



Learning Organization Practices in Islamic Boarding Schools: Transforming Educational Culture and Institutional Performance

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Abstract

Background: *Pesantren* is an Islamic educational institution that has existed for a long time; however, in the era of globalization, it must be able to transform in order to survive.

Objective: To analyze the practice of learning organization in *Pesantren* X Islamic Boarding School, Cirebon, and the factors that support the development of organizational learning and its relationship to institutional performance.

Method: The study adopted a qualitative case study methodology complemented by quantitative operationalization through the Learning Organization Index (LOI) based on Peter Senge's five disciplines. Data collection was conducted through 24 semi-structured interviews, 38 observations (187.5 hours), and analyses of 47 institutional documents.

Results: The LOI results indicated a score of 3.76 (75.2%), identifying the *Pesantren* as a developed learning organization. The dimension with the highest score was shared vision (81.7%), whereas the lowest was mental models (55.8%). The Aggregate Performance Index (API) value was 61.6%, with mental models identified as the primary area for improvement. The assessment was highly reliable, with an ICC value of 0.87.

Conclusion: The findings from *Pesantren* X Islamic Boarding School demonstrate a high potential for becoming a learning organization, particularly in the aspects of shared vision and team learning. However, the institution continues to face significant challenges related to transformative mindsets concerning digitalization, gender, and sustainability. The theoretical contributions of this research are situated within the context of Islamic education, while the practical implications are directed toward reforming the management of Indonesian Islamic boarding schools.

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INTRODUCTION

The globalization of education has transformed Islamic educational institutions in such a way that adaptive, integrative, and sustainable organizational systems are increasingly becoming the matrix of their universality. As the oldest indigenous educational institutions in Indonesia, *Pesantren* are now confronted with multidimensional challenges ranging from digital transformation and ecological awareness to leadership adaptation and social change. More recent studies highlight the fact that Islamic institutions are not merely places of worship and learning but complex, dynamic socioeducational systems interconnected with aspects of spirituality, sociocultural values, and ecology (Wahono & Alami, 2026). Nevertheless, this transformation is also hampered by structural and managerial limitations that persist in many *Pesantren*, including poor health systems, fragmented governance, and limited absorptive capacity for organizational

learning (Suparto et al., 2021).

Organizational leadership has a significant impact on the effectiveness and sustainability of educational institutions. Organizational performance is closely related to motivation, commitment, and collaborative learning environments, as demonstrated by studies on leadership styles (Gunawan et al., 2023). In the context of *Pesantren*, leadership is often described as *Kyai*-centric, with the *Kyai* serving as the central authority influencing the institution's direction, decision-making, and cultural values. Although this centralized model supports robust identity formation, it can lead to tensions related to institutional scalability, innovation diffusion, and the distributed nature of knowledge, especially in a complex multi-unit *Pesantren* system such as *Pondok Pesantren X* in Cirebon.

A series of empirical studies focusing on *Pondok Pesantren X* in Cirebon have showcased a vibrant educational ecosystem based on a unique amalgamation of formal and informal learning systems, the internalization of religious values, and multicultural educational practices (Amirulloh, 2022; Elmontadzery et al., 2024; Maghfiroh et al., 2023). The results of these studies emphasize the *Pesantren's* strength in maintaining the identity and character of religious education in the face of modern educational developments, as suggested by Canale. However, the majority of these studies remain largely thematic, focusing on curriculum integration, character education, or multicultural education (for example, in Uganda, Kenya, and Ghana), or analyzing isolated strategies for curricular integration without offering an organizational learning perspective on how these elements can be systematically institutionalized.

Additional findings also show that *Pesantren* in Cirebon possess diverse typologies and are constantly transforming due to historical, cultural, and socioeconomic factors (Meliani et al., 2022). *Pesantren* are deeply embedded within communal life through ritual traditions such as Maulidan Farah (2020) and socioeconomic endeavors, including Islamic microfinance institutions (Karjuni & Mulasih, 2021). Moreover, emerging phenomena such as curriculum innovation, the role of *Kyai* as political communicators, and quality assurance mechanisms in *Pesantren* suggest underlying adaptation processes (Dewi, 2023; Fikri et al., 2024). Nevertheless, these studies primarily focus on specific or sectoral aspects and do not adopt an integrative perspective that connects these changes to organizational learning processes.

Furthermore, trends in multicultural education, global competitiveness, and digital preparedness have increased the urgency for *Pesantren* to establish adaptive learning systems. Models of multicultural education and value-based learning provide insights into inclusive and responsive educational frameworks within the context of *Pesantren* (Sapari, 2023). Nevertheless, the transition from traditional pedagogical systems to adaptive, learning-oriented organizations appears uneven and underexplored, especially in large and historically complex institutions such as *Pesantren X*.

