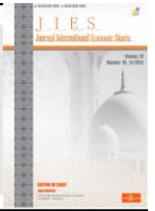




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Sustainable Economic Model for Islamic Boarding Schools: The Role of Sharia Cooperatives, Halal Certification, and Digital Transformation

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ABSTARCT



Objective: The role of integrated economic models on Islamic higher education institutions is to be evaluated in this paper, based on the interdependence of cooperative agribusiness principles, cooperative networks, and cooperative certification systems for sustainable development.

Methods: The study design is a cross-sectional survey study. It uses a quantitative approach. This includes multiple regression and hierarchical moderation analysis. Data were collected using structured questionnaires to measure constructs related to economic models, institutional collaboration, and certification frameworks, and these were subjected to appropriate reliability and validity tests.

Results: The results indicate robust positive correlations between the central economic framework and sustainability outcomes within institutions. Collaboration among multiple stakeholders will be essential for organisational and participant development. According to the study, these relationships are much stronger thanks to leadership support, specialised knowledge and technological adoption, forming an ecosystem for sustainable development.

Novelty: The novel integrated framework presented in this research successfully bridges traditional values with contemporary economic practices. It introduces unique moderating mechanisms that enhance the effectiveness of core institutional strategies. The study is pioneering in its approach, showing how ethical principles can be integrated with modern development methods in a systematic way.

Research Implication: Educational leaders seeking to balance traditional values with economic sustainability will find the findings valuable, as they provide evidence-based strategies for institutional development. Contributions have been made to broader discussions on sustainable educational models by the research, and significant relevance has been demonstrated for institutions navigating the intersection of tradition and modernity.

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1. Introduction

The global halal industry is expanding rapidly and is set to become a significant economic powerhouse. According to Dinar Standard 2023 and Halal Practitioner 2025, 2028, the halal market is projected to reach an astonishing US\$3.36 trillion (Horizon, 2025). Despite this, Indonesia has great potential in this area. It is the country with the largest Muslim population in the world (Jaelani, 2017; Jones, 2006). However, it still lags behind market leaders in the Southeast Asia region. These include Malaysia Dinar Standard, 2023 as cited in Halal

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Practitioner 2025 (Marlina et al., 2025; Mohd Shuhaimi et al., 2025). Although micro, small and medium-sized enterprises (MSMEs) form the backbone of the national economy and contribute significantly to GDP, they are constrained by limited access to capital and technology (Elasrag, 2016; Endris & Kassegn, 2022; Mukherjee, 2018). In this context, pesantren are seen as a potential incubator for change (Ahwarumi & Sawarjuwono, 2017). These institutions' unique social capital, particularly the kyai's spiritual and entrepreneurial leadership, plays a vital role in students' character development and independence (Ahwarumi & Sawarjuwono, 2017; Auliyah et al., 2025; Karim et al., 2025). The integration of MSMEs with pesantren through a Sharia cooperative model could overcome the problems and realise this immense potential (Ma & Sukmana, 2025; Mutmainah et al., 2025).

There are many urgent issues to address in order to establish a robust halal ecosystem in Indonesia. The complexity of halal certification poses a significant challenge for small entrepreneurs (Annabi & Ibdapo-Obe, 2017). Secondly, the lack of halal financing has also become a widespread issue (Ben Bouheni et al., 2016). This is exacerbated by a lack of confidence in MSMEs and the managerial capabilities of business actors. Thirdly, although people consider multi-stakeholder cooperation a necessity, various bureaucratic inefficiencies often hamper the process of implementing it (Abdul-Talib & Abd-Razak, 2013). Furthermore, the absence of a clear link between institutional support and business performance highlights the significance of internal capabilities as mediating factors (Awan et al., 2015). This apparent interdependence signals the need for integration, which is something that should be considered.

This study is based on the Pentahelix/Quadruple Helix governance model, which suggests that synergy between various stakeholders leads to innovation and sustainable development (Hernández et al., 2025). The implementation of the Sharia Cooperative Model is predicated on the principle of profit-and-loss sharing contracts in economic Islam (As-Salafiyah et al., 2025; Taufik Syamlan et al., 2025). Additionally, the research considers Islamic spiritual leadership theory to understand the polarisation effect of Kyai, who we hypothesise would serve as a moderating variable stimulating entrepreneurial spirit and institutional independence in the context of Muslim boarding schools (Hadji Latif, 2019).

Such research is urgently needed to bridge important gaps in the literature. While earlier studies pay attention to government policy, they tend to neglect the particularities of socio-religious institutions such as pesantren (Qorib, 2025; Setinawati et al., 2025). On the other hand, if for pesantren, the research done only emphasizes pesantren as an educational institution without seeing it as an integrated economic strength. This study bridges that divide. Although certain findings suggest that institutional support has a direct effect on the empowerment of businesses, while others found that the effect of such support is fully mediated by internal factors such as financial risk tolerance (Afdawaiza et al., 2025; Al Lawati et al., 2025; Yudi & Feiya, 2025). In addition, Kyai is well-known as a spiritual leader that have impact in building character, however, it has quantitating impact as the moderating variable in a structured business model (Titi Sartini, 2025). This study fills the promising gap with a new approach to integrate Pentahelix model, Sharia cooperative principles, and Islamic spiritual leadership theory in one quantitative research.

