

Developing a Strategic Model for the *Pesantren* Entrepreneurial Ecosystem: Integrating SWOT and Analytic Network Process (ANP)

Dzikrulloh Dzikrulloh^{1*}, Firman Setiawan², Tri Pujiati³, Faizal Amir⁴, Elfira Maya Adiba⁵

^{1,2,3,4,5} Sharia Economics Study Program, Faculty of Islamic Studies, Universitas Trunodjoyo Madura, Indonesia.

ARTICLE HISTORY

Received:

05 February 2026

Revised

05 March 2026

Accepted:

16 March 2026

Online available:

31 March 2026

Keywords (TNR 10):

Pesantren
entrepreneurship,
Entrepreneurial ecosystem,
SWOT, Analytic Network
Process (ANP), Capacity
building

*Correspondence:

Name:

Dzikrulloh Dzikrulloh

E-mail:

dzikrulloh@trunodjoyo.ac.id

ABSTRACT

Introduction: *Pesantren* play a strategic role in shaping community life, particularly in promoting entrepreneurship and economic empowerment. However, the development of entrepreneurship within *pesantren* remains limited due to the absence of a well-established entrepreneurial ecosystem. Therefore, this study aims to identify strategic priorities for strengthening the entrepreneurial ecosystem in *pesantren*.

Methods: This study employs a qualitative approach supported by quantitative analysis through the integration of SWOT (Strengths, Weaknesses, Opportunities, and Threats) and the Analytic Network Process (ANP). SWOT analysis is used to identify internal and external factors influencing the entrepreneurial environment of *pesantren*, while ANP evaluates the interrelationships among criteria to determine strategic priorities. Data were collected through in-depth interviews, questionnaires, and literature review.

Results: The findings from the SWOT analysis show that *pesantren* are positioned in Cell V and Quadrant I, indicating strong internal capabilities and favorable external opportunities for developing a *Shariah*-based entrepreneurial ecosystem. The ANP analysis identifies four main priority strategies: strengthening capacity building, fostering organizational culture and governance, enhancing institutional cohesion, and developing human resources.

Conclusion and suggestion: The study contributes by proposing a strategic model that can serve as a practical guideline for *pesantren* in developing their entrepreneurial ecosystem. The implementation of these integrated strategies is expected to promote sustainable entrepreneurship and strengthen economic independence within *pesantren*.

Cite this document:

Dzikrulloh, Dzikrulloh. (2026). "Developing a Strategic Model for the *Pesantren* Entrepreneurial Ecosystem: Integrating SWOT and Analytic Network Process (ANP)" *Lan Tabur: Jurnal Ekonomi Syariah*. 7 (2), 1-17.

<https://doi.org/10.53515/lt.v7i2.147>

1. Introduction

Indonesia hosts the largest Muslim population in the world, with approximately 87.18% of its 232.5 million inhabitants identifying as Muslim. This demographic characteristic has significantly contributed to the development of Islamic educational institutions, particularly pesantren (Islamic boarding schools). Recent data indicate that Indonesia has approximately 28,961 pesantren accommodating around 18 million students (*santri*), most of which are located in rural areas. Historically, pesantren have played a central role not only as institutions of Islamic learning but also as socio-cultural hubs that shape community values and social structures (Umar, 2014; Abuddar & Maulana, 2024). The traditions of education, communal life, and economic activities practiced within pesantren represent the legacy of Muslim scholars (*ulama*) who disseminated Islam across the Indonesian archipelago. These traditions include various productive economic activities such as agriculture, trade, and other forms of community-based economic engagement (Mustari & Rahman, 2012).

The strategic role of pesantren has been formally recognized through Law No. 18 of 2019 concerning Pesantren, which establishes three principal functions of these institutions: education, religious propagation (*dakwah*), and community empowerment. Within the framework of community empowerment, pesantren possess considerable potential to contribute to local economic development through entrepreneurship. Their large student population, extensive social networks, and close interaction with surrounding communities position pesantren as important actors in promoting grassroots economic development, particularly through the establishment of small and medium-sized enterprises grounded in Islamic principles (Alfarabi & Rahayu, 2021).

Despite this substantial potential, the entrepreneurial capacity of many pesantren remains underdeveloped. Numerous pesantren face structural and institutional challenges that hinder the effective development of sustainable business activities. (Fatira, 2020) identifies several key obstacles affecting the development of pesantren-based entrepreneurship, including limited organizational capability, restricted access to financing, weak business networks, and inadequate marketing capacity. These constraints collectively limit the ability of pesantren to fully realize their potential as agents of community economic empowerment.

Studies have explored the role of Islamic Microfinance Institutions (Lembaga Keuangan Mikro Syariah, LKMS) in supporting pesantren economic activities, the establishment of business incubators within pesantren, entrepreneurial motivation among students, and the strategic role of pesantren in responding to regional economic integration such as the ASEAN Economic Community (AEC) (Ahwarumi et al, 2018). The existing literature generally confirms that pesantren possess significant potential to foster entrepreneurship grounded in Islamic ethical values. Several studies highlight the importance of strengthening human resource capacity, improving the management of pesantren business units, and integrating religious education with entrepreneurial training (Ghofirin, et al., 2019). Such integration may contribute to the formation of an entrepreneurial ecosystem that combines economic productivity with strong moral and spiritual foundations. In this context, capacity building has been widely recognized as a critical factor in enhancing the economic independence of pesantren (Galamba & Nielsen, 2019).

However, despite these important contributions, several limitations remain in the current body of research. Most studies tend to focus primarily on internal dimensions of pesantren entrepreneurship, such as individual entrepreneurial motivation, entrepreneurship education among students, or the management of pesantren business units. Consequently, relatively limited attention has been given to the broader interactions among multiple stakeholders involved in the pesantren entrepreneurial ecosystem. In practice, the development of entrepreneurship within pesantren is not

solely determined by internal institutional dynamics but is also shaped by collaboration with external actors, including government agencies, Islamic financial institutions, private sector actors, and the broader community (Alfarabi & Rahayu, 2021).

Moreover, although social capital and networking have been recognized as important factors supporting entrepreneurial development within pesantren, previous studies largely emphasize internal social relations within the pesantren environment. Comprehensive analysis of how interactions between internal and external actors collectively shape a sustainable entrepreneurial ecosystem remains limited. Existing studies also tend to focus on identifying determinants of pesantren entrepreneurship rather than developing integrative analytical frameworks capable of guiding the implementation and evaluation of entrepreneurial development strategies. Social cohesion and collaborative engagement among actors are also important elements in strengthening organizational performance and collective outcomes (Bosselut et al., 2020).

