

# Modeling the Impact of Islamic Religious Education on Halal Ecosystem Awareness among Indonesian Secondary Students: A PLS-SEM Approach

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## ABSTRACT

The rapid expansion of the halal ecosystem has increased the need for educational strategies that cultivate halal awareness among younger generations. However, existing studies have primarily focused on consumer behavior and higher education, while empirical evidence regarding the role of Islamic Religious Education (IRE) in developing halal ecosystem awareness among secondary school students remains limited. This study examines the influence of IRE effectiveness on students' cognitive, affective, and behavioral halal ecosystem awareness. A quantitative explanatory design was employed involving 370 students from public, Islamic, vocational, and private secondary schools in West Java, Indonesia, selected through purposive sampling. Data were collected using a structured questionnaire and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS. The measurement model was evaluated through validity and reliability testing, followed by structural model assessment using bootstrapping procedures. The findings indicate that IRE effectiveness positively and significantly influences cognitive ( $\beta = 0.451, p < 0.001$ ), affective ( $\beta = 0.486, p < 0.001$ ), and behavioral ( $\beta = 0.435, p < 0.001$ ) halal ecosystem awareness. The strongest effect was observed in the affective dimension, highlighting the role of IRE in strengthening students' ethical commitment and value internalization. Although the explanatory power of the model was modest ( $R^2 = 0.189-0.236$ ), the results confirm that IRE constitutes an important educational mechanism for fostering halal awareness. This study contributes to Islamic education literature by conceptualizing halal ecosystem awareness as a multidimensional educational outcome and demonstrating the role of IRE in shaping students' knowledge, attitudes, and behaviors. The findings suggest that contextual, experiential, and value-oriented learning approaches should be integrated into secondary education to strengthen halal literacy and support sustainable halal ecosystem development.

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## 1. INTRODUCTION

The rapid expansion of the global halal ecosystem has transformed the concept of halal from a matter of religious dietary compliance into a multidimensional framework encompassing ethical consumption, sustainable production, supply chain management, tourism, pharmaceuticals, cosmetics, finance, and public governance (Haleem et al., 2020; Ibrahim et al., 2022). As halal industries continue to grow, supported by increasing Muslim populations and heightened consumer awareness, the demand for individuals who possess comprehensive halal literacy has become increasingly important. Consequently, educational institutions are expected to play a strategic role in preparing younger generations who not only understand the halal principles conceptually but are also capable of applying them consistently in everyday life. Within this context, education functions as a long-term mechanism for developing ethical awareness, responsible decision-making, and value-oriented behavior that supports the sustainability of the halal ecosystem.

Recent literature suggests that halal awareness should no longer be interpreted merely as consumers' recognition of halal certification or their intention to purchase halal products. Instead, contemporary scholars conceptualize halal awareness as a multidimensional construct involving cognitive understanding, affective commitment, and behavioral implementation (Aslan, 2023; Qureshi et al., 2023). The cognitive dimension reflects individuals' knowledge of halal concepts and certification systems, the affective dimension concerns personal beliefs, ethical responsibility, and emotional attachment toward halal values, while the behavioral dimension represents the actual practice of halal-oriented behavior in everyday activities. Such a multidimensional perspective is particularly relevant in educational settings because schools are expected to cultivate not only students' knowledge but also their attitudes and behaviors through structured learning experiences.

Although halal-related research has expanded considerably during the past decade, existing studies have predominantly focused on consumer purchasing behavior, halal certification, halal tourism, marketing strategies, and university students or adult consumers (Haleem et al., 2020; Ibrahim et al., 2022). Numerous empirical investigations have examined the influence of religiosity, halal knowledge, trust, subjective norms, and purchase intention on halal consumption decisions (Albra et al., 2023; Sari & Susanti, 2025). However, relatively little attention has been devoted to understanding how halal awareness develops among secondary school students during adolescence, despite this developmental stage representing a critical period for identity formation, moral reasoning, and long-term behavioral development. More importantly, previous studies generally position halal awareness as an outcome of religiosity or consumer behavior without examining the contribution of formal educational processes as an explanatory mechanism.