This study aims to empirically analyse the relationship between the Sharia cooperative model, multi-stakeholder collaboration and Halal certification in promoting economic sustainability and community development. The research focuses particularly on the relationships between these key factors and other important moderating factors, such as leadership, financial literacy and technology adoption. The findings here promise significant theoretical contributions to research on collaborative governance and ethical entrepreneurship, and this will be achieved through the integrated analytical framework. In practice, the study provides a strategy for improving the international competitiveness of community-based enterprises and boosting transformative economic development and social empowerment through Sharia-compliant business models.

2. Theoretical foundation

2.1 *The Influence of the Sharia Cooperative Model on Economic Independence and Halal MSME Growth*

It is believed that the sharia cooperative model will strengthen the economic independence of pesantren. These institutions often have to contend with MSME oriented constraints which means capital and financing

(Rokhman, 2021). In this way, pesantren as the independent pillar of national education can be like a sharia cooperative structure that relies on internal potencies and capital of the members through sharia-based financing contract such as profit-and-loss sharing (*mudharabah*), so they do not depend on external funding sources (Ascarya, 2022). Such a model can create an independent economic storm in the pesantren. In addition, the overall nature of cooperative can accommodate all members in an effective manner in terms of resource pooling on joint demands, whether for daily operational costs or investment in educational facilities (Hudaefi, 2020). It takes the pesantren out of an educational-only frame and makes it a complete socio-economic ecosystem where not only its financial independence but also its sustainability increases.

The sharia cooperative model also works synergistically to serve as structural support that positively affects the growth of halal MSMEs that are affiliated with the pesantren. One of the main challenges in stimulating MSME growth is financing and credit guarantee (Siswanto, 2021). This is directly addressed by Sharia cooperatives by providing halal working capital and venture funding to their member MSMEs to scale production and product quality (Wahyudi, 2023). Apart from finance, cooperatives can serve as a single voice to help members overcome other major obstacles including the budgetary and procedural burdens of achieving formal halal product certification (Abdullah, 2022). By providing group support and mentoring, the cooperative removes an important entry barrier to the more lucrative international halal market (Fathi, 2020) It will empower small and medium-sized businesses to evolve out of local markets and become competitive within the larger halal landscape, allowing for faster growth.

H1: The sharia cooperative model has a positive effect on the economic independence of the Islamic boarding school.

H2: The sharia cooperative model has a positive effect on the growth of halal MSMEs.

2.2 The Influence of Multi-Stakeholder Collaboration on Student Empowerment and MSME Growth

Rather than being passive recipients, students are empowered by engraving skills to become decision-makers. Furthermore, multi-stakeholder collaboration is encouraged, thus enhancing student empowerment (Rami S. et al, 2020). By working together with industry players and the government, educational institutions can provide students with practical training and relevant entrepreneurship skills (Nurhayati, 2021). Cooperatives can create a real learning space in which students can apply their theoretical knowledge to industrial issues, particularly in the area of halal product development and marketing (Suryana, 2022). Moreover, knowledge transfer and capacity building are promoted by these collaborations through structured mentorship programmes and industry exposure (Khalid, 2023). Academic institutions, local businesses and government training institutions collaborate to establish an environment conducive to the development of students from diverse backgrounds. This environment is instrumental in equipping students with the fundamental competencies required for successful entrepreneurship. This all-encompassing strategy doesn't just develop technical proficiency, it also enhances self-assurance and leadership capabilities, nurturing the next generation of halal industry leaders.

This multi-stakeholder approach enables the creation of combined and complementary business ecosystems which considerably speed up the growth of halal MSMEs. This would allow integration of the value chain and address more than one constraints simultaneously through strategic partnership among pesantren, financial institution and market player (Rahman, 2022). The ability to offer collective marketing and distribution channels (Hasan, 2021) enables access to wider markets, and tech transfer and knowledge sharing can result in improved quality of product. In addition, multi-stakeholder platforms improve innovation capacity and competitive advantage through the combination of religious expertise from pesantren and business experience from business partners (Mubarak, 2023). Ecosystems of correlative industries to MSMEs channel critical production technology, market intelligence, and business development services to drive sustainable growth and expansion into global markets all of which are extremely difficult to obtain through direct access.

H3: Multi-stakeholder collaboration has a positive effect on student empowerment.

H4: Multi-stakeholder collaboration has a positive effect on the growth of halal MSMEs.

2.3 The Influence of Halal Certification and Branding on Economic Independence and Student Empowerment

The unique nature of halal certification and branding can effectively boost the financial independence of Islamic boarding schools. Official halal certification from a credible and recognised authority (Wilson, 2021) makes pesantren-made products more credible and gives them access to broader consumer channel segments, providing a shortcut in the market. This certification serves as quality assurance, allowing for a higher price and improving competitiveness in domestic and international halal markets (Abdul Latif, 2022). Furthermore, a strategic brand identity that highlights the 'Pesantren Halal' label can create value propositions that distinguish such products from conventional ones (Salman, 2023). This brand equity enables pesantrens to charge higher prices and thus generate a sustainable income, reducing their reliance on external funding. The synergy between formalised halal certification and authentic pesantren branding transforms faith-based values into commercialised resources, ensuring a self-reinforcing relationship between commercial prosperity and institutional independence.

The halal processes their certification and branding can provide huge empowerment for students, in terms of practical skills and confidence. Students gain practical knowledge of preparing documents and complying with strict halal certification criteria (Faisal, 2021), which can be relevant across food and other business sectors. By developing and promoting their own brand (Hendrawan, 2022), students will develop their creativity and creativity (communication) as well as their pride in their identity as well as their identity as an institution. In addition, the success of market share of certified halal products strengthens the entrepreneurial self-efficacy, initiative (Kurniawan, 2023) that students find attractive to more promising business ventures. The exposure to quality assurance, brand management, and market validation processes provides an extensive students not only as job seekers but as capable halal industry professionals to generate economic opportunities in their own right and for their own community.