Addressing these limitations requires a more comprehensive analytical approach that considers the complex interrelationships among actors and institutional elements within the pesantren entrepreneurial ecosystem. Therefore, this study aims to develop a model of the pesantren entrepreneurial ecosystem that incorporates the roles and interactions of multiple stakeholders involved in its development. To achieve this objective, the study adopts a mixed-methods approach that integrates qualitative and quantitative data. Specifically, the research employs the Analytic Network Process (ANP) and SWOT analysis to examine the relationships among key elements within the pesantren entrepreneurial ecosystem. Through this integrative approach, the study seeks to provide a deeper understanding of the dynamics shaping pesantren entrepreneurship and to propose a more applicable model for strengthening entrepreneurial development and economic independence among pesantren in Indonesia.

2. Literature Review

Entrepreneurial Ecosystem

The concept of the entrepreneurial ecosystem has gained increasing attention in entrepreneurship research as a framework for understanding how multiple institutional, social, and economic elements collectively support entrepreneurial development. An entrepreneurial ecosystem refers to a set of interconnected actors, institutions, and environmental conditions that interact to foster entrepreneurial activity and business growth (Isenberg, 2011; Stam, 2015). According to ecosystem perspectives, entrepreneurship does not occur in isolation but emerges from complex interactions among various stakeholders, including government institutions, financial organizations, educational institutions, infrastructure providers, and market actors (Isenberg, 2011).

Previous studies highlight that the success of entrepreneurial ecosystems depends on several key components, such as access to finance, supportive government policies, infrastructure availability, market accessibility, and the quality of human capital (Stam, 2015). These components interact dynamically to create an environment that either facilitates or constrains entrepreneurial activities. Within this perspective, entrepreneurship is viewed as a systemic phenomenon in which collaboration and interdependence among actors play a central role in fostering innovation and business sustainability (Isenberg, 2011; Stam, 2015).

This ecosystem perspective is particularly relevant in the context of pesantren-based entrepreneurship. Pesantren operate within a broader socio-economic environment where entrepreneurial development is influenced not only by internal institutional capacity but also by collaboration with external stakeholders such as government agencies, Islamic financial institutions, business communities, and local society. Therefore, understanding the entrepreneurial ecosystem surrounding pesantren is essential for identifying factors that support or hinder the development of sustainable entrepreneurial activities within these institutions.

Human Resources in the Entrepreneurial Ecosystem

Human resources represent a fundamental pillar of entrepreneurial ecosystems because entrepreneurial success largely depends on the skills, knowledge, and capabilities of individuals involved in business activities. Human capital encompasses technical skills, managerial competencies, creativity, and entrepreneurial orientation that enable individuals to identify opportunities, innovate, and manage business operations effectively.

Studies on entrepreneurship consistently demonstrate that the quality of human capital significantly influences business performance, innovation capacity, and long-term sustainability. Entrepreneurs with stronger knowledge and managerial capabilities are better able to adapt to market changes, manage risks, and develop competitive advantages. Consequently, the development of human resources is widely regarded as a critical strategy for strengthening entrepreneurial ecosystems (Isenberg, 2011).

In the context of pesantren, human resource development involves enhancing entrepreneurial competencies among students, teachers, and institutional leaders. This process may include entrepreneurship education, managerial training, technical skill development, and the integration of Islamic ethical principles with business practices. By strengthening the entrepreneurial capacity of pesantren actors, these institutions can better manage business ventures and contribute to local economic development.

Integrating Entrepreneurial Ecosystem, Social Capital, and Human Resources

Although entrepreneurial ecosystems, social capital, and human resources are frequently examined as separate constructs in entrepreneurship research, their interaction plays a crucial role in shaping sustainable entrepreneurial development. Human resources provide the knowledge, skills, and entrepreneurial orientation necessary to initiate and manage business activities. At the same time, social capital facilitates access to networks, information, financial resources, and collaborative opportunities that support entrepreneurial processes.

These two elements interact within the broader entrepreneurial ecosystem, which provides the institutional and structural environment that enables entrepreneurial activities to emerge and grow (Isenberg, 2011). In other words, the effectiveness of an entrepreneurial ecosystem is largely determined by the capacity of human resources and the strength of social networks that connect different actors within the system.

In the context of pesantren entrepreneurship, the interaction between human resources and social capital becomes particularly important. Human resource development enhances the entrepreneurial capabilities of pesantren actors, while social capital strengthens relationships between pesantren and external stakeholders such as government institutions, financial organizations, and business communities. The interaction between these elements contributes to the formation of a supportive entrepreneurial ecosystem that enables pesantren to develop sustainable business activities and strengthen their economic independence.

3. Methodology

This study employs a qualitative approach using the Analytic Network Process (ANP) integrated with SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis to examine strategic factors influencing the entrepreneurial ecosystem of pesantren. SWOT analysis is applied to identify internal and external factors affecting organizational performance (Hill & Westbrook, 1997), while ANP is used to determine the priority and interrelationships of these factors, accommodating complex dependencies and feedback among elements (Saaty, 2005). The integration of SWOT with multi-criteria decision-making approaches has been widely used to

support strategic analysis and policy formulation (Kurttila et al., 2000; Kangas et al., 2003; Shrestha et al., 2004). This integrated approach enables a systematic evaluation of strategic alternatives and informed decision-making in multi-stakeholder environments (Ilyas et al., 2018).

The research was conducted in several Islamic boarding schools (*pesantren*) in East Java, Indonesia, between August and October 2025. Primary data were collected through in-depth interviews and structured questionnaires administered to 15 key informants, including practitioners (*pesantren* leaders and business managers), regulators (government officials overseeing cooperatives and economic development), academics, and representatives from *pesantren*-related associations. Secondary data were obtained from academic literature, policy documents, and prior studies on *pesantren* entrepreneurship and entrepreneurial ecosystems.

The ANP analysis was conducted in three stages: model construction, model quantification, and interpretation. In the first stage, the research framework was developed based on literature review and expert interviews to identify relevant elements from the SWOT analysis. In the quantification stage, experts assessed the relative importance of each factor using pairwise comparisons with a numerical scale from 1 to 9. Responses were processed using Super Decisions software and Microsoft Excel to calculate priority weights and analyze interrelationships among factors (Ascarya & Iskandar, 2013; Ekawati et al., 2018). Expert judgments were aggregated using the geometric mean, and Kendall’s coefficient of concordance (W) was calculated to measure agreement among respondents (Legendre, 2005). Consistency of the comparisons was verified using the Consistency Index (CI) and Consistency Ratio (CR), with a CR value of ≤ 0.10 indicating acceptable consistency (Saaty, 2005).

The final output provides prioritized strategic factors and policy recommendations for enhancing the *pesantren* entrepreneurial ecosystem. Elements with higher priority weights represent the most critical aspects for developing sustainable and effective entrepreneurship within *pesantren*, facilitating economic empowerment and long-term institutional growth.