This gap is significant because schools represent one of the earliest institutional environments where Islamic values are systematically introduced and reinforced through formal instruction. In Indonesia, Islamic Religious Education (IRE) is a compulsory subject designed not only to transmit religious knowledge but also to cultivate moral character, ethical reasoning, and socially responsible behavior. Accordingly, IRE has the potential to become an important institutional mechanism for fostering halal ecosystem awareness among adolescents. Nevertheless, empirical evidence regarding whether the effectiveness of IRE actually contributes to students' cognitive, affective, and behavioral understanding of halal remains scarce. Existing educational studies tend to discuss Islamic Religious Education in relation to character education, religiosity, or moral development, while its role in promoting halal ecosystem awareness has received limited scholarly attention (Navilah et al., 2024; Nurdin et al., 2024). Consequently, an important theoretical and empirical gap remains regarding the educational contribution of IRE to halal awareness formation.

The present study addresses this gap by integrating perspectives from Social Learning Theory and Transformative Learning Theory. Social Learning Theory argues that individuals acquire knowledge, attitudes, and behaviors through observation, modeling, reinforcement, and interaction within their social environment (Bandura, 1986). In classroom contexts, teachers function as significant role models who influence students not only through instructional delivery but also through demonstrations of

ethical conduct and everyday practices. Meanwhile, Transformative Learning Theory explains that meaningful learning occurs when individuals critically reflect upon their existing assumptions, leading to changes in perspectives, values, and behaviors (Mezirow, 1997). Together, these theoretical perspectives suggest that effective Islamic Religious Education should extend beyond knowledge transmission by encouraging reflection, value internalization, and behavioral transformation related to halal principles. Therefore, the influence of IRE is expected to be observable across the cognitive, affective, and behavioral dimensions of halal ecosystem awareness rather than being limited to conceptual understanding alone.

Based on these theoretical foundations, this study conceptualizes halal ecosystem awareness as a multidimensional construct comprising cognitive, affective, and behavioral dimensions and empirically examines the effectiveness of Islamic Religious Education as its principal explanatory variable. Unlike previous studies that primarily emphasize consumer behavior or religiosity, this research investigates the educational process itself as a determinant of halal awareness among students. Furthermore, by involving respondents from public senior high schools, Islamic senior secondary schools, vocational schools, and private secondary schools, the study captures a broader educational context that reflects the diversity of Indonesia's secondary education system.

Accordingly, this study investigates the influence of Islamic Religious Education effectiveness on students' cognitive, affective, and behavioral halal ecosystem awareness among Indonesian secondary school students using Partial Least Squares Structural Equation Modeling (PLS-SEM). The study contributes theoretically by extending the application of Social Learning Theory and Transformative Learning Theory to halal education and by positioning halal ecosystem awareness as a multidimensional educational outcome. Practically, the findings are expected to provide evidence-based recommendations for curriculum developers, educators, and policymakers seeking to strengthen halal ecosystem education through more contextual, experiential, and value-oriented learning approaches within secondary education.

Based on the proposed conceptual framework, the study formulates the following hypotheses:  
H1: Islamic Religious Education positively influences students' cognitive halal ecosystem awareness.  
H2: Islamic Religious Education positively influences students' affective halal ecosystem awareness.  
H3: Islamic Religious Education positively influences students' behavioral halal ecosystem awareness.

## 2. METHODS

This research employed a quantitative explanatory design to analyze the relationship between Islamic Religious Education effectiveness and halal ecosystem awareness among secondary school students. The study involved respondents from four educational institutions in West Java Province, namely SMAN 3 Tasikmalaya, MAN 2 Bandung, SMKN 7 Bandung, and SMA Pasundan Bandung. These schools represent different educational backgrounds, including public, Islamic, vocational, and private secondary education.

Participants were selected purposively because the study required respondents who had previously participated in Islamic Religious Education learning activities and had been introduced to halal and *thayyib* concepts in classroom instruction. Using the Slovin formula with a 5% margin of error, the minimum required sample size was calculated before data collection (Adam, 2020). To improve statistical robustness and strengthen SEM estimation, the final number of respondents was expanded to 370 students.

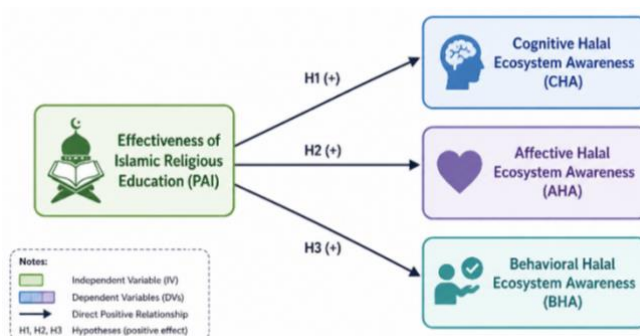
The research instrument consisted of structured questionnaire items developed from previous halal awareness and religious education studies. Several contextual modifications were made to ensure suitability for secondary education settings. The Islamic Religious Education construct included indicators related to instructional quality, teacher competence, learning relevance, and teaching approaches. Meanwhile, halal ecosystem awareness was divided into cognitive, affective, and behavioral dimensions.