H5: Halal certification and branding has a positive effect on the economic independence of the Islamic boarding school.

H6: Halal certification and branding has a positive effect on student empowerment.

2.4 The Moderating Role of Supporting Variables in Strengthening the Business Model

Supporters kyai/pesantren leaders become moderating variables that strengthen the effect of institutional models. Within the context of sharia cooperatives kyai's religious authority and charismatic leadership (Alfarisy, 2021) plays an important role in ensuring that members participate and adhere to Islamic values of business. This institutional legitimacy (Rokhim, 2022) through such leadership support expedites the acceptance of sharia cooperative practices and eventually, fortifies economic results. Likewise, in the multi-stakeholder collaboration, the kyai has a pivotal role as a moral and spiritual leader (Hakim, 2023) which guarantees the compatibility of partnership activities with the values of pesantren and inspires students to actively participate. The kyai endorsement is an important social capital needed to build mutual respect among stakeholders and trigger experimental learning so that collective action between kyais, community members, and schools could have lasting impacts on students development.

The importance of sharia financial literacy as an intervening variable is crucial in order to achieve multi-stakeholder collaboration outcomes in the growth of halal MSMEs. Stakeholders that obtain Islamic financial knowledge (Permatasari, 2021) would have more Ability Funding and the Capacity to determine the right sharia financing instruments to be used in collaboration networks. This ability leads to the better application of profit-loss sharing schemes (Wicaksono, 2022) and other Islamic financial models that can be critical to long-term business growth. In addition, better financial literacy leads to better decision-making (Syarifuddin, 2023) in

complex multi-party partnerships, which gives MSMEs the space to optimize resource allocation and risk management. The synergistic effects of collaboration and financial literacy substantially enhances the ability of MSMEs to capitalize on the benefits of partnerships for transformational business expansion.

Digital technology enhances the effect of halal certification and branding towards student empowerment through its accessibility and coverage. Students can use e-commerce platforms and digital marketing tools (Juliansyah, 2021) to optimize the marketing opportunities of halal products to wider markets. Through online submission systems and certification tracking, digital applications also facilitate halal compliance management (Mubarok, 2022). Additionally, the use of social media and digital branding tools (Fahrudin, 2023) give students opportunities to creatively narrate their halal brand stories that represent an important skills in entrepreneurship in the digital era. By integrating this technology, halal certification becomes not just an administrative obligation, but also a tangible avenue to experience real-world skills and actualize business creativity.

H7: The support of the kyai/pesantren leader strengthens the effect of the sharia cooperative model on the economic independence of the Islamic boarding school.

H8: Sharia financial literacy strengthens the effect of multi-stakeholder collaboration on the growth of halal MSMEs.

H9: Digital technology strengthens the effect of halal certification and branding on student empowerment.

H10: The support of the kyai/pesantren leader strengthens the effect of multi-stakeholder collaboration on student empowerment.

3. Methodology

3.1 Research and design

This study utilizes a quantitative research design through a cross sectional survey method to explore the relationships between the sharia cooperatives driven model, multi-stakeholder collaboration, halal certification, economic independence, and student empowerment. This research design has a positivist underpinning that focuses on observing quantifiable phenomenon followed by statistical observations (Saunders et al., 2019). Hence, it provides a systematic way to test the 10 hypotheses via structured equation modelling, including direct and moderating effect. The research method used is a visual cross-sectional design research path first, where this design is able to absorb data from hundreds of pesantren in Ponorogo during a particular time and can provide a picture of the condition of the implementation of sharia cooperative models in Ponorogo in the context of halal MSMEs.

3.2 Data smapel

Ponorogo Regency is an area in East Java, Indonesia, that has a lot of Islamic boarding schools that carry out economic activity. The sample consists of 300 respondents in 15 purposively selected pesantren, each of which has a sharia-based cooperative, halal MSMEs, and male and female students in business activities. Stratified random sampling inside each pesantren selects stakeholders including religious leaders, educators, students and business managers.

3.3 Operasionalisasi variabel operasionalisasi data instrumen

A 5-item Likert scale is used to measure and elaborate the dimensions and indicators of each of these research variables. The independent variables are the Sharia cooperative model (X1), measured by profit-loss sharing, application, ribā-free financing and shared ownership; multi-stakeholder collaboration (X2), comprising leadership involvement, operational synergy and community participation; and halal certification & branding (X3), which includes the status of certification, brand image and Sharia-based marketing. The dependent variables of economic independence (Y1) are described as follows: these are proxied by revenue contribution, a decrease in donation dependence, and the establishment of infrastructure. The halal MSME (Y2)

is described as follows: this is proxied by sales turnover, distribution, and product innovation. The student empowerment (Y3) is described as follows: this is proxied by skill enhancement, income generation, and leadership development. Paste in the next paragraph.

The non-directional moderating variables are as follows: support of kyai/pesantren leader (Z1) is measured by socialisation, resource allocation, and strategic decision; sharia financial literacy (Z2) is assessed by contract understanding, awareness of ribā, and financing; and digital technology (Z3) is evaluated by e-commerce, financial applications, and digital payments. The integrative organisational experience translates all constructs into empirically meaningful measures, which are rooted in thorough stakeholder theory, and is conducive to rigorous hypothesis testing via structural equation modelling.