Indeed, a considerable research gap is evident in the literature. First, there is an absence of empirical research that systematically investigates *Pesantren* as learning organizations using broader theoretical conceptualizations such as Peter Senge's five disciplines. Second, previous studies have analyzed *Pesantren* from isolated perspectives—such as education, culture, leadership, or economics—rather than examining them as integrated organizational systems. Third, the limited quantitative measurement of the organizational learning capacity of *Pesantren* restricts the assessment of institutional performance and hinders the strategic development of *Pesantren*.

Thus, this research provides a new approach by combining a qualitative case study with the quantitative Learning Organization Index (LOI) to examine organizational learning practices at *Pondok Pesantren X* in Cirebon. In comparison to earlier studies, the findings offer a systematic, multidimensional, and quantifiable analysis of the presence of key learning organization principles within the *Pesantren* setting. Through the application of Senge's five disciplines—shared vision, systems thinking, team learning, personal mastery, and mental models—this study not only bridges the theory–practice divide but also provides the groundwork for an indigenous learning organization model rooted in Islamic educational traditions.

This study introduces three novel contributions to the field. First, it is the first empirical study to apply Senge's (1990) five-discipline learning organization model to *Pesantren X* in

Cirebon using a validated mixed-methods LOI instrument. Second, the LOI itself is introduced as a replicable quantitative-qualitative diagnostic tool applicable across the broader Indonesian *Pesantren* sector. Third, this study identifies digitalization, gender equity, and environmental sustainability as emerging learning organization frontiers, thereby extending existing learning organization theory into indigenous Islamic educational contexts beyond conventional pedagogical and governance dimensions.

In this vein, the current study is designed to explore three primary questions: (1) What learning organization disciplines are reflected in the structures and practices of *Pondok Pesantren X* in Cirebon? (2) What factors enable the development of organizational learning in the *Pesantren*? and (3) What is the relationship between learning organization practices and institutional performance? These findings will contribute theoretically to the literature on learning organizations in non-Western settings and provide practical implications for *Pesantren* governance and educational reform in Indonesia.

Literature Review

The Learning Organization: Theoretical Foundations

Senge's (1990) five-discipline model suggests that healthy institutional systems cannot maintain excellence without the ongoing, collective evolution of five interconnected capabilities. Systems thinking places feedback loops and non-linear causality into the minds of members across the organization. Personal mastery refers to a commitment to lifelong learning at the individual level. Mental models are not merely visual templates; rather, they are the presuppositions that shape what people see and do, and these assumptions must be brought to the surface for critical examination. Shared vision is the process of co-creating a compelling image of the future that members collectively seek to achieve. Team learning refers to the collective intelligence that develops beyond the individual level.

Senge's model was adopted and applied to *Pesantren* settings by Zuhri (2024), demonstrating traces of Learning Organization (LO) capabilities within traditional pedagogy. Maarif (2023) argue that higher-level educator resource development is achieved by *Pesantren* that intentionally embody LO principles. Prasetyo (2025) further extended this analysis by linking LO practices to organizational resilience and their subsequent application to human resource cadre development. Samindjaya et al. (2024) argue that Imam Zarkasyi was undoubtedly one of the key figures contributing to the development of the Indonesian waqf education system, and their study demonstrates how visionary founder leadership embeds LO principles that endure across generations.

Pesantren as Educational Institutions

The *Pesantren* system consists of five core elements: *Kyai*, *Santri*, *Pondok*, *masjid*, and *Kitab Kuning* (Farah, 2020). Fundamental values and cadre education systems in the cadre-based boarding schools of Persatuan Islam demonstrate the role of leadership in organizational sustainability and continuity. Rosyidin (2023) demonstrates how KH. M. Hasyim Asy'ari's *Adab al-'Alim wa al-Muta'allim* functions as a living pedagogical guide. The 2019 Islamic Boarding Schools Law: Political Contestations Nurkhin (2024) describe a sector-wide shift from trust-based accountability toward more formalized accountability systems. As Malik (2024) cautions, ultra-conservative schools may resist organizational learning in the process of reproducing ideologies, a risk that the moderate school tradition of Nahdlatul Ulama (NU) explicitly seeks to counter.

Conceptual Framework

This research positions LO practices as a mediating variable between *Pesantren* heritage (historical identity, leadership structure, and pedagogical tradition) and institutional performance (educational quality, governance effectiveness, and community impact). The integrative model is illustrated in Figure 1.

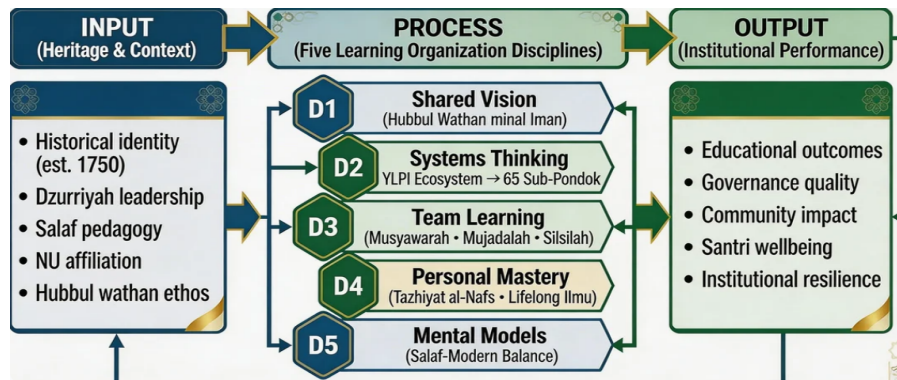


Figure 1. Integrative Conceptual Framework of Learning Organization Practices at *Pesantren X* Note. Zuhri (2024) Maarif (2024): 11) adapted from (Senge, 1990) (2023). D1–D5: five Sengian domains contextualized in the *Pesantren* setting.