Prior to the main survey, the questionnaire underwent expert review involving specialists in Islamic education and halal studies. A pilot test was subsequently conducted to evaluate item clarity and measurement consistency. Minor revisions were implemented before the instrument was distributed on a larger scale. Data collection took place between February and March 2026. Participation was voluntary, and respondents were informed that all responses would remain anonymous and used exclusively for academic purposes.

The collected data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS software. This analytical approach was selected because it is appropriate for predictive studies involving multiple latent variables and complex structural relationships (J. F. Hair et al., 2022). The analysis consisted of two major stages: evaluation of the measurement model and assessment of the structural model.

Convergent validity was assessed through outer loading and Average Variance Extracted (AVE) values, while discriminant validity was examined using the Fornell–Larcker criterion and HTMT ratio. Reliability evaluation relied on Cronbach’s Alpha and Composite Reliability values (Hair, J. F., Jr., Sarstedt, M., Ringle, C. M., & Gudergan, 2023; Henseler et al., 2015; Sarstedt et al., 2021). After confirming the adequacy of the measurement model, hypothesis testing was conducted through bootstrapping procedures to determine the significance of the structural relationships. This approach enables the study to assess the predictive relationships between Islamic Religious Education effectiveness and the cognitive, affective, and behavioral dimensions of halal ecosystem awareness, in line with established methodological standards in PLS-SEM research (J. Hair & Alamer, 2022).

The conceptual research model illustrating the relationships between Islamic Religious Education effectiveness and the dimensions of halal ecosystem awareness is presented in Figure 1



**Figure 1.** The Conceptual Research Model

### 3. FINDINGS AND DISCUSSION

#### 3.1 Findings

##### 3.1.1 Demographics of Respondents

Table 1 illustrates the demographic profile of the respondents participating in this research, which involved 370 secondary school students. The respondent composition was dominated by female students, reflecting stronger participation in questionnaire-based academic surveys. Data collection was conducted in four educational institutions in West Java Province, including SMAN 3 Tasikmalaya, MAN 2 Bandung, SMKN 7 Bandung, and SMA Pasundan Bandung. The inclusion of public, Islamic, vocational, and private schools was intended to capture diverse educational contexts among students who had previously engaged in Islamic Religious Education learning and had been introduced to halal and thayyib principles within formal classroom instruction.

In terms of academic level, the respondents were drawn from Grade X and Grade XI students. This distribution enabled the study to capture differences in halal ecosystem awareness based on students' academic maturity and educational experiences. Overall, the respondent profile demonstrates sufficient variation in gender, school background, and grade level, supporting the relevance of the analysis within the secondary education context.

**Table 1.** Profile of Respondents

| Demographics         | Frequency  | Percentage  |
|----------------------|------------|-------------|
| <b>Gender</b>        |            |             |
| Male                 | 155        | 41.9%       |
| Female               | 215        | 58.1%       |
| <b>Total</b>         | <b>370</b> | <b>100%</b> |
| <b>School Origin</b> |            |             |
| SMKN 7 Bandung       | 138        | 37.3%       |
| SMAN 3 Tasikmalaya   | 91         | 24.6%       |
| MAN 2 Bandung        | 103        | 27.8%       |
| SMA Pasundan Bandung | 38         | 10.3%       |
| <b>Total</b>         | <b>370</b> | <b>100%</b> |
| <b>Grade Level</b>   |            |             |
| Grade X              | 200        | 54.1%       |
| Grade XI             | 170        | 45.9%       |
| <b>Total</b>         | <b>370</b> | <b>100%</b> |

Source: Field survey, 2025.

The large proportion of respondents from vocational schools suggests that students enrolled in skill-oriented education are actively engaged in Islamic Religious Education related to halal values. A higher proportion of female respondents also reflects strong participation in ethics- and value-oriented learning topics. Furthermore, the inclusion of both Grade X and Grade XI students provides insight into the development of halal ecosystem awareness across different stages of secondary education.