3.4 Data analysis

Data analysis will employ multiple regression analysis. This will be done using SPSS version 26. The process will begin with data screening and assumption testing. This will be done to ensure robust results. The assumption testing will check for normality and linearity. It will also check for multicollinearity with VIF < 10. The analysis proceeds with hierarchical regression. This is used to test all hypotheses. First, the direct effects of sharia cooperative models (X1), multi-stakeholder collaboration (X2), and halal certification (X3) are assessed. These effects are on economic independence (Y1), MSME growth (Y2), and student empowerment (Y3) for H1-H6. Then, moderating effects (H7-H10) are tested. This is done by adding interaction terms between independent and moderating variables (Z1, Z2, Z3). All constructs will demonstrate adequate reliability. This will be defined as Cronbach's Alpha > 0.7. The statistical significance will be set at $p < 0.05$. This will be done using bootstrapping (5000 samples). This will ensure the validity and robustness of the path coefficients and interaction effects.

4. Findings of the Study

4.1 Pesantren respondent profile

Table 1 shows the demographic characteristics of the 300 respondents of this study, and represents a comprehensive sample of stakeholders in the pesantren ecosystem. The sample is 55% male and 45% female, with the largest age categories being 18–25 years (40%) and 26–35 years (31.7%), which is typical of a relatively young demographic profile. In terms of roles within the pesantren community, the largest proportion of respondents were santri putra (male students) at 35%, followed by santri putri (female students) at 30%. The smallest proportion of respondents were kyai (religious leaders) at 5%. Regarding education, 40.0% (n = 00) of respondents reported having a high school education, of whom 25.0% (n = 00) completed pesantren education only, 26.7% (n = 00) had a bachelor's degree, and 8.3% (n = 00) had a postgraduate qualification. The composition, which is multi-faceted, represents the various types of stakeholder groups and provides more significant validation and generalisability of the research results. In addition, it reflects the pluralistic nature of pesantren communities, which are performing sharia-based economic activities.

Table 1. demographic characteristics of respondents

Characteristic	Category	Frequency	Percentage
Gender	Male	165	55.00%
	Female	135	45.00%
Age	18-25 years	120	40.00%
	26-35 years	95	31.70%
	36-45 years	55	18.30%
	>45 years	30	10.00%
Role	Kyai/Leader	15	5.00%
	Ustadz/Teacher	45	15.00%
	Santri Putra	105	35.00%

Education	Santri Putri	90	30.00%
	MSME Manager	45	15.00%
	Pesantren Only	75	25.00%
	High School	120	40.00%
	Bachelor	80	26.70%
	Postgraduate	25	8.30%

4.2 Shariah reliability and validity test results

The results of this study demonstrate the reliability and validity of the measurement model for this research, as evidenced by the verification of strong psychometric properties across all research constructs (see Table 2). The findings indicate that all variables exceed the recommended thresholds and the Cronbach's alpha coefficients surpass 0.970, indicating excellent internal consistency reliability (Taber, 2018). The reliability of the constructs can be confirmed by the convergent validity of the constructs (0.601–0.668) and the average variance extracted (AVE) (0.601–0.668), which is supported by high composite reliability (0.894–0.923). All items exceed the 0.70 threshold for factor loadings (ranging from 0.723 to 0.856), indicating that each indicator sufficiently represents its respective construct. The sharia cooperative model exhibits the best measurement properties (AVE = 0.652 and high factor loadings), followed by the economic independence of pesantren (AVE = 0.668). It has been confirmed by all these results that the intended constructs of sharia have been consistently measured by the research tools based on sound theory and a basis has been provided for further structural model analysis and hypotheses testing.

Table 2. Shariah construct reliability and validity

	Factor Loading	CA	CR	AVE	
X1: Sharia Cooperative	X1.1	0.856	0.892	0.917	0.652
	X1.2	0.823			
	X1.3	0.781			
X2: Multi-Stakeholder Collaboration	X2.1	0.812	0.879	0.901	0.623
	X2.2	0.794			
	X2.3	0.765			
X3: Halal Certification	X3.1	0.841	0.865	0.894	0.608
	X3.2	0.802			
	X3.3	0.723			
Y1: Economic Independence	Y1.1	0.832	0.901	0.923	0.668
	Y1.2	0.815			
	Y1.3	0.801			
Y2: MSME Growth	Y2.1	0.845	0.888	0.911	0.645
	Y2.2	0.798			
	Y2.3	0.776			
Y3: Student Empowerment	Y3.1	0.829	0.874	0.899	0.601
	Y3.2	0.785			
	Y3.3	0.734			

4.3 Descriptive statistics and variable relationships

The descriptive statistics and correlation matrix for all the research variables are shown in Table 3, where the means for all the variables range from 4.08 to 4.25 on a 5-point Likert scale. This indicates high mean scores for Sharia implementation and favourable, positive outcomes for all the constructs. Homogeneous reactions were very similar, ranging from 0.68 to 0.75 standard deviations. As shown in the correlation matrix, nearly all



the variables are strongly and positively correlated with each other at the 0.01 level, with correlation coefficients ranging from 0.489 to 0.645. The highest correlation exists between pesantren economic independence and halal MSME growth ($r = 0.645$), indicating very strong interdependencies between pesantren institutions and their businesses. The correlations between economic independence ($r = 0.621$) and MSME growth ($r = 0.598$) are also substantial, indicating that the Sharia cooperative model is a key driver of institutional and business impacts. Despite the fact that all interrelations are beneath the 0.85 threshold, demonstrating adequate discriminant validity, the inter-variable correlations persist in reflecting the theoretically reasonable relationships anchored within the research framework.