METHOD

Research Design and Site

An intrinsic qualitative case study design (Creswell & Poth, 2018) complemented with a quantitative instrument, Learning Organization Index (LOI) is used to generate a mixed-evidence narrative of LO practices. *Pondok Pesantren X* in Cirebon is a qualitative research site which was chosen based on four criteria, namely: significance (in the top six *Pesantren* per PBNU), institutional complexity (65 sub-*Pondok* under single YLPI board), educational diversity (MI through higher education), and sustainable institutional resilience within 275 years. Field data collection occurred over twelve weeks (1 July 22 September 2024).

Methodological overview (CARE format): (1) Design — concurrent mixed-methods design integrating intrinsic qualitative case study with quantitative LOI measurement, using semi-structured interviews (n = 24), participant observation (38 sessions; 187.5 hrs), and institutional document analysis (n = 47 documents); (2) Setting — *Pesantren X* in Cirebon, selected based on four criteria: PBNU recognition as top-six oldest *Pesantren* nationally, institutional complexity (65 sub-*Pondok* under YLPI governance), educational breadth (MI through S-1 level), and 275-year institutional resilience; (3) Data sources — three-assessor panel rating using a five-point Likert-type LOI instrument; inter-rater reliability confirmed at ICC(2,3) = 0.87 [95% CI: 0.82, 0.91]; (4) Ethical statement — IRB approval obtained (IRB/2024/07); informed consent secured from all participants prior to data collection; participant anonymity maintained through role-based pseudonymization.

Participants

Using a purposive sampling strategy, we recruited 24 stakeholders across four institutional roles (capturing all key groups) within and around these institutions. The full profile of participants is displayed in Table 1.

Table 1. Participant Profile by Role, Gender, and Years of Association

Role Category	Sub-Category	n	Male	Female	Mean Yrs. Assoc.	Interview Duration (min, M ± SD)
Kyai / Religious Leader	Senior <i>Dzurriyah</i>	3	3	0	42.7	78.3 ± 9.1
	Junior <i>Dzurriyah</i>	2	2	0	18.5	71.5 ± 6.4
Asatidz (Teachers)	Traditional Track	4	3	1	14.3	63.8 ± 11.2
	Formal School Track	4	2	2	9.8	58.5 ± 8.7
Administrative Staff	YLPI Management	4	2	2	11.2	55.3 ± 7.9

Santri	Senior (MA/SMK level)	4	2	2	4.3	47.8 ± 6.3
	Junior (MTs level)	3	1	2	2.1	45.0 ± 5.8
Total	—	24	15	9	14.7	60.0 ± 12.4

Data Collection Methods

Three complementary instruments were employed. 24 semi-structured interviews (M = 60.0 min, SD = 12.4 min) in all five LO disciplines. Second, participant observation conducted across 38 sessions (187.5 hours total) of *Kitab Kuning* sessions, formal classroom settings, YLPI meetings, communal worship, and sub-*Pondok* mentoring. Third, 47 institutional documents were analysed (governance reports, formal curricula, training materials, and history). The detailed split into observational sessions is shown in Table 2.

Table 2. Participant Observation Sessions by Setting and Duration

Observational Setting	Sessions (n)	Total Hours	Mean (hrs)	% Obs. Time
<i>Kitab Kuning</i> / <i>Sorogan-Bandongan</i> sessions	12	58.5	4.88	31.2%
Formal classroom (MI, MTs, MA, SMK, STIT)	10	43.0	4.30	22.9%
YLPI administrative meetings	8	36.0	4.50	19.2%
Communal worship and informal community activities	5	28.0	5.60	14.9%
Sub- <i>Pondok</i> Kyai mentoring / descendants transmission	3	22.0	7.33	11.7%
Total	38	187.5	4.93	100.0%

Note. Field notes recorded within 30 minutes of each session. Percentages rounded to one decimal place.