### 3.1.2 Outer Model Evaluation

The present study applied a reflective measurement framework to analyze the association between latent variables and their corresponding indicators. Evaluation of the measurement model was performed through the Partial Least Squares Structural Equation Modeling (PLS-SEM) technique, which is widely recognized as suitable for predictive-oriented studies involving multiple latent constructs and complex model structures (Black & Babin, 2019; J. F. Hair et al., 2022).

Assessment of convergent validity focused on outer loading coefficients and Average Variance Extracted (AVE) values. In accordance with recommended PLS-SEM standards, acceptable convergent validity is achieved when indicator loadings are higher than 0.70 and AVE values surpass 0.50 (Edeh et al., 2022). As reported in Table 2, all indicators fulfilled these criteria, with loading factors exceeding the required threshold and all constructs producing AVE values above 0.50. These results indicate that the indicators successfully reflect the constructs they were intended to measure.

To verify discriminant validity, the analysis employed both the Fornell–Larcker criterion and the Heterotrait–Monotrait Ratio (HTMT). The findings demonstrate that the square root of AVE for each construct remained higher than the inter-construct correlations, while HTMT scores stayed below the recommended cut-off value of 0.85. This outcome confirms adequate differentiation among the constructs and indicates the absence of substantial conceptual redundancy.

Reliability testing was subsequently carried out using Cronbach's Alpha and Composite Reliability indices. All latent variables obtained reliability scores above 0.70, demonstrating strong internal consistency among the measurement items (Sarstedt et al., 2021). Taken together, the results of

the outer model assessment suggest that the measurement model fulfills the commonly accepted standards of validity and reliability in PLS-SEM research.

**Table 2.** Convergent Validity

| Variables                                          | Sample Statement                                                                                | Item Indicator                          | Loading Factor | AVE   | Conclusion |
|----------------------------------------------------|-------------------------------------------------------------------------------------------------|-----------------------------------------|----------------|-------|------------|
| Effectiveness of Islamic Religious Education (PAI) | Islamic Religious Education helps me understand halal and <i>thayyib</i> concepts in daily life | Quality of learning materials           | 0.782          | 0.646 | Valid      |
|                                                    |                                                                                                 | Teaching methods                        | 0.839          |       | Valid      |
|                                                    |                                                                                                 | Teacher competence                      | 0.799          |       | Valid      |
|                                                    |                                                                                                 | Learning relevance                      | 0.794          |       | Valid      |
| Cognitive Halal Ecosystem Awareness (CHA)          | I understand the importance of halal principles beyond food consumption                         | Knowledge of halal concepts             | 0.801          | 0.783 | Valid      |
|                                                    |                                                                                                 | Understanding halal certification       | 0.943          |       | Valid      |
|                                                    |                                                                                                 | Awareness of halal production processes | 0.905          |       | Valid      |
| Affective Halal Ecosystem Awareness (AHA)          | I feel responsible for applying halal values in my daily life                                   | Attitude toward halal values            | 0.819          | 0.639 | Valid      |
|                                                    |                                                                                                 | Ethical concern in consumption          | 0.817          |       | Valid      |
|                                                    |                                                                                                 | Commitment to halal lifestyle           | 0.761          |       | Valid      |
| Behavioral Halal Ecosystem Awareness (BHA)         | I practice Halal-oriented behavior in my daily activities                                       | Halal consumption behavior              | 0.811          | 0.660 | Valid      |
|                                                    |                                                                                                 | Selection of halal certified products   | 0.796          |       | Valid      |
|                                                    |                                                                                                 | Consistent halal lifestyle practices    | 0.830          |       | Valid      |

Source: Authors' data analysis using SmartPLS (2026)

**Table 3.** Fornell Larcker

| Variables | AHA          | BHA          | CHA          | PAI          |
|-----------|--------------|--------------|--------------|--------------|
| AHA       | <b>0.800</b> |              |              |              |
| BHA       | 0.267        | <b>0.812</b> |              |              |
| CHA       | 0.241        | 0.238        | <b>0.885</b> |              |
| PAI       | 0.486        | 0.235        | 0.451        | <b>0.804</b> |

Source: Authors' data analysis using SmartPLS (2026)

Notes:

AHA = Affective Halal Awareness

BHA = Behavioral Halal Awareness

CHA = Cognitive Halal Awareness

PAI = Effectiveness of Islamic Religious Education

**Table 4.** Heterotrait–Monotrait Ratio (HTMT)

| Variables | PAI   | CHA   | AHA   | BHA |
|-----------|-------|-------|-------|-----|
| AHA       |       |       |       |     |
| BHA       | 0.368 |       |       |     |
| CHA       | 0.303 | 0.300 |       |     |
| PAI       | 0.632 | 0.552 | 0.539 |     |

Source: Authors' data analysis using SmartPLS (2026)

**Table 5.** Composite Reliability

| Variables                                          | Composite Reliability (rho_c) | Conclusion |
|----------------------------------------------------|-------------------------------|------------|
| Effectiveness of Islamic Religious Education (PAI) | 0.879                         | Reliable   |
| Cognitive Halal Awareness (CHA)                    | 0.915                         | Reliable   |
| Affective Halal Awareness (AHA)                    | 0.841                         | Reliable   |
| Behavioral Halal Awareness (BHA)                   | 0.852                         | Reliable   |

Source: Authors' data analysis using SmartPLS (2026)

### 3.1.3 Inner Model Evaluation

The evaluation of the structural (inner) model was conducted by assessing collinearity, predictive accuracy, and effect size in line with established PLS-SEM guidelines (Hair et al., 2019; Hair et al., 2021). Collinearity was examined using the Variance Inflation Factor (VIF) to ensure that the relationships among latent constructs were not affected by multicollinearity. As presented in Table 6 (Inner VIF Values), the VIF values for the Effectiveness of Islamic Religious Education (PAI) in predicting Cognitive, Affective, and Behavioral Halal Ecosystem Awareness are all equal to 1.000, which is well below the recommended threshold of 5. These results confirm that no multicollinearity issues are present and that the structural model is suitable for further evaluation.

The predictive accuracy of the model was subsequently assessed using the coefficient of determination ( $R^2$ ), which indicates the proportion of variance in the endogenous constructs explained by the exogenous variable. Based on the criteria proposed by Chin (1998) and Henseler et al. (2015), the results shown in Table 7 (R Square Values) reveal that the Effectiveness of Islamic Religious Education explains 20.4% of the variance in Cognitive Halal Ecosystem Awareness ( $R^2 = 0.204$ ), 23.6% of the variance in Affective Halal Ecosystem Awareness ( $R^2 = 0.236$ ), and 18.9% of the variance in Behavioral Halal Ecosystem Awareness ( $R^2 = 0.189$ ). All three  $R^2$  values fall within the low category, indicating that while Islamic Religious Education contributes meaningfully to students' halal ecosystem awareness, a substantial portion of the variance is influenced by other factors outside the model (Chin, 1998; Henseler et al., 2015). The relatively low  $R^2$  values do not indicate weak model performance, but rather reflect the multidimensional and context-dependent nature of halal awareness formation in educational settings. In social and educational research, students' cognitive, affective, and behavioral outcomes are shaped not only by classroom instruction, but also by family socialization, peer influence, media exposure, and institutional culture, which limits the proportion of variance that can be explained by a single educational factor.

To further examine the magnitude of the structural relationships, effect size ( $f^2$ ) was analyzed to determine the relative impact of Islamic Religious Education on each dimension of halal ecosystem awareness. As reported in Table 8 (F Square Values) and following the guidelines of Hair et al. (2022), the Effectiveness of Islamic Religious Education exhibits a moderate effect on Affective Halal Ecosystem Awareness ( $f^2 = 0.309$ ), suggesting that Islamic Religious Education plays a more prominent role in shaping students' values, attitudes, and emotional commitment to halal principles (J. Hair & Alamer, 2022). In contrast, its effects on Cognitive Halal Ecosystem Awareness ( $f^2 = 0.256$ ) and Behavioral Halal Ecosystem Awareness ( $f^2 = 0.233$ ) are categorized as low, indicating a weaker yet still meaningful influence.

Overall, the inner model evaluation confirms that the proposed structural relationships are statistically acceptable and theoretically interpretable. The findings indicate that Islamic Religious Education exerts its strongest influence on the affective dimension of halal ecosystem awareness, supporting the notion that religious education is particularly effective in fostering internal values and attitudes. However, the relatively low explanatory power for cognitive and behavioral dimensions suggests that the development of comprehensive halal awareness and consistent halal-oriented behavior may require reinforcement from additional social, institutional, and environmental factors beyond formal religious instruction.

