tradition and innovation can be held together within a single pedagogical ecosystem.

## CONCLUSION

This review has synthesized twenty-four studies to clarify how *pesantren* in Indonesia are modernizing, and it yields three connected conclusions. First, modernization is not a single trajectory but a dialectical process that produces three institutional responses along a continuum, namely progressive adaptive, selective adaptive, and resistive, a spectrum that reflects the diversity rather than the deficiency of Indonesia's Islamic educational ecosystem. Second, transformation unfolds simultaneously across four interdependent dimensions, namely curriculum, learning method, institutional management, and technology, which together form a single ecosystem of change in which tradition functions as the organizing foundation rather than an obstacle. Third, this transformation carries significant implications for Islamic education, strengthening graduate competencies, widening the social function of *pesantren*, and giving rise to a distinctly Indonesian hybrid model that holds tradition and innovation together within one pedagogical framework. On this basis, the review recommends the development of a transformative-integrative model of *pesantren* education that treats inherited values as the foundation for innovation, and it calls for further empirical work, particularly comparative field studies, to verify and extend these synthesized findings. Above all, these conclusions point to a clear policy priority: government policy should support the autonomy and self-reliance of *pesantren* throughout the process of transformation, rather than driving a top-down formalization that risks eroding the very identity from which the strength of these institutions derives.

## ACKNOWLEDGMENT

The author would like to express sincere gratitude to all participants who generously shared their time and experiences for this study. Appreciation is also extended to colleagues and academic mentors for their valuable insights and constructive feedback throughout the research process.

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