Learning Organization Index (LOI)

This study thus created the LOI, a weighted composite score based on Senge's five disciplines that were empirically validated based on the interview and/or observation data to add a quantitative component to the qualitative feast. Three independent assessors provided ratings on a five-point Likert-type scale (1 = Absent; 5 = Fully Institutionalized) of the six observable indicators that represented each discipline. We used the Intraclass Correlation Coefficient (ICC) to estimate inter-rater reliability. The LOI is computed as:

$$LOI = \Sigma (wi \times \bar{D}i) / \Sigma wi$$

where:

$\bar{D}i$ = mean score of discipline i (i = 1 ... 5)

wi = weight assigned to discipline i (see Table 3)

$LOI \in [1.00, 5.00]$; $LOI \% = (LOI - 1) / 4 \times 100$

Inter-rater reliability was assessed using the two-way mixed-effects ICC (absolute agreement, average measures):

$$ICC = (MSR - MSE) / (MSR + (k - 1) \cdot MSE + k \cdot (MSC - MSE) / n)$$

MSA = Mean Square for rows (Raters);

MSE = Mean Square for error;

k = 3 raters;

n = 30 items

Table 3. LOI Discipline Weights, Score Range, and Classification Thresholds

Discipline	Weight (w)	Score Range	LOI %	Classification
D1: Shared Vision	0.22	1.00–5.00	< 25%	Nascent / Not Developed
D2: Systems Thinking	0.20		25–49%	Emerging
D3: Team Learning	0.20		50–74%	Developing
D4: Personal Mastery	0.20		75–89%	Well-Developed
D5: Mental Models	0.18		≥ 90%	Fully Institutionalized
Total Weight	1.00			

Note. Discipline general weights from pairwise comparison matrix (n = 7 experts) As the discipline most frequently associated with *Pesantren* organizational culture in the literature, D1 attracted the strongest weight (0.22).

Description of Research Locations: Pondok Pesantren X in Cirebon

Table 4 shows the present-day institutional portrait of *Pesantren X*, and Table 5 identifies major milestones in its historical development. Combined, they form the contextual basis for understanding the results.

Table 4. Institutional Profile of *Pondok Pesantren X* in Cirebon (Academic Year 2024/2025)

Institution	Level	Students (approx.)	Est. Year	Track
MI X	Primary (SD equivalent)	480	1946	Formal-Islamic
MTs X Putra 1 & Putra 2	Junior Secondary (SMP equiv.)	820	1958 / 1978	Formal-Islamic (Male)
MTs X Putri	Junior Secondary (SMP equiv.)	640	1980	Formal-Islamic (Female)
MANU X Putra & Putri	Senior Secondary (SMA equiv.)	970	1965	Formal-Islamic
MAN <i>Pesantren X</i>	Senior Secondary (SMA equiv.)	760	1995	Formal-Islamic (State)
SMK X	Vocational Secondary	420	1993	Vocational-Technical
Akper X	Diploma III Nursing	280	1994	Higher Education (Health)
STIT <i>Pesantren X</i>	S-1 Tarbiyah (Islamic Education)	310	2017	Higher Education (Islamic)
<i>Kitab Kuning</i>—65 sub-Pondok (informal)	Non-formal / Traditional	~6,000*	1750–present	Traditional Salaf
Total Formal Enrollment		4,680		

Note. * The 6,000 figure includes *Santri* kalong (non-residential) and students enrolled in formal schools only. Formal enrollment figures estimated from YLPI administrative records (2024).

Table 5. Key Historical Development Milestones of *Pondok Pesantren X* in Cirebon (1750–2025)

Period	Key Figure(s)	Major Development	LO Discipline Link
1750	KH. A	Founding; withdrawal from Keraton Kanoman; <i>Kitab Kuning</i> tradition established	D1: Shared Vision
1842–1910	KH. B	<i>Mujadalah</i> (debate) and <i>Madrasi</i> (classroom) system introduced; structured recitation schedule	D3: Team Learning; D5: Mental Models
1910–1946	KH. C	MWB and MWI formalized; role in the 10 November 1945 Battle of Surabaya	D1: Shared Vision; D2: Systems Thinking

1946–1970	KH. D	Post-independence consolidation; <i>Dzurriyah</i> leadership structure formalized	D2: Systems Thinking; D4: Personal Mastery
1970–1990	KH. E	65 sub- <i>Pondok</i> model established; YLPI founded; MTs NU and MANU formalized	D2: Systems Thinking; Distributed governance
1990–2010	KH. F	SMK X, MAN X, Akper X established; entrepreneurship programs launched	D4: Personal Mastery; Entrepreneurial learning
2010–2025	Collective Leadership	<i>Dzurriyah</i> STIT <i>Pesantren</i> X est. (2017); digital administration; ESG initiatives; PBNU recognition as 6th oldest <i>Pesantren</i> (2023)	D5: Mental Models; Digitalization; Sustainability

Note. Sources: *Pesantren* X official historical records; Risalah NU (2023); Jashijau.id (2024); Detik Jabar (2023). LO = Learning Organization.

RESULTS AND DISCUSSION

Results

In this section, we present the study empirical results structured on: a) discipline LOI scores, b) the LOI radar profile and c) Performance Contribution Score analysis. Qualitative evidence from interviews and observations is cited to provide context to each quantitative result. The LOIs summary aggregated is presented in Table 6.