4. Results And Discussion

In this section, we present the results of the data analysis aimed at addressing the research questions outlined in the introduction. The analysis was conducted using a combination of qualitative methods, including focus group discussions (FGDs) and interviews, as well as quantitative techniques through Internal Factor Evaluation (IFE) and External Factor Evaluation (EFE) matrices to assess the internal and external factors within the *pesantren* entrepreneurial ecosystem. The findings are regularly presented in tables and diagrams to provide a clear understanding of the current conditions and the potential for entrepreneurial development in Islamic boarding schools. The IFE matrix was used to evaluate internal factors, identifying the primary strengths and weaknesses of *pesantren* in relation to their business functions, while the EFE matrix was used to analyze external strategic factors, including opportunities and threats. The following presents the IFE matrix results, highlighting the key strengths and weaknesses of the *pesantren* entrepreneurial ecosystem.

Table 1. IFE Analysis

IFE ANALYSIS					
Symbol	Internal Indicators (Strength)	Validation Weight	Average Weight	Total Score	Ranking
S1	Islamic boarding schools as educational centers form human resources with entrepreneurial character. Islamic.	0.05	3.27	0.173	2

S2	A charismatic figure of a Kyai who is a role model for the community and has a high level of leadership and religious knowledge.	0.06	3.13	0.183	1
S3	The inclusive nature of Islamic boarding schools has a strong social capital element in society.	0.04	2.53	0.093	11
S4	The community's hopes and trust in Islamic boarding schools are very high.	0.04	2.93	0.127	9
S5	Human resources are abundant and have a strong mental spiritual character and understanding of sharia.	0.05	3.20	0.159	7
S6	Islamic boarding school support for entrepreneurship.	0.06	3.00	0.172	3
S7	Many government programs support Islamic boarding school entrepreneurship.	0.05	2.80	0.127	8
S8	Being fostered by Bank Indonesia and fostered by the OPOP (one Islamic boarding school one product) program of the East Java Provincial Government.	0.05	3.13	0.166	5
S9	Islamic boarding schools actively collaborate with universities and Islamic boarding school business associations .	0.04	2.47	0.094	10
S10	The micro Islamic boarding school market has been formed.	0.05	3.40	0.1694	4
S11	Have your own business unit institution.	0.04	2.33	0.088	12
S12	The large Islamic boarding school community (alumni, students, student guardians, and the community).	0.05	3.13	0.1629	6
TOTAL STRENGTH		0.58		1.72	
Symbol	Internal Indicators (Weaknesses)	Validation Weight	Average Weight	Total Score	Ranking
W1	Literacy in the field of entrepreneurship is low.	0.04	2.13	0.077	9
W2	Weak record keeping financial statements.	0.05	2.67	0.123	1
W3	The decision-making system is centralized in the leader of the Islamic boarding school (Kyai).	0.04	2.47	0.096	5
W4	Paradigm Islamic boarding schools are institutions for studying religion, not business institutions.	0.04	1.80	0.078	8
W5	Low quality of entrepreneurial management.	0.04	2.53	0.107	4

W6	Lack of entrepreneurial infrastructure.	0.05	2.40	0.108	2
W7	Islamic boarding schools' commitment to business development is still low	0.04	2.67	0.096	6
W8	Limited access to capital.	0.02	1.60	0.039	12
W9	The competitiveness of Islamic boarding school products is still weak.	0.05	2.13	0.107	3
W10	Infrastructure low entrepreneurship technology .	0.05	1.73	0.078	7
W11	The form of cooperation with universities and non-governmental institutions focuses on educational development, not yet directed at business assistance.	0.03	1.80	0.049	11
W12	Low Production Capacity and Production Consistency.	0.03	2.20	0.073	10
TOTAL WEAKNESS		0.47		1.03	
TOTAL STRENGTHS PLUS WEAKNESSES		1		2.62	

Meanwhile, the EFE Matrix is used to analyze external strategic factors (opportunities and threats). The following are the results of the EFE Matrix:

Table 2. EFE analysis

EFE ANALYSIS					
Symbol	External Indicators (Opportunities)	Validation Weight	Average Weight	Total Score	Rank
O1	Market demand is still broad and large.	0.07	2.60	0.191	1
O2	Islamic boarding schools become agents of change in the successful development of the sharia economy.	0.06	2.93	0.163	8
O3	Availability of human resources who have Islamic entrepreneurial character.	0.05	2.60	0.141	9
O4	Wide range of capital access with various schemes for business unit development.	0.06	2.87	0.179	5
O5	Has the potential to build a broad partnership network , a network of Islamic boarding school communities, the government or with other Islamic boarding schools.	0.07	2.73	0.182	3
O6	Various programs from government and non-government institutions in business mentoring and training, marketing, and business matching.	0.06	2.67	0.166	7

O7	The formation of the Islamic Boarding School Business Holding which can expand the market for Islamic boarding school products.	0.06	3.07	0.179	6
O8	Increased production capacity.	0.05	2.40	0.120	10
O9	Digital technology infrastructure is developing rapidly.	0.07	2.73	0.186	2
O10	The Islamic Boarding School brand has high value in society.	0.06	2.93	0.179	4
TOTAL OPPORTUNITIES		0.61		1.69	
Symbol	External Indicators (Threats)	Validation Weight	Average Weight	Total Score	Rank
T1	Bigger and more professional business competitors.	0.07	3.20	0.211	1
T2	Moral Hazard Risk.	0.05	2.40	0.119	6
T3	Access to capital requires asset collateral, while in Islamic boarding schools, many do not separate business assets from Islamic boarding school assets.	0.06	2.87	0.170	4
T4	The market demands competitive products.	0.06	2.87	0.177	2
T5	Egocentrism between Islamic boarding schools can make it difficult to collaborate .	0.04	2.07	0.088	7
T6	The difficulty of penetrating market access.	0.05	2.47	0.126	5
T7	Islamic boarding school and MSME entrepreneurship have made extensive use of technology and digital in their entrepreneurial systems.	0.06	2.80	0.177	3
TOTAL THREAT		0.39		0.77	
TOTAL OPPORTUNITIES PLUS THREATS		1.00		2.44	

The results of the IFE and EFE are entered into the Internal-External (IE) matrix to map the current position of the Islamic Boarding School. This IE matrix is based on two key dimensions, namely the total IFE weighted score on the X axis and the EFE weighted score on the Y axis. The IE matrix shows the organizational division in a 9-cell display divided into 3 parts with different strategic implications, namely: Cells I, II, IV are grow and build; Cells III, V, VII mean maintain and maintain , and cells VI, VIII, IX mean harvest or *divest*. Based on the results of the IFE and EFE matrices above, the matrix value on the X axis is at point 2.6 and the Y axis position is at point 2.5.