**Table 6.** Inner VIF Value

| Predictor                                          | CHA   | AHA   | BHA   |
|----------------------------------------------------|-------|-------|-------|
| Effectiveness of Islamic Religious Education (PAI) | 1.000 | 1.000 | 1.000 |

Source: Authors' data analysis using SmartPLS (2026)

The coefficient of determination ( $R^2$ ) analysis demonstrates that the effectiveness of Islamic Religious Education accounts for 20.4% of the variance in Cognitive Halal Awareness, 23.6% in Affective Halal Awareness, and 18.9% in Behavioral Halal Awareness. Although these explanatory values are categorized as relatively low, they still reflect a meaningful contribution of Islamic Religious Education in shaping students' halal ecosystem awareness. The findings imply that the development of halal awareness is not determined exclusively by formal classroom learning, but is also influenced by various external elements, including family upbringing, media consumption, peer interaction, and the broader school environment.

**Table 7.** R Square Value

| Endogenous Variable | R Square | Result |
|---------------------|----------|--------|
| CHA                 | 0.204    | Low    |
| AHA                 | 0.236    | Low    |
| BHA                 | 0.189    | Low    |

Source: Authors' data analysis using SmartPLS (2026)

The effect size ( $f^2$ ) evaluation indicates that the impact of Islamic Religious Education on Affective Halal Awareness reaches a moderate level ( $f^2 = 0.309$ ). In contrast, its influence on Cognitive Halal Awareness ( $f^2 = 0.256$ ) and Behavioral Halal Awareness ( $f^2 = 0.233$ ) is classified within the low category. These findings suggest that Islamic Religious Education contributes more strongly to the development of students' attitudes, value orientation, and emotional attachment toward halal principles than to the cognitive or behavioral dimensions alone.

**Table 8.** F Square Value

| Relationship | F Square | Result   |
|--------------|----------|----------|
| PAI → CHA    | 0.256    | Low      |
| PAI → AHA    | 0.309    | Moderate |
| PAI → BHA    | 0.233    | Low      |

Source: Authors' data analysis using SmartPLS (2026)

### 3.1.5 Hypothesis testing

Hypothesis evaluation was performed through the bootstrapping technique in the PLS-SEM analysis to determine the statistical significance of the relationships between the latent constructs. The findings reveal that the effectiveness of Islamic Religious Education positively and significantly influences all dimensions of halal ecosystem awareness.

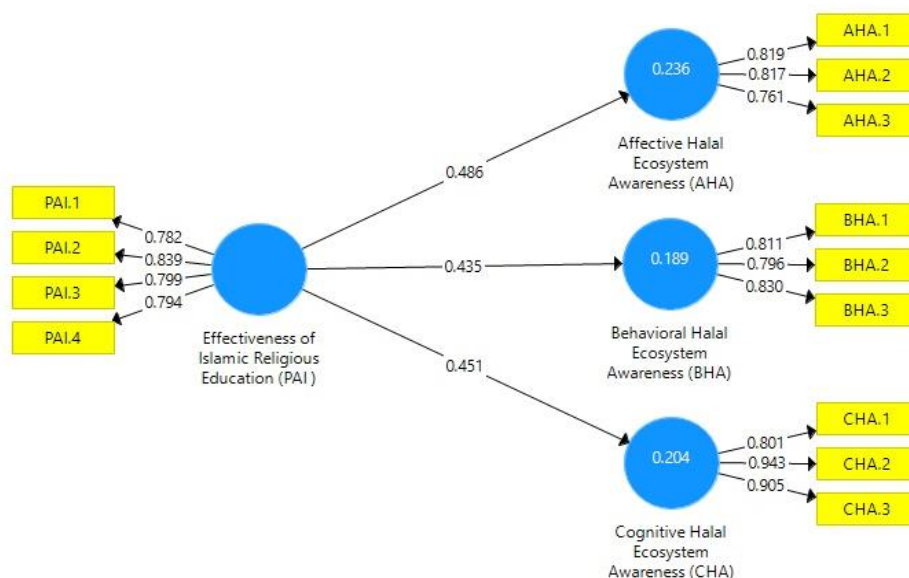
The structural relationship between Islamic Religious Education and Cognitive Halal Awareness generated a path coefficient of  $\beta = 0.451$ , indicating a statistically significant effect and supporting the proposed hypothesis. The highest coefficient emerged in the relationship with Affective Halal Awareness ( $\beta = 0.486$ ), whereas the effect on Behavioral Halal Awareness reached  $\beta = 0.435$ . Based on these results, all hypotheses formulated in this study were supported empirically.