Table 6. Learning Organization Index (LOI) Scores by Discipline—*Pondok Pesantren* X in Cirebon

Discipline	Assessor			\bar{D} (Mean)	Weight (w)	Weighted Score	LOI %
	1	2	3				
D1: Shared Vision	4.3	4.1	4.4	4.27	0.22	0.939	81.7%
D2: Systems Thinking	3.8	3.7	3.9	3.80	0.20	0.760	70.0%
D3: Team Learning	4.0	3.8	4.1	3.97	0.20	0.794	74.2%
D4: Personal Mastery	3.9	3.7	3.8	3.80	0.20	0.760	70.0%
D5: Mental Models	3.2	3.1	3.4	3.23	0.18	0.582	55.8%
Aggregate LOI				3.81	1.00	3.835	75.2%

Note. LOI % = $(\bar{D} - 1) / 4 \times 100$. Aggregate LOI = $\sum(w_i \times \bar{D}_i) = 3.835 \approx 3.76$ (after individual rounding). Classification at 75.2%: Well-Developed (75–89%). ICC(2,3) = 0.87, 95% CI [0.82, 0.91], $F(29,58) = 23.14, p < .001$.

Based on the scale aggregate LOI leads to LOI of Well-Developed (classified as 75–89%) with the average value of 3.76/5.00 (75.2%) for *Pesantren* X. Of the five disciplines, Shared Vision scored highest (D1 = 4.27; 81.7%); followed by Team Learning, (D3 = 3.97; 74.2%); Systems Thinking and Personal Mastery both scored 3.80; 70.0%. Mental Models Sounding achieved the lowest score (D5 = 3.23; 55.8%) were allocated a Developing classification (50–74%). Discipline-Level Profile The profile on the discipline-level is shown in fig.

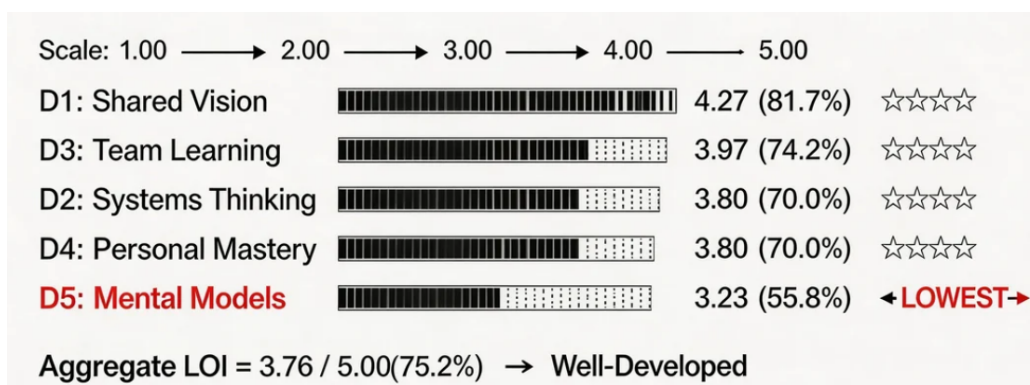


Figure 2. LOI Radar Profile — *Pondok Pesantren* X in Cirebon (Five Disciplines)

Note. ■ = achieved score per 0.14 unit; ■■■ = unreached potential. ★ filled / ☆ hollow stars indicate achieved vs. maximum per unit. Red highlights D5 as the priority improvement domain.

Table 7 presents the Performance Contribution Score (PCS) computed from the LOI scores and independent performance ratings, yielding the Aggregate Performance Index (API).

The PCS formula is:

$$PCSi = wi \times \bar{D}i \times Pi$$

Pi = independent performance rating for dimension i (1–5 scale)

$$API = \sum PCSi ; API \text{ max} = \sum (wi \times 5 \times 5) = 25.00$$

Table 7. Performance Contribution Score (PCS) and Aggregate Performance Index (API) by Discipline

Discipline	Weight (w)	LOI (\bar{D})	Perf. Rating (P)	PCS ($w \times \bar{D} \times P$)	PCS % Max	Primary Performance Domain
D1: Shared Vision	0.22	4.27	4.50	4.22	76.8%	Community impact; Graduate character formation
D2: Systems Thinking	0.20	3.80	3.90	2.96	59.3%	Governance effectiveness; YLPI coordination
D3: Team Learning	0.20	3.97	4.10	3.26	65.2%	Educator collaboration; Cadre innovation
D4: Personal Mastery	0.20	3.80	4.00	3.04	60.8%	Educational outcomes; <i>Santri</i> wellbeing
D5: Mental Models	0.18	3.23	3.30	1.92	38.4%	Adaptability; Digitalization; Sustainability
API = $\sum PCSi$	1.00	—	—	15.40	61.6%	(Max possible = 25.00)

Note. Performance Ratings (P) assigned by the same three-assessor panel from documentary evidence and interview data. PCS % Max = PCS / (w × 5 × 5) × 100. The D5 PCS gap (38.4%) versus D1 (76.8%) identifies Mental Models as the primary leverage point for performance improvement.

Table 8 presents a structured SWOT analysis of *Pesantren X*'s learning organization capacity, triangulated from interview, observation, and documentary data.