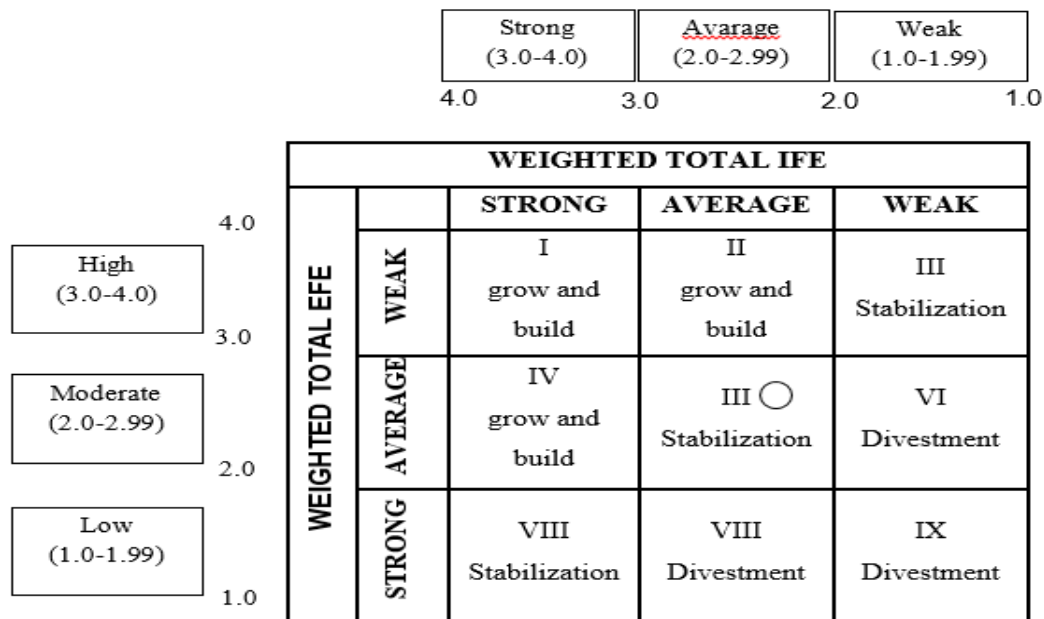


Figure 1. IE Matrix
(Source: Processed data, 2025)

The position of Islamic boarding schools in building an entrepreneurial ecosystem according to the IE matrix is in cell V, namely hold and maintain, with a total score of internal strategy factors (2.58) and a total score of external strategies (2.38). In this position, the strategies applied for cell V are market penetration *and* product development. This means that Islamic boarding schools have the power to develop themselves in building an entrepreneurial ecosystem by expanding the market and developing products. Market penetration and product development can be done by strengthening the pillars in the entrepreneurial ecosystem (David, 2016).

After conducting IFE and EFE analysis, the next step is to analyze the positioning. The analytical tool used is the 4-Quadrant SWOT Matrix Analysis. Analysis using the 4-K SWOT matrix uses a diagram divided into 4 quadrants which aims to determine the company's position and its development. The formula for calculating the coordinate value on the X-axis is Horizontal axis (X) = (Subtotal strengths - Subtotal weaknesses) / 2 then $(1.56 - 0.99) / 2 = 0.28$. While the formula for calculating the coordinate value on the Y-axis is vertical axis (Y) = (Subtotal opportunities - Subtotal threats) / 2 then $1.62 - 0.75 / 2 = 0.43$. The results are then made in the form of a diagram, resulting in the following:

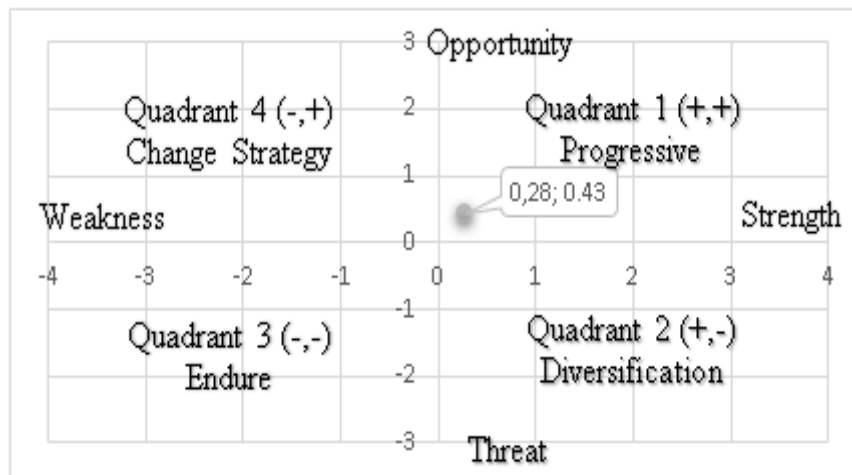


Figure 2. SWOT Positioning
 (Source: Processed data, 2025)

Based on the results of the image, the position of the Islamic Boarding School is in Quadrant I. These results can be interpreted as meaning that the Islamic Boarding School has progressive strengths and opportunities to be able to build an Islamic boarding school entrepreneurial ecosystem.

ANP RESULTS

There are seven pillars for building an entrepreneurial ecosystem: education, culture, human resources, financing, policy, support, and the market. The results of the *analytic network process* (ANP) below represent the opinions of practitioners, academics, and regulators. According to the results, the main pillars for building an entrepreneurial ecosystem in Islamic boarding schools can be summarized in the following figure:

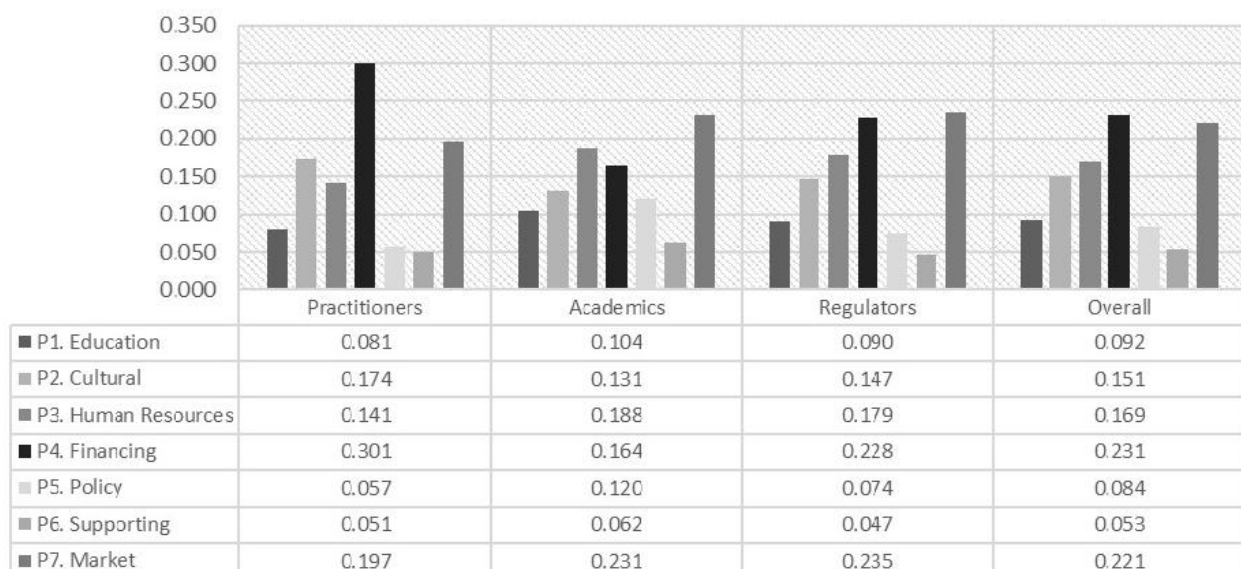


Figure 3. Pillars of the Islamic Boarding School Entrepreneurship Ecosystem

(Source: Processed data, 2025)

The opinions of all respondents on the main pillars of building an entrepreneurial ecosystem in Islamic boarding schools are the financing pillar (0.23088) or 23%, then the market pillar with a value of (0.22081) or 22% and then the HR pillar (0.16926) or 17% and the lowest pillar is the supporting pillar of 0.05331 or 5%. The value of *Rater Agreement* (Kendall W) or the level of understanding of the respondents is 0.676, meaning that the opinions of all respondents have the same understanding of 67% in the results above. The level of significance of the results above is (0.0000), which is below 1% with a low level of inconsistency, namely (0.0088), meaning that the opinions of practitioners have high significance and consistency . The data can be seen in the table below:

Table 3. Results of Kendall's W, X² and P-Value

MAIN CRITERIA	RESPONDENTS			
	PRACTITIONER	ACADEMICS	REGULATOR	ALL
Inconsistency	0.0088 ***	0.0046 ***	0.0088 ***	0.0088 ***
Kendall's W	0.8 77	0.578	0.834	0.6 76
X ²	26.31	17.33	25.02	60.89
P -Value	0.00019 ***	0.00812 ***	0.00034 ***	0.0000 ***

*** significance level 0.01 level; ** significance level 0.05 level; * significance level 0.10

The results of the respondents' agreement on the SWOT element produced a fairly moderate Kendall's W value, which was (0.4765), meaning that 48% of respondents had the same agreement with a very high level of significance of the p-value of the strength element, which was (0.0000). The following are the details of the SWOT element data results. In the strength factor, the highest factor is the figure of the kyai (0.2005), then the broad elements of the Islamic boarding school community (0.1928), the market share of the established Islamic boarding school (0.1761), Being fostered by the government (0.1430), Islamic boarding school support for Islamic boarding school independence (0.1089), Abundant human resources (0.0895), and Islamic boarding schools as centers of education (0.0893). Meanwhile, in the Weakness element , the highest factor is low Islamic boarding school entrepreneurial management with a value of (0.2191), the next factor is minimal infrastructure with a value of (0.1955), Unprofessional Human Resources (0.1878), decisions centralized on Kyai (0.1295), Weak accountability (0.0950), weak product competitiveness (0.0950) and finally low technology (0.0777). In the highest *Opportunity* element according to the results of the respondents, namely varied mentoring programs (0.2386), partnership potential (0.2038), broad market demand (0.1602), Islamic boarding school brands (0.1144), technological progress (0.1048), Islamic boarding school business holdings (0.1008), and many financing schemes (0.0775). Meanwhile, in the threat element (*treath*), the highest threat factors are difficult market access (0.2615), then moral hazard risk (0.2188), high costs (0.1266), egocentrism between Islamic boarding schools (0.1101), market demands (0.1008), professional business competitors (0.0995), and difficult access to capital (0.0829).

Strategy Element Criteria

The following are the results of the SWOT strategy from the four strategy criteria SO (Strength-Opportunity), ST (Strength-Threat), WO (Weakness-Opportunity) WT (Weakness-Threat):

Table 4. Strategy Elements

STRATEGY ELEMENTS		All
SO	SO1. Building a Business Incubator	0.20692
	SO2. Strengthening Capacity Building	0.31315
	SO3. Building Business Networks and Cooperation	0.24496
	SO4. Optimizing the Role of Support Systems	0.23497
ST	ST1. Building Culture and Governance	0.42748
	ST2. Integration of entrepreneurship education	0.25668
	ST3. Strengthening Mentoring Networking	0.31583
WO	WO1. Building and strengthening cohesion	0.30991
	WO2. Developing a virtual market	0.26052
	WO3. Expanding Access to Capital	0.20138
	WO4. Strengthening Business Licensing Legalities	0.22818
WT	WT1. Designing a Marketing Strategy	0.29633
	WT2. Conducting an Audit	0.24200
	WT3. Building Human Resource Management	0.35864
Kendall's W		0.4765
X2		42.8821
P -Value		0.0000

From the results above, the main strategy/priority of the SO (Strength-Opportunity) strategy is Strengthening Capacity Building, for the ST (Strength-Threat) strategy , namely building culture and governance, then from the WO (Weakness-Opportunity) strategy, namely building and strengthening cohesion and finally the WT (Weakness-Threat) strategy, namely building human resources (HR).

Entrepreneurship Ecosystem Model of Islamic Boarding Schools.

The following is a table that describes the results of respondents' choices of alternative models for building an Islamic boarding school entrepreneurial ecosystem:

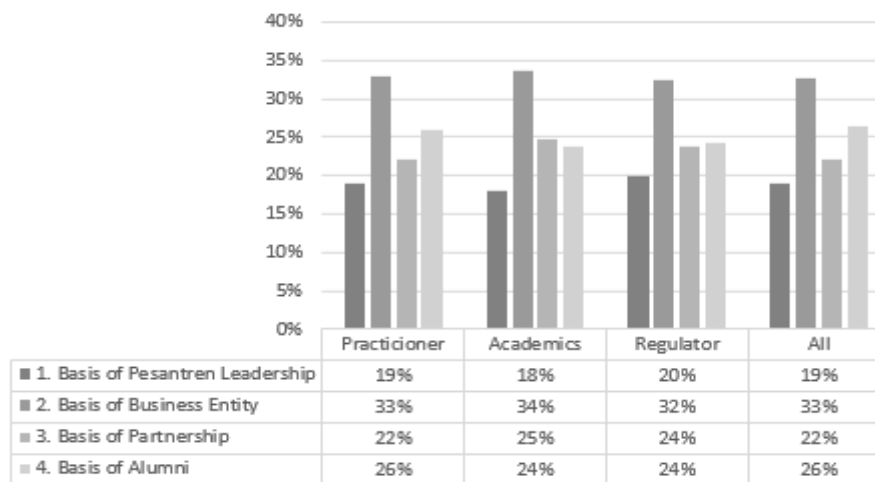


Figure 4. Results of the Islamic Boarding School Entrepreneurship Ecosystem Model
(Source: Processed data, 2025)

From the data above, the highest alternative model in building an entrepreneurial ecosystem is business-based entrepreneurship. The level of agreement of Kendall's W is (0.8631), meaning that 86% of respondents have the same agreement with a very high level of significance p-value, namely (0.00001). The details of the respondents' opinions can be sorted as follows: Business entity basis (0.3262), Partnership basis (0.26296), Alumni basis (0.2214), Islamic boarding school leadership basis (0.18949).