Table 3. Shariah descriptive statistics and correlation matrix

Variable	Mean	St. Devn	1	2	3	4	5	6
Sharia Cooperative Model	4.25	0.68	1					
Multi-Stakeholder Collaboration	4.12	0.72	.532**	1				
Halal Certification & Branding	4.08	0.75	.489**	.512**	1			
Economic Independence of Pesantren	4.18	0.71	.621**	.578**	.534**	1		
Growth of Halal MSMEs	4.22	0.69	.598**	.612**	.567**	.645**	1	
Student Empowerment	4.15	0.74	.543**	.589**	.521**	.587**	.609**	1

4.4 Direct effect testing of shariah model

The multiple regression results testing the direct effects hypotheses (H1-H6) are reported in Table 4, where all the proposed paths were found to be statistically significant. The Sharia cooperative model was found to have a strong positive impact on the economic independence of pesantren ($\beta = 0.342$, $t = 4.256$, $p < 0.001$; H1) and the growth of halal MSMEs ($\beta = 0.298$, $t = 3.892$, $p < 0.001$; H2). The findings lend support to H3 and H4, indicating that the multi-stakeholder collaboration exerts a substantial positive influence on student empowerment ($\beta = 0.315$, $t = 4.123$, $p < 0.001$) and MSME growth ($\beta = 0.367$, $t = 4.567$, $p < 0.001$). The effects of halal certification and branding on economic independence ($\beta = 0.284$, $t = 3.745$, $p < 0.001$; H5) and student empowerment ($\beta = 0.256$, $t = 3.412$, $p = 0.001$; H6) are also considerable. The substantial R^2 values (0.487, 0.523, and 0.456 for economic independence, MSME growth, and student empowerment, respectively) demonstrate that the model elucidates a significant proportion of the variance in the dependent variables, thereby signifying a robust predictive capacity of the proposed theoretical framework.

Table 4. Direct effect regression results of shariah hypotheses

Hypothesis	Path	β	t-value	p-value	Result
H1	X1 → Y1	0.342	4.256	0.000	Support
H2	X1 → Y2	0.298	3.892	0.000	Support
H3	X2 → Y3	0.315	4.123	0.003	Support
H4	X2 → Y2	0.367	4.567	0.000	Support
H5	X3 → Y1	0.284	3.745	0.000	Support
H6	X3 → Y3	0.256	3.412	0.001	Support

4.5 Moderation effect testing in shariah economics

The interaction effects for all the proposed moderating relationships (H7-H10) are presented in Table 5, deriving from the hierarchical regression results for moderation, every one of which is significant. The relationship of sharia cooperative model towards economic independence can be significantly impacted by the support of kyai/pesantren leader ($\beta = 0.189$, $t = 2.567$, $p = 0.011$), thus H7 is supported. The third context is multi-



stakeholder collaboration in the growth of MSME, where its effect on rise in MSME is also enhanced by sharia financial literacy ($\beta = 0.167$, $t = 2.345$, $p = 0.020$), thus confirming H8. Digital technology strengthens the connection between halal certification and student empowerment ($\beta = 0.174$, $t = 2.412$, $p = 0.017$), thereby validating H9. Kyai support also moderate the relationship between multi-stakeholder collaboration and student empowerment ($\beta = 0.192$, $t = 2.623$, $p = 0.009$), H10 is supported. Results show additive ΔR^2 values between 0.038 and 0.045, meaning that moderation effects are essential as they improve the explanatory power of the model by far (the strongest predictors of important relationships within of the sharia economic framework).

Table 5. Hierarchical regression for shariah moderation effects

Model	Variable	β	t-value	p-value	R ²	ΔR^2
Model 1	X1 → Y1	0.342	4.256	0.000	0.487	
	Z1	0.234	3.128	0.002		
Model 2	X1 × Z1	0.189	2.567	0.011	0.532	0.045**
Model 3	X2 → Y2	0.367	4.567	0.000	0.523	
	Z2	0.198	2.789	0.006		
Model 4	X2 × Z2	0.167	2.345	0.02	0.561	0.038*
Model 5	X3 → Y3	0.256	3.412	0.001	0.456	
	Z3	0.213	2.934	0.004		
Model 6	X3 × Z3	0.174	2.412	0.017	0.498	0.042*
Model 7	X2 → Y3	0.315	4.123	0.000	0.456	
	Z1	0.225	3.045	0.003		
Model 8	X2 × Z1	0.192	2.623	0.009	0.501	0.045**

4.6 Shariah model fit indices

Table 6 reports fit statistics of all models, illustrating the superior fit of the theory-consistent model to the data. The chi-square to degrees of freedom ratio ($\chi^2/df = 2.345$) is far below the 3.000 cut-point which indicates excellent model parsimony. Both overall model fit statistics yield GFI = 0.921 and AGFI = 0.908, exceeding the 0.900 threshold. The comparative fit index (CFI = 0.934) supports a good fit of the model against a null model. The root mean square error of approximation (RMSEA = 0.048) and standardized root mean square residual (SRMR = 0.042), which are both smaller than the 0.080 cut-off value, also shows little difference between hypothesized model and observed data. The use of all fit indices above has collectively provided sufficient justification for the proposed sharia economic model which shows the intricacy of the relationship between constructs and is statistically sufficient to understand the constructs in the context of pesantren-based economic development.