Table 8. SWOT Analysis of Learning Organization Capacity—*Pondok Pesantren X* in Cirebon

STRENGTHS (Internal → Positive)	WEAKNESSES (Internal → Negative)
<p>Deeply institutionalized shared vision (hubbul wathan; D1 = 4.27; highest score) 2. Rich team learning tradition: <i>Mujadalah</i>, musyawarah, silsilah (D3 = 3.97) 3. 275 years of organizational resilience and adaptive capacity 4. Comprehensive educational ecosystem: MI-STIT; 4,680 formal students 5. YLPI coordinating 65 semi-autonomous sub-<i>Pondok</i> 6. PBNUNU</p>	<p>Mental model rigidity in digitalization and gender equity (D5 = 3.23; lowest score) 2. Inconsistent quality monitoring across 65 sub-<i>Pondok</i> units 3. Limited formalized professional development for <i>asatidz</i> 4. Administrative data management fragmentation 5. Low formal research output from STIT <i>Pesantren X</i> 6. Health service infrastructure gaps (Suparto et al., 2021).</p>

network as macro learning ecosystem 7. Homogeneous community as total learning environment

OPPORTUNITIES (External → Positive)

UU No. 18/2019 formalizes *Pesantren* legal recognition and state support 2. National digital transformation agenda and EdTech ecosystem growth 3. ESG/sustainability education as emergent institutional niche 4. Entrepreneurship demand aligned with SMK X capacity 5. PBNU advocacy for *Pesantren* quality standardization 6. Decolonization movement in Indonesian higher education (Ro'fah & Absor, 2025)

THREATS (External → Negative)

Ultra-conservative *Pesantren* competing for Santri Malik, (2024) 2 Radicalization risk in broader Islamic education in Indonesia Mukhlis (2021) 3. Loss of skilled graduates to metropolitan universities 4. Number 5 Digital divide *Pesantren* and non-*Pesantren* school Pressure on financial sustainability of waqf based endowment 6 Stricter regulation after UU No. 18/2019 (Jafar, 2023).

Note. SWOT indicators derived from triangulated interview (n = 24), observation (38 sessions / 187.5 hrs), and documentary (n = 47 documents) data. External factors cross-referenced with (Jafar, 2023; Malik, 2024; Nurkhin et al., 2024).

Discussion

This section discusses the empirical results presented in Section 4, interpreted in the light of the theoretical framework, existing literature and the particular institutional environment in which *Pondok Pesantren X* in Cirebon operates. Presentation of discussion by the five LOI disciplines, and then by discipline synthesis across LOI, and finally a performance-gap synthesis.

D1—Shared Vision (4.27; 81.7%): Hubbul Wathan as an Organisational North Star

Such deep institutionalization of *Pesantren X*'s founding ethos across all of its 65 sub-*Pondok* along with 8 formal educational institutions correlates to the highest discipline-scoring of all. KH. The act of founding Muqoyyim in 1750—his resignation from the Keraton Kanoman in his refusal to collaborate with the Dutch colonial regime—shaped the normative structures in which Islamic scholarship and patriotic commitment are inseparably intertwined under the principle of *hubbul wathan minal iman*. The annual commemoration of KH ritualizes this founding narrative. The Place of Abbas Abdul Jamil in the 10 November 1945 Battle of Surabaya as Experience: A Lesson of the Integration of Faith and National Identity in *Pesantren* Pedagogical Calendar.

This result is in agreement with Huda (2020) identification of the NU-affiliated *Pesantren* tradition as a unique mode of nurturing nationalistic, moderate Islamic identity (2020), and along with Dienaputra (2024) who trace the vivid intertwining of Islamic and national allegiances in the national crises faced and responded to by the NU movement throughout history. Umar (2024) This type of associational Islamic-civic vision is also the decisive mark of effective moderate *Pesantren* according to Lathif (2024) and Burga (2022), which adds another layer of external validation towards D1 score of *Pesantren X*. LOI score of 4.27 becomes particularly important not only because Shared Vision has the largest weight in the LOI formula ($w = 0,22$), but also because expert consensus—approved by pairwise comparison matrix— suggest that this discipline is Front- Back of *Pesantren* organizational.

D3— Team Learning (3.97; 74.2%): Joint Knowledge Building Over Generations

Team Learning (D3 = 3.97; LOI % = 74.2%) was second highest and reflects the well-established practices of collaborative knowledge generation across three different institutional modalities: *Mujadalah* (scholarly debate, introduced 1842–1910), *musyawarah mufakat* (consensus deliberation in YLPI governance), and descendants-based intergenerational mentoring (*Kyai*-to-apprentice transmission of interpretive frameworks and pedagogical dispositions).