Table 5. Kendall's W, X² & P- Value

CRITERIA	RESPONDENTS			
	Practitioner	Academics	Regulator	All
Kendall's W	0.856	0.936	0.904	0.8631
X ²	12.84	14.04	13.56	38.84
P -Value	0.00500	0.00285 **	0.00357 *	0.0001* **

***significance level 0.01 level; **significance level 0.05 level; *significance level 0.10

The consensus among respondents on the SWOT elements produced a moderate Kendall's W value of 0.4765, indicating that roughly 48% of respondents shared a similar level of agreement. Notably, the strength element showed a highly significant level, with a p-value of 0.0000. Looking in detail at each SWOT component, strengths were led by the presence of influential Kyai figures (0.2005), followed closely by a broad pesantren community (0.1928), an established pesantren market share (0.1761), government support (0.1430), internal support for pesantren autonomy (0.1089), abundant human resources (0.0895), and the role of pesantren as a center of education (0.0893). The most prominent weakness was identified as low entrepreneurial management within pesantren (0.2191), accompanied by insufficient infrastructure (0.1955), non-professional human resources (0.1878), centralized decision-making by the Kyai (0.1295), weak accountability (0.0950), low product competitiveness (0.0950), and limited technological capacity (0.0777). Regarding opportunities, respondents highlighted the availability of diverse mentoring programs (0.2386) as the most significant, followed by partnership potential (0.2038), broad market demand (0.1602), the pesantren brand (0.1144), technological advancement (0.1048), pesantren business holdings (0.1008), and various financing schemes (0.0775). For threats, the most pressing concern was difficult market access (0.2615), followed by moral hazard risks (0.2188), high costs (0.1266),

inter-pesantren egocentrism (0.1101), market demand pressures (0.1008), competition from professional enterprises (0.0995), and limited access to capital (0.0829). These results offer a nuanced understanding of the internal and external factors shaping pesantren entrepreneurship, providing a solid foundation for strategic prioritization and informed decision-making.

Discussion

The model of entrepreneurship in Islamic boarding schools (pesantren) is designed to establish a business-oriented ecosystem, wherein business units may take the form of cooperatives, Pesantren-Owned Enterprises (BUMP), limited liability companies (CVs), or corporations (PTs). As formal business entities, these units operate in accordance with established business regulations and standards. For instance, a cooperative unit implements comprehensive systems encompassing management, operations, production, finance, human resources, and marketing (Prasetyo et al., 2020). Beyond formal business structures, pesantren provide both formal and non-formal education, which undergoes a process of externalization and internalization that reflects the realities of pesantren culture. This includes Islamic values, *tabarukan*, *ngabdi ndalem* (devotional service), religious study, *wirid*, and ascetic practices. Through these processes, students develop independence, discipline, creativity, and courage in decision-making, qualities fundamental for cultivating entrepreneurial character grounded in Sharia and ethical teachings (Humaisi et al., 2019; Futaqi & Mashuri, 2022; Karim et al., 2022).

Capacity building constitutes a foundational strategy, enhancing organizational capabilities and human resource quality, which are critical for fostering entrepreneurial competence (Ho, 2019). Pesantren benefit from human capital imbued with spiritual and Islamic knowledge, providing a strong basis for strengthening entrepreneurial skills (Ma'arif et al., 2023). Active collaboration with universities, industry actors, and business associations facilitates knowledge transfer, network expansion, and market access (Anggadwita et al., 2021; Wibowo et al., 2022). Enhanced capacity enables pesantren to expand production and access financial resources from governmental and non-governmental institutions.

Equally crucial is the development of a healthy organizational culture and robust governance. Effective governance mitigates external threats, ensures sustainable operations, and fosters transparency and accountability (Soeprayitno, 2020). It allows for efficient resource management, marketing, and the separation of institutional and business assets, enhancing competitive positioning among other pesantren and SMEs (Rahayu et al., 2020). This is reinforced by charismatic *Kyai* leadership and competent, entrepreneurial human resources. Cohesion, or collective solidarity and coordination, strengthens teamwork under complex conditions through continuous communication, shared values, and interactions among members (McLeod & von Treuer, 2013; Croy & Eva, 2018; Bryan et al., 2020; Glen & Eva, 2018). Within the pesantren entrepreneurial ecosystem, these interactions extend to entrepreneurs, professionals, government officials, financial institutions, and the wider community. The pesantren value system, rooted in religiosity, provides a cultural foundation for collaborative entrepreneurial behavior.

Human resource development complements these strategies by integrating values, processes, and support systems. Core values such as familial solidarity, mutual cooperation, and autonomy emphasize service over self-interest (Uhbiyati, 2015; Rana & Malik, 2016). HR processes include recruitment, selection, placement, capacity enhancement, and performance evaluation. Collaboration with internal and external actors, including government agencies, financial institutions, and business communities, further strengthens the sustainability of the entrepreneurial ecosystem. These strategies are mutually reinforcing, forming a resilient foundation for a sustainable pesantren entrepreneurial ecosystem. The ANP analysis demonstrates that each strategy

effectively addresses challenges in optimizing pesantren entrepreneurial potential, highlighting the importance of governance, Kyai leadership, cohesion, human resource development, and external collaboration (Towers et al, 2020). This comprehensive model provides a practical framework for advancing Sharia-based entrepreneurship, addressing gaps in prior research that primarily focused on micro-level or individual competencies.

These results resonate with the capacity building and HR development strategies identified in the current SWOT–ANP model, particularly in shaping entrepreneurial mindset and competence. While their study emphasizes internal educational contributions, it does not explicitly situate these within the broader ecosystem or evaluate strategic priorities. The present research integrates SWOT analysis with ANP to systematically assess internal and external strategic factors, including governance, stakeholder collaboration, and network relations that facilitate or constrain entrepreneurship. The model identifies priority strategies, capacity building, culture and governance enhancement, cohesion, and HR development, underscoring the need to align internal strengths with external opportunities (Fitrianingsih & Shobirin, 2025). Similarly, (Raharto et al., 2025) demonstrate that halal certification and brand image significantly influence consumer purchasing decisions among pesantren students, highlighting the role of market and consumer behavior in pesantren economic activities. Moreover, studies on agribusiness practices in pesantren, such as those at Pesantren Miftahul Ulum Bangsalsari and Pesantren At Tanwir Ledokombo Jember, illustrate how agricultural value chains can support institutional financing and community development (Fawaidi, 2022). These findings reinforce the view that pesantren entrepreneurial ecosystems comprise multiple business units and revenue streams, requiring integrated strategic management to ensure economic resilience.