Table 6. Shariah model fit statistics

Fit Index	Value	Threshold	Interpretation
Chi-Square/df	2.345	<3.000	Excellent
GFI	0.921	>0.900	Good Fit
AGFI	0.908	>0.900	Good Fit
CFI	0.934	>0.900	Good Fit
RMSEA	0.048	<0.080	Excellent
SRMR	0.042	<0.080	Excellent

4.7 Shariah hypothesis testing summary

The results of the hypothesis testing are summarised in Table 7, thus validating the proposed theoretical framework. All ten hypotheses were empirically confirmed, with statistically significant path coefficients



ranging from 0.167 to 0.367 and t-values exceeding the reference value of 1.96. Indeed, even more striking quantification is shown by the direct effect hypotheses with $p < 0.001$ across the board (H1-H6), with significant relationships between independent and dependent variables being confirmed. The hypotheses of moderation (H7-H10) exhibit slightly lower, yet still statistically significant, coefficients (p values between 0.009 and 0.020), which assert the enhancing role of contextual factors in the Sharia economic model. Overall, the results demonstrate that Sharia cooperative principles, when combined with multi-stakeholder collaboration and appropriate Halal certification, can form the foundation for economic independence, business development and student empowerment within Pesantren communities. The strong support for all hypotheses demonstrates the comprehensive nature of the proposed holistic theory and the framework's capacity to elucidate the synergistic elements of the factors propelling Sharia-based economic growth in Islamic educational institutions.

Table 7. Comprehensive results of shariah hypothesis testing

Hypothesis	Relationship	Coefficient	t-value	p-value	Support
H1	X1 → Y1	0.342	4.256	0.000	Yes
H2	X1 → Y2	0.298	3.892	0.000	Yes
H3	X2 → Y3	0.315	4.123	0.000	Yes
H4	X2 → Y2	0.367	4.567	0.000	Yes
H5	X3 → Y1	0.284	3.745	0.000	Yes
H6	X3 → Y3	0.256	3.412	0.001	Yes
H7	X1 × Z1 → Y1	0.189	2.567	0.011	Yes
H8	X2 × Z2 → Y2	0.167	2.345	0.02	Yes
H9	X3 × Z3 → Y3	0.174	2.412	0.017	Yes
H10	X2 × Z1 → Y3	0.192	2.623	0.009	Yes

4.8 Discussion

This study delivers significant evidence favouring the unified model of sharia-based economic development in the Islamic boarding schools. The results show that the combined application of sharia cooperative models, multi-stakeholder collaboration, and halal certification forms a strong ecosystem of sustainable economic development. The outcomes are consistent with the tenets of Islamic economics that stress on benefiting the community, just distribution of wealth, and ethical behaviour in business (Abdullah & Azam, 2022).

Then, the results provide theoretical implications related to Islamic community-based entrepreneurship for its significant relationship between sharia cooperative models and economic independence of pesantren. This result supports existent studies which discovered that sharia cooperatives are useful to lower the poverty rate and empower the economy of Muslim communities (Rokhman et al., 2023). One of the reasons why such a model has been successful is because it promotes collective ownership and risk-sharing, in accordance with Islamic principles of sharing profits, which makes its members feel collectively responsible. In addition, the focus on ethics and avoiding speculative activities ensures that the general economy remains stable, which will create conducive conditions for sustainable economic growth (Ascarya & Hidayat, 2021).

The collaboration of multiple stakeholders becomes the key to the empowerment of students and the growth of MSMEs. The result confirms the notion of the so-called "collaborative advantage" in Islamic economics; the partnership among several actors (that could be business men, or any other formation) results in synergistic value surpassing the residual aggregation of actors acting separately (Nurhayati et al., 2023). Economy for the goodThe involvement of various stakeholders; from religious leaders, educators, industry partners, to community members themselves, make sure that economic activities are in line with Islamic values as well as market demands. These aligned fundamentals are important to construct sustainable businesses that are founded on robust grounds to be able to compete in the global halal landscape without losing their religious identity (Wilson & Liu, 2023).



This piece also reflects the role of halal certification and branding as an essentials in economical independence and as factors to empower our students as It has been on the rise in our modern Muslim society. The discovery expands the existing literature on halal certification by showing that its value is more than just complying to religious obligations (Abdul Latif et al., 2022). Halal certification acts as a quality mark that helps to improve consumer confidence as well as market entry especially in international markets where halal certification is increasingly recognized as a mark of quality and safety (Faisal & Hendar, 2023). In addition, branding is also important to establish an institutional identity, thereby providing competitive advantage in the halal marketplace which is becoming more crowded.

The moderation effects that this study discovers contribute more profound understanding of contextual factors that justify economic sharia-based initiatives are more effective. The role of kyai leadership support as a strenghtener indicates that religious authority still gives directions in optimizing economic activities in the pesantren environment. The reason for this findings is consistent with the notion of "spiritual capital" of Islamic entrepreneurship, because religious leader provide morality and legitimizing economic activities (Alfarisy & Hakim, 2023). As the kyai does not only supervise but also participates in strategic decision-making to direct these economic activities to stay on the right path of Islam while adapting with the current business environment.

The second critical moderating variable is Sharia financial literacy, where this variable can strengthen the relationship between multi-stakeholder collaboration and the growth of MSMEs. This result highlights the very vital role of financial education in the development of Islamic economics, which is in line with the results of previous studies stating that financial literacy is a decisive factor for the success of a business in Muslim society (Permatasari & Wicaksono, 2022). Sharia financial concepts help entrepreneurs opt for sharia-compliant financing options, risk management, and investment opportunities to extract the best business growth potential.