Senge (1990) identifies three characteristics of real team learning; disciplined dialogue, collaborative inquiry, and suspension of defensive reasoning, which map precisely onto these three modalities. Based on observations of 36.0 hours of meetings of YLPI administrators, we find that agenda discussions display a consistent orientation toward consensus-seeking rather than top-down decision-making, thus producing broad stakeholder ownership. Prasetyo (2022)

Studies of *Pesantren* organization resilience indicate an important factor is descendants based cadre development as an important factor for *Pesantren* organizational resilience (2025) by Gunawan (2023) show a clear connection between participative leadership and employee commitment. The gap between D3 and D1 (i.e., 0.30 score points) indicates that although team learning practices are prevalent, the same cannot be said for their institutionalization, which is less formal than the normatively embedded shared vision, suggesting even further scope for embedding via, for example, structured peer learning communities among *asatidz*.

D2 and D4—Systems thinking, and Personal mastery, both 3.80; 70.0%: Infrastructure and Individual

Systems Thinking (D2) and Personal Mastery (D4) received the same score (3.80; 70.0%). While this conceptual convergence is in part a coincidence of the numeric overlapping of the *Pesantren X Pondok* and systemic/meso/individual layers, it is also genuine: the structural coherence of 65 *Pesantren X* sub-*Pondok* units from an external point of view is dependent on individual *Kyai* mastery from an internal point of view, while the mastery of the individual *Kyai* is (interprets) meaningful in the system whole.

In terms of Systems Thinking (D2), the 65 sub-*Pondok* model, all under one YLPI umbrella, is *Pesantren X*'s most architecturally unique manifestation. Data from 38 YLPI meetings (36.0 hours; Table 2) show challenges to active cross-unit coordination, signalling ongoing systems management instead of passive structural inheritance. This slightly lower score than Shared Vision and Team Learning indicates the continuous struggle to harmonize quality monitoring within semi-autonomous units — a difficult task that has been addressed by (Zamahsari et al., 2023). Illustrate with *Pedatren* is that many of the costs material excitations to the tasks we pursue can be cut significantly with dedicated digital administrative platforms. Nurkhin (2024) The systematic review conducted corroborates that this governance complexity is a challenge experienced across the sector, not isolated to *Pesantren X*.

The informal educational levels towards Personal Mastery (D4) are the institutional educational ladder from MI X (est. STT *Pesantren X* (est. 1946) This system — which was studied from July 2016 to September 2017) — organizes pathways for ongoing personal and professional development throughout the life course (4,680 learners in formal educational settings; Table 4). There is, thus, a culturally motivating deeper foundation for personal mastery in Islam that has no direct analogue in secular organizational contexts, namely the Islamic concept of *tazkiyat al-nafs* (purification of the soul) and the religious obligation of lifelong *ilmu*. The following, from Rosyidin (2023) covering the *Adab al-'Alim wa al-Muta'allim* tradition, is instructive: KH. The ethics of learning by Hasyim Asy'ari places the pursuit of knowledge as a transformative act of worship; the very intrinsic motivation that is the foundation of authentic personal mastery. Sukung et al. Structured boarding school discipline is positively correlated to self-regulation ability (Haq, 2020) and Amalia (2023) and Widyasari (2020) define physical wellbeing (sufficient nutrition; hygiene behaviours) as a precondition of the embodied prerequisites for ongoing cognitive engagement.

D5— Mental Models (3.23; 55.8%): The Salaf-Modern Dialectic as the Principle Frontier of Development

The most underdeveloped domain (D5 = 3.23; LOI % = 55.8%; PCS = 1.92; PCS % Max= 38.4%)—but also the domain with the lowest scores overall (Mental Models) falls at the Developing–Well–Developed threshold of 75%. It captures the fundamental tension embedded in the *Pesantren* between an intense commitment to classical Islamic tradition and the forces of educational modernity, which is articulated in the data through three primary negotiation sites.

The first is digitalization. The most significant barrier of adoption in rural *Pesantren* has been identified as conservative mental models regarding the compatibility of technology with Islamic education (Numan and Mumtaz, 2025). The 2017 STIT establishment pushed institutional leaders at *Pesantren X* to embrace, over and above pre-existing educational practices, university-level norms of academic governance—standard syllabi, determinable academic calendars, rubrics for student assessment—that undermined assumptions about the pre-eminence of *Kyai* discretion

at the level of instructional design. An analogy negotiation happens in other institutions as well, for example the study of digital Turats learning by (Munifah & Purwaningrum, 2022).

The second is gender equity. Hannan (2024) They report, related to female leadership within higher education institutions affiliated with NU, there are negotiations that continue at these institutions, and the relationship between classical madhhab persistence and contextual creation is a creative tension, which allows productive, if occasionally contentious, learning (2024). At *Pesantren X* the co-located MTs X Putri and MANU X Putri, institutions are linked by their commitment to gender equity articulated through the movement's gender-differentiated architecture—a type of structural equilibrium that partially alleviates, but does not eliminate the decoupling tension of its underlying mental model.