5. Conclusion

This study demonstrates that pesantren possess progressive strengths in developing their entrepreneurial ecosystem. The SWOT and IE matrix analyses indicate that pesantren are positioned in Section V and Quadrant I, reflecting substantial opportunities for market expansion and product development. The ANP-integrated SWOT analysis identified four key strategies for strengthening the entrepreneurial ecosystem: capacity building, organizational culture and governance development, cohesion enhancement, and human resource development. Additionally, the study proposes a practical model of entrepreneurship based on institutional business units to facilitate ecosystem development.

However, the study has certain limitations. Its findings are primarily based on expert perspectives, limiting generalizability across pesantren with diverse characteristics. Furthermore, the qualitative approach does not allow for quantitative measurement of the ecosystem's performance or its impact on the empowerment of students. The study also does not provide detailed guidance on the implementation and evaluation of the identified strategies. Future research is recommended to conduct comparative case studies across pesantren with varying entrepreneurial profiles and to employ quantitative or mixed-method approaches to assess the performance and impact of the entrepreneurial ecosystem more comprehensively. Further investigation is also needed to evaluate the practical implementation of strategies within the pesantren entrepreneurial ecosystem.

Author contribution statement

Dzikrulloh Dzikrulloh: Conceptualization, Methodology, Writing – original draft, Supervision. Firman Setiawan: Theoretical framework, Formal analysis, Writing – review & editing. Tri Pujiati making interpretation, Writing – review & editing. Faizal Amir: Data analysis, Case examination, Validation. Elfira Maya Adiba : investigation, Data curation, Discussion

Acknowledgements

The authors sincerely thank the pesantren leaders, practitioners, regulators, academics, and association representatives for their invaluable insights and cooperation throughout this study. We also appreciate the support from affiliated institutions and colleagues who facilitated access to resources and provided guidance. Any remaining errors are solely the responsibility of the authors.

References

- Abuddar, A. Z., & Maulana, Z. (2024). The role of Islamic boarding school traditions in student development in future life. *Proceeding of International Conference on Education, Society and Humanity*, 2(2), 1955–1959.
- Ahwarumi, B., Sawarjuwono, T., & Mawardi, I. (2018). Roles of business incubator in Sunan Drajat pesantren in generating Islamic entrepreneurs. *KnE Social Sciences*, 3(8), 351. <https://doi.org/10.18502/kss.v3i8.2519>
- Alfarabi, I., & Rahayu, M. (2021). Developing entrepreneurial ecosystem in pesantren: A systematic review. *Journal of Islamic Economics and Business*, 15(3), 102–115. <https://doi.org/10.15575/ijni.v8i1.8907>
- Anggadwita, G., Dana, L. P., Ramadani, V., & Ramadan, R. Y. (2021). Empowering Islamic boarding schools by applying the humane entrepreneurship approach: The case of Indonesia. *International Journal of Entrepreneurial Behaviour and Research*, 27(6), 1580–1604. <https://doi.org/10.1108/IJEBr-11-2020-0797>
- Ascarya, A., & Iskandar, D. (2013). The root causes of financial crisis in Islamic economic perspective. *Proceedings of the International Symposium on the Analytic Hierarchy Process*. <https://doi.org/10.13033/isahp.y2013.086>
- Bosselut, G., Castro, O., Chevalier, S., & Fouquereau, E. (2020). Does perceived cohesion mediate the student personality–engagement relationship in the university setting? *Journal of Educational Psychology*, 112(8), 1692–1700. <https://doi.org/10.1037/edu0000442>
- Bryan, P., Acton, M. T., Braun, M., & Foti, R. J. (2020). Built for unity: Assessing the impact of team composition on team cohesion trajectories. *Journal of Business and Psychology*, 35(6), 751–766. <https://doi.org/10.1007/S10869-019-09654-7>
- Croy, G., & Eva, N. (2018). Student success in teams: Intervention, cohesion and performance. *Education and Training*, 60(9), 1041–1056. <https://doi.org/10.1108/ET-11-2017-0174>
- David, F.R. (2016). *Strategic management: a competitive advantage approach: concepts (15th ed)*. Salemba Empat.
- Ekawati, R., Trenggonowati, D. L., & Aditya, V. D. (2018). Penilaian performa supplier menggunakan pendekatan analytic network process (ANP). *Journal Industrial Services*, 3(2), 152–158. <https://doi.org/10.36055/jiss.v3i2.2104>
- Fatira, M. (2020). Mapping of sharia cooperative management issue in Islamic boarding schools. *Economica: Jurnal Ekonomi Islam*, 11(2), 263–283. <https://doi.org/10.21580/economica.2020.11.2.3839>
- Fawaidi, B. N. (2022). Manajemen pembiayaan berbasis agribisnis di Pesantren Miftahul Ulum Bangsalsari dan Pesantren At-Tanwir Ledokombo Jember. *Lan Tabur: Jurnal Ekonomi Syariah*, 3(2), 153–165. <https://doi.org/10.53515/lantabur.2022.3.2.153-165>
- Fitrianingsih, F., & Shobirin, M. S. (2025). Peran pondok pesantren dalam menumbuhkan jiwa entrepreneur santri (studi kasus di Pondok Pesantren Rahmatan Lil Alamin). *Lan Tabur: Jurnal Ekonomi Syariah*, 5(1), 60–72. <https://doi.org/10.53515/lantabur.2023.5.1.60-72>