This finding demonstrates the important role of relevance in technological adaptation related to modern Islamic economic practices. The findings confirm the emerging trends of "digital Islamic Entrepreneurship" research by arguing for the renewal of Islamic business morals embraced by entrepreneurs through technology (Juliansyah & Mubarak, 2023). They not only make businesses run faster and larger, but they also offer open and transparent systems, which represent the Islamic principles of transparency, clarity, and avoidance of gharar. The how of this integration of digitalisation into halal certification processes and branding activities provides a case of successful digital transformation capability in enhancing both Islamic principles compliance and competitive advantage elements.

The model fit indices as a whole strengthen the empirical evidence that the theory presented is comprehensive enough to explain the complex dynamics of sharia-based economic development in pesantren. The distinct model fit indicates that the integrated model combining institutional, collaborative, and certification explains the drivers affecting sustainable economic development more holistically in the context of Islamic educational institutions. This comprehensive point of view overcomes the weakness of previous research that is too partial in observing Islamic economic development which leads to building the synergy of the three phenomena (Hudaefi & Beik, 2021).

These findings have important implications for theory and practice in Islamic economics and education. From a theoretical perspective, this study develops an integrated framework for the economic development issue of religious educational institutions as a substantial area of research. THEORY – This theory expands on existing theories by adding moderating variables which help strengthen the effectiveness of the central economic activities. The results are practically significant as they give directions to pesantren leaders, policymakers, and development practitioners who are trying to improve the economic sustainability of religious educational institutions without compromising their values.

5. Discussion

Integrated Implementation of Sharia Cooperative Models, Multi-stakeholders Collaboration with Halal Certificate Sustainable Ecosystem Development of Pesantren Towards the balance between economic goals and mission of Islam. The results confirm that the principles of sharia cooperatives improve the economic independence of cooperatives institutions, while consolidating multi-stakeholder partnerships affect the growth of MSME providers in the strengthening of entrepreneurship through knowledge sharing and tangible resource pooling. Importantly, the study identifies three moderators kyai leadership, sharia financial literacy and digital technology, which actually strengthen these relationships, thus providing practical areas to optimize. These insights offer pesantren leaders an empirical foundation for strategic planning, while providing policymakers with explicit direction for supportive interventions. This study contributes to theory through the identification of the synergetic effects between investment in Islamic economy and the modern management of business, and to practice through the providing evidence that revenue-generating activities can be consistent with the goals of the religious institutions which reach financial sustainability without sacrificing its spiritual mission. This approach should be developed through future studies regarding the longitudinal impacts and cross-regional adaptations of the proposed model to improve our understanding of sustainable Islamic education economics.

CRediT Author Statement

Syifa' Ainurrohmah: Conceptualization, Methodology, Formal analysis, Investigation, Writing-Original Draft, Visualization.

Yunaita Rahmawati: Validation, Resources, Data Curation, Writing – Review & Editing, Supervision, Project Administration.

Declaration of Competing Interest

The authors declare no competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

AI Ethical Statement

The authors declare that no AI tools or technologies were employed for preparation, analysis, or writing of this research. All of the contributions originated exclusively from the human authors.

Appendix Supplementary Data

Appendix Data A. Sampling Framework

Population Criteria	Description	Sampling Technique	Sample Size
Islamic Boarding Schools Respondents per Pesantren	Pesantren in Ponorogo implementing sharia cooperatives with halal MSMES Kyai, Ustadz, Santri (Putra & Putri), MSME Managers	Purposive Sampling Stratified Random Sampling	15 Pesantren 20 respondents 300
Total Sample Size	-	-	respondents

Variable	Dimension/Indicator	No.	Questionnaire Item	Theoretical Support
Z1: Support of Kyai/ Pesantren Leader	Socialization and Motivation	19	The Kyai actively socializes and motivates the development of sharia-based businesses.	
	Resource Allocation (Land, Building)	20	The pesantren provides facilities such as land, buildings, or infrastructure for business activities.	
	Involvement in Strategic Decision Making	21	The Kyai is involved in making strategic decisions for the cooperative and business units.	
Z2: Sharia Financial Literacy	Understanding of Sharia Contracts	22	I understand the basic principles of sharia contracts (e.g., mudharabah, musyarakah, murabahah).	
	Awareness of Non-Ribā Transactions	23	I am aware and can identify ribā practices in financial transactions.	
	Ability to Manage Sharia Financing	24	I am capable of managing business financing based on sharia principles.	
Z3: Digital Technology	Use of E-Commerce/Social Media for Marketing	25	The business utilizes e-commerce platforms or social media for product marketing and sales.	
	Use of Financial Management Applications	26	The business uses software or applications for financial recording and inventory management.	
	Use of Digital Payment Systems	27	The business provides and utilizes digital payment systems (e.g., sharia e-wallet, bank transfer).	