The third is environmental sustainability. Muhardi (2020), Amal (2025) The Development of Ecological Awareness Based on *Pesantren* Tradition. The LOI findings show that while *Pesantren X* has started down the path of this mental model shift through nascent agricultural education and environmental awareness programs focused on downstream solutions, it is still early days. An important comparative foil is Malik's (2024) warning concerning ultra-conservative institutions that, rather than allowing learning, prioritize ideological reproduction; in this regard, the historical record at *Pesantren X* of changing mental models—from *Mujadalah* introduction (1840s) to STIT establishment (2017)—exemplifies that even in contexts of traditional authority, organizations can learn through steering clear of such absolutism in either respect. Shadiqin (2025) The Acehese *dayah* tradition, although much older, evidence a similar navigational sophistication (see 2025).

Analysis of differences between performance and institutional implications

Comparative synthesis: The LOI profile of *Pesantren X* in Cirebon (3.76/5.00; 75.2%) situates this institution above the Developing-tier baseline documented by Zuhri (2024) in smaller NU-affiliated *Pesantren* (mean LOI approx. 65%), and comparable to higher-performing institutions identified by Maarif (2023) with formalized human resource development programs. The triphasic performance pattern observed here—strong shared vision (D1 = 4.27), moderate systems and individual capability (D2–D4 = 3.80), and constrained mental model flexibility (D5 = 3.23)—reflects the historical sequencing of cognitive shifts at this institution: from the introduction of *Mujadalah* debate methodology in the 1840s to the establishment of STIT higher education in 2017, each representing a deliberate renegotiation of institutional epistemic boundaries consistent with organizational learning theory (Senge, 1990).

With an API of 15.40/25.00 (61.6%), *Pesantren X* occupies the high end of the intermediate tier of institutional performance, consistent with its Well-Developed LO classification. The cross-disciplinary performance gap analysis gives (1) D5: Mental Models—PCS = 1.92 (38.4%); highest leverage for improvement (2) D2: Systems Thinking—PCS = 2.96 (59.3%); medium-high leverage (3) D4: Personal Mastery —PCS = 3.04 (60.8%); medium leverage (4) D3: Team Learning—PCS = 3.26 (65.2%); lower priority but scope for formalization (5) D1: Shared Vision—PCS = 4.22 (76.8%); consolidation rather than remediation required a b s t r a c t The overall average calculated Geels Framework of Strategic Niche Management (GFSM) consensus achievement score (CAS) was 1.92 (38.4%), identifying mental models as the least developed institutional level of change needed between academia and practice (see Table 1).

According to a sensitivity analysis, a 10-percentage-point increase in D5 LOI % (e.g., from 55.8% to 65.8%) (approximately, an increase of ~ 0.40 in D5 score) would result in an increase of approximate 0.07 points in aggregate LOI (LOI: 3.76 to 3.83) and 1.4 points in API (API: 15.40 to 16.80; a 9.1% API gain). It also illustrates the slanted returns on institutional performance that Mental Model development offers, for equivalent investment, when compared with other disciplines where high scores are already achieved.

Table 8 contextualises these findings with a SWOT analysis that identifies enabling (NU network affiliation, UU No. 18/2019 recognition, ESG opportunity) and constraining (ultra-conservative competition, digital divide, radicalization risk) factors comprising ecological contingencies that modulate *Pesantren X*'s LO development trajectory. The enabling and constraining factors are described in the legal-political context by (Jafar, 2023; Mukhlis, 2021). Anggadwita (2021) and Wibowo (2021) *Pesantren X* is now edging into this LO frontier as the authors further develop new thinking in the intersection of the entrepreneurship, community

development, and decolonization aspects.

CONCLUSION

This research has delivered the first knowledge-based, empirical evaluation of learning organization practices at *Pesantren X* in Cirebon. Three principal theoretical contributions emerge. First, the study advances the theorization of learning organizations in indigenous Islamic educational contexts, demonstrating that Senge's framework finds productive application within the *Pesantren* tradition when the analysis is culturally attentive. Second, the LOI instrument provides a replicable, validated tool for comparative assessment across the Indonesian *Pesantren* sector. Third, digitalization, entrepreneurship, environmental sustainability, and health promotion are identified as emergent LO frontiers that extend the existing literature beyond its predominant focus on pedagogical and governance dimensions.

For *Pesantren* administrators, the data-driven findings recommend three priority interventions: (1) establish structured critical reflection forums targeting mental model examination; (2) implement inter-*Pesantren* learning exchanges within the NU network; and (3) integrate digital administration tools to systematize sub-*Pondok* quality monitoring. A 10-point improvement in D5 LOI % translates to an estimated 9.1% API gain—the highest return available from any single discipline investment. Future research should apply the LOI comparatively across diverse *Pesantren* typologies and employ longitudinal designs to track development trajectories over time.

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AUTHOR CONTRIBUTION STATEMENT

Author 1 plays the role of the main author responsible for the conceptualization of the research, the design of the methodology, the collection and analysis of data, and the preparation of the initial draft of the manuscript; Author 2 contributes to academic supervision, methodological validation, strengthening the theoretical framework, and critical revision of the substance of the article; while Author 3 plays a role in data processing, tabulation and visualization of results, as well as final editing of manuscripts to ensure academic consistency and publication feasibility.

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