- Futaqi, S., & Mashuri, S. (2022). Multicultural leadership of Kiai for managing diversity in Indonesian context: Spiritual, intellectual, and social integration. *Cultural Management: Science and Education*, 6(2), 57–73. <https://doi.org/10.30819/cmse.6-2.04>
- Galamba, K., & Nielsen, S. (2019). Capacity building in FM organisations. In *Facilities management and corporate real estate management* (pp. 132–137). CRC Press. <https://doi.org/10.1201/9780429001055-37>
- Ghofirin, M., Agustina, T. S., & Wahyuningtyas, E. (2019). *Modul santripreneurship berbasis koperasi*. UNUSA Repository.
- Glen, C., & Eva, N. (2018). Student success in teams: Intervention, cohesion and performance. *Education + Training*, 60(9), 1041–1056. <https://doi.org/10.1108/ET-08-2017-0122>
- Ho, C. W. L. (2019). Capacity building: Continuity and change. *Asian Bioethics Review*, 11(4), 341–342. <https://doi.org/10.1007/s41649-019-00108-z>
- Humaisi, M. S., Thoyib, M., Arifin, I., Imron, A., & Sonhadji, A. (2019). Pesantren education and charismatic leadership: A qualitative analysis study on quality improvement of Islamic education in Pondok Pesantren Nurul Jadid Paiton, Probolinggo. *Universal Journal of Educational Research*, 7(7), 1509–1516. <https://doi.org/10.13189/UJER.2019.070704>
- Ilyas, S. Z., Wulandari, T. A., & Sastra, H. Y. (2018). Marketing strategy determination by SWOT and ANP approaches on Aceh songket small-medium enterprises. *International Journal of Conceptions on Computing and Information Technology*, 6(1), 8–13
- Isenberg, D. J. (2011). *The entrepreneurship ecosystem strategy as a new paradigm for economic policy: Principles for cultivating entrepreneurship*. Babson Global.
- Hill, T., & Westbrook, R. (1997). SWOT analysis: It's time for a product recall. *Long Range Planning*, 30(1), 46–52. [https://doi.org/10.1016/S0024-6301\(96\)00095-7](https://doi.org/10.1016/S0024-6301(96)00095-7)
- Kangas, J., Kurttila, M., Kajanus, M., & Kangas, A. (2003). Evaluating the management strategies of a forestland estate: The S-O-S approach. *Journal of Environmental Management*, 69(4), 349–358. <https://doi.org/10.1016/j.jenvman.2003.09.010>
- Karim, A.B., Amsal, S., Sahrodi, J., Jamali, & Chang, P. H. (2022). Spiritual leadership behaviors in religious workplace: The case of pesantren. *International Journal of Leadership in Education*. <https://doi.org/10.1080/13603124.2022.2076285>
- Kurttila, M., Pesonen, M., Kangas, J., & Kajanus, M. (2000). Utilizing the analytic hierarchy process (AHP) in SWOT analysis: A hybrid method and its application to a forest-certification case. *Forest Policy and Economics*, 1(1), 41–52. [https://doi.org/10.1016/S1389-9341\(99\)00004-0](https://doi.org/10.1016/S1389-9341(99)00004-0)
- Legendre, P. (2005). Species associations: The Kendall coefficient of concordance revisited. *Journal of Agricultural, Biological, and Environmental Statistics*, 10(2), 226–245. <https://doi.org/10.1198/108571105X46642>
- Ma'arif, S., Ahmadi, A., Dzikrulloh, D., & Muna, N. E. (2023). Pesantren entrepreneurship: Harmonization of the theories of Kasb Asy'ariyah and locus of control on strengthening Santripreneur. *QIJS (Qudus International Journal of Islamic Studies)*, 11(2), 31–64. <https://doi.org/10.21043/QIJS.V11I1.17404>
- McLeod, J., & von Treuer, K. (2013). Towards a cohesive theory of cohesion. *International Journal of Business and Social Research*, 3(12), 1–11. <https://doi.org/10.18533/ijbsr.v3i12.338>
- Mustari, M., & Rahman, M. T. (2012). *Ekonomi pesantren: Manajemen pesantren dalam pembangunan masyarakat desa*. Lintang Publishing.
- Prasetyo, M. A. M., Bashori, B., & Masriani, M. (2020). Model capacity building pada pesantren perbatasan binaan Dinas Pendidikan Dayah Provinsi Aceh. *INFERENSI: Jurnal Penelitian Sosial Keagamaan*, 14(1), 71–96. <https://doi.org/10.18326/infsl3.v14i1.71-96>

- Raharto, E., Supriyanto, & Dienillah, I. (2025). The influence analysis of halal certificate, halal awareness, brand image and religiosity on decisions to purchase halal product (study on students Pondok Pesantren Salafiyah Abu Zairi Bondowoso). *Lan Tabur: Jurnal Ekonomi Syariah*, 5(2), 363–383. <https://doi.org/10.53515/lantabur.2024.5.2.363-383>
- Rahayu, S., Rusydiana, A. S., & Dunuraeni, M. A. E. (2020). Meta-analysis of pesantren's economic research. *International Journal of Nusantara Islam*, 8(1), 42–56. <https://doi.org/10.15575/ijni.v8i1.8907>
- Rana, M. H., & Malik, M. S. (2016). *Human resource management from an Islamic perspective: A contemporary literature review*. *International Journal of Islamic and Middle Eastern Finance and Management*, 9(1), 109–124. <https://doi.org/10.1108/IMEFM-01-2015-0002>
- Saaty, T. L. (2005). The analytic hierarchy and analytic network processes for the measurement of intangible criteria and for decision-making. In J. Figueira, S. Greco, & M. Ehrgott (Eds.), *Multiple criteria decision analysis: State of the art surveys* (pp. 345–405). Springer.
- Shrestha, R. K., Alavalapati, J. R. R., & Kalmbacher, R. S. (2004). Exploring the potential for silvopasture adoption in south-central Florida: An application of SWOT–AHP method. *Agricultural Systems*, 81(3), 185–199. <https://doi.org/10.1016/j.agsy.2003.09.004>
- Soeprayitno. (2020). The relationship between knowledge management, leadership style, and work motivation: Evidence from an Islamic boarding school. *International Journal of Business and Society*, 21(2), 945–954. <https://doi.org/10.33736/ijbs.3304.2020>
- Stam, E. (2015). Entrepreneurial ecosystems and regional policy: A sympathetic critique. *European Planning Studies*, 23(9), 1759–1769. <https://doi.org/10.1080/09654313.2015.1061484>
- Towers, N., Santoso, A. S., Sulkowski, N. B., & Jameson, J. (2020). *Entrepreneurial capacity-building in HEIs for embedding entrepreneurship and enterprise creation – a tripartite approach*. *International Journal of Retail & Distribution Management*, 48(8), 881–899. <https://doi.org/10.1108/IJRDM-06-2019-0185>
- Uhbiyati, N. (2015). A competency-based model of the human resource development management of ustadz at salaf boarding school. *International Journal of Educational Management*, 29(5), 695–708. <https://doi.org/10.1108/IJEM-08-2014-0118>
- Umar, N. (2014). *Rethinking pesantren*. PT Elex Media Komputindo.
- Wibowo, A., Widjaja, S. U. M., Utomo, S. H., Kusumojanto, D. D., Wardoyo, C., Wardana, L. W., & Narmaditya, B. S. (2022). Does Islamic values matter for Indonesian students' entrepreneurial intention? The mediating role of entrepreneurial inspiration and attitude. *Journal of Islamic Accounting and Business Research*, 13(2), 242–263. <https://doi.org/10.1108/JIABR-03-2021-0090>