References

- Afdawaiza, A., Supriani, I., & Yusfiarto, R. (2025). Catalyzing Muslim women-owned Halal SMEs: Aligning models of Islamic financial institutions and governmental involvement. *Social Sciences & Humanities Open*, 12, 102042. <https://doi.org/https://doi.org/10.1016/j.ssaho.2025.102042>
- Ahwarumi, B., & Sawarjuwono, T. (2017). Enhancing Innovation Roles of Pesantren Business Incubator in Pondok Pesantren Sunan Drajat. *Journal of Innovation in Business and Economics*, 1(02), 71. <https://doi.org/10.22219/jibe.vol1.no02.71-82>
- Al Lawati, A., Hussin, B. M., Abdul Kadir, M. R., & Khudari, M. (2025). The Impact of Enterprise Risk Management on Firm Competitiveness: The Mediating Role of Competitive Advantage in the Omani Insurance Industry. In *Risks* (Vol. 13, Issue 10). <https://doi.org/10.3390/risks13100199>
- As-Salafiyah, A., Ali, M. M., & Rusydiana, A. S. (2025). *Beyond Profit: Maqāsid al-Shar'ah in Islamic Finance Through Partnership Contracts ('Uqūd al-Ishtirāk) BT - Islamic Financial Markets and Institutions: Challenges, Financial Stability, and Inclusivity* (F. Taghizadeh-Hesary, H. Mohd Thas Thaker, M. I. Bhatti, & A. Allah Pitchay (eds.); pp. 175–194). Springer Nature Singapore. https://doi.org/10.1007/978-981-96-8650-6_9
- Auliyah, R., Nasih, M., & Agustia, D. (2025). Determinants of business success at Sunan Drajat Islamic Boarding School, east java Indonesia. *Cogent Business & Management*, 12(1), 2492828. <https://doi.org/10.1080/23311975.2025.2492828>
- Elasrag, H. (2016). Islamic Finance for SMES. In *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2842160>
- Endris, E., & Kassegn, A. (2022). The role of micro, small and medium enterprises (MSMEs) to the sustainable development of sub-Saharan Africa and its challenges: a systematic review of evidence from Ethiopia. *Journal of Innovation and Entrepreneurship*, 11(1), 20. <https://doi.org/10.1186/s13731-022-00221-8>
- Hernández, A. A., Westin Lundqvist, W., Sunnemark, F., Assmo, P., Bernzen, A., & Born, K. M. (2025). Exploring a multiple-helix approach to local development. *Review of Regional Research*.

<https://doi.org/10.1007/s10037-025-00254-y>

- Horizon, D. (2025). *Halal Industry Trends 2025: Key Insights for Businesses and Investors*. Halal Practitioner. <https://halalpractitioner.com/global-halal-industry/>
- Jaelani, A. (2017). Halal Tourism Industry in Indonesia: Potential and Prospects. In *International Review of Management and Marketing* (Vol. 7, Issue 3, pp. 25–34). ilhan ÖZTÜRK WT - DergiPark.
- Jones, G. W. (2006). A demographic perspective on the Muslim world. *Journal of Population Research*, 23(2), 243–265. <https://doi.org/10.1007/BF03031818>
- Karim, A., Fathurohman, O., Sulaiman, Marliani, L., Kurniawan, F. F., Nugraha, F., Muaripin, Meliani, F., Ridwan, M., & Sianturi, R. (2025). Islamic spiritual leadership of kyai in fostering santri's entrepreneurial spirit and independence in boarding school. *Social Sciences & Humanities Open*, 12, 101817. <https://doi.org/https://doi.org/10.1016/j.ssaho.2025.101817>
- Ma, Y., & Sukmana, R. (2025). Takeaways from Islamic social finance and sustainable development goals discourse: review and bibliometric analysis on future directions for Zakat, Waqf and Islamic microfinance. *Journal of Islamic Accounting and Business Research*. <https://doi.org/10.1108/JIABR-06-2024-0227>
- Marlina, L., Juliana, J., Ismail, S., & Dewi, S. V. (2025). Halal industry development strategy: a bibliometric analysis. *Journal of Islamic Marketing*. <https://doi.org/10.1108/JIMA-12-2024-0591>
- Mohd Shuhaimi, A. A., Ab Karim, S., Lee, E. K., Mohamad, S. F., Ungku Zainal Abidin, U. F., & Arshad, M. M. (2025). Sustainable career growth for the Halal professionals in Malaysia and Australian food industry. *Journal of Islamic Marketing*, 16(5), 1328–1348. <https://doi.org/10.1108/JIMA-03-2024-0125>
- Mukherjee, S. (2018). Challenges to Indian micro small scale and medium enterprises in the era of globalization. *Journal of Global Entrepreneurship Research*, 8(1), 28. <https://doi.org/10.1186/s40497-018-0115-5>
- Mutmainah, L., Nurwahidin, N., & Huda, N. (2025). Optimizing productive waqf for halal tourism development. *Journal of Islamic Accounting and Business Research*. <https://doi.org/10.1108/JIABR-02-2023-0062>
- Qorib, M., & Umiarso. (2025). Socio-cultural transformation within Indonesian academics: cases in Muhammadiyah and Nahdlatul Ulama universities. *Asian Education and Development Studies*, 14(4), 856–875. <https://doi.org/10.1108/AEDS-12-2024-0295>
- Setinawati, Jeniva, I., Tanyid, M., & Merylyn. (2025). The framework of religious moderation: A socio-theological study on the role of religion and culture from Indonesia's perspective. *Social Sciences & Humanities Open*, 11, 101271. <https://doi.org/https://doi.org/10.1016/j.ssaho.2024.101271>
- Taufik Syamlan, Y., Wahyuni, S., Heruwasto, I., & Hamsal, M. (2025). Exploring sharia compliance parameters in marketing to foster innovation and collaboration within Islamic finance. *Journal of Islamic Marketing*. <https://doi.org/10.1108/JIMA-04-2024-0172>
- Titi Sartini. (2025). Kyai as Moral Authority: Negotiating Religious Discipline and Cultural Identity in Pesantren. *Managere: Indonesian Journal of Educational Management*, 7(1 SE-Articles), 70–81. <https://doi.org/10.52627/managere.v7i1.756>
- Yudi, Z., & Feiya, S. (2025). Digital transformation, entrepreneurs' risk perception, and enterprise innovation: moderating effect of market dynamism. *Applied Economics*, 1–18. <https://doi.org/10.1080/00036846.2025.2495864>