The overall findings demonstrate that Islamic Religious Education contributes substantially to students' cognitive understanding, emotional orientation, and behavioral tendencies related to halal ecosystem principles. The stronger influence identified within the affective dimension further suggests that religious education is particularly effective in promoting value internalization and emotional commitment, rather than functioning solely as a medium for knowledge transmission.

**Table 9.** Hypothesis Testing Results

| Relationship          | Original Sample ( $\beta$ ) | T Statistics | P Values | Result   |
|-----------------------|-----------------------------|--------------|----------|----------|
| PAI $\rightarrow$ CHA | 0.451                       | 11.198       | 0.000    | Accepted |
| PAI $\rightarrow$ AHA | 0.486                       | 11.087       | 0.000    | Accepted |
| PAI $\rightarrow$ BHA | 0.435                       | 10.081       | 0.000    | Accepted |

Source: Authors' data analysis using SmartPLS (2026)



**Figure 2.** The Result of SEM Analysis

### 3.2 Discussion

The present study demonstrates that the effectiveness of Islamic Religious Education (IRE) significantly influences students' halal ecosystem awareness across the cognitive, affective, and behavioral dimensions. These findings reinforce the proposition that religious education should not be viewed merely as a mechanism for transmitting doctrinal knowledge but rather as a comprehensive educational process that facilitates intellectual development, ethical reasoning, and value internalization. Within contemporary educational discourse, effective learning extends beyond improving cognitive achievement to fostering dispositions and behaviors that are consistently aligned with the values promoted through instruction. The significant positive relationships observed in this study therefore indicate that IRE functions as an institutional mechanism through which halal principles are transformed into meaningful educational experiences that shape students'

understanding, attitudes, and daily practices. This finding supports previous educational research suggesting that values-based instruction contributes to both moral development and socially responsible behavior when learning experiences are contextualized within students' everyday realities (Umami et al., 2023; Hanafiah & Hamdan, 2021).

The positive influence of IRE on the cognitive dimension of halal ecosystem awareness indicates that classroom learning contributes to students' conceptual understanding of halal principles beyond the traditional emphasis on food consumption. Students increasingly recognize halal as an integrated ethical framework encompassing production processes, consumer responsibility, environmental sustainability, and social accountability. This finding extends previous halal education studies, which have generally emphasized halal literacy as factual knowledge or certification awareness (Navilah et al., 2024; Nurdin et al., 2024). From the perspective of Social Learning Theory, cognitive development occurs through observation, interaction, and guided instruction in which teachers serve as significant role models who organize learning experiences and reinforce appropriate understanding (Bandura, 1986). Nevertheless, the relatively modest coefficient of determination suggests that cognitive awareness is not exclusively produced by formal education. Students are simultaneously exposed to diverse sources of halal-related information through family discussions, religious communities, social media, digital platforms, and peer interaction. Consequently, Islamic Religious Education should be understood as one important contributor within a broader ecosystem of knowledge acquisition rather than as the sole determinant of students' cognitive development.

Among the three dimensions examined, the affective dimension exhibited the strongest relationship with the effectiveness of Islamic Religious Education. This finding provides important theoretical insight because it suggests that religious education is particularly successful in cultivating students' emotional commitment, ethical sensitivity, and personal responsibility toward halal values. Such a result is consistent with Transformative Learning Theory, which argues that meaningful education encourages learners to critically reflect upon existing assumptions and gradually reconstruct their value systems through reflective experiences (Mezirow, 1997). Rather than simply memorizing religious concepts, students appear to internalize halal principles as part of their personal moral identity. This finding also supports previous studies reporting that continuous religious instruction strengthens value internalization and ethical orientation among Muslim students (Umami et al., 2023). Unlike many previous investigations that primarily associated halal awareness with consumer purchasing behavior or religiosity (Aslan, 2023; Qureshi et al., 2023), the present study demonstrates that formal educational experiences themselves significantly contribute to shaping students' affective attachment to halal values. Therefore, the educational significance of IRE extends beyond knowledge transmission by fostering enduring ethical dispositions that may guide future decision-making.

Although Islamic Religious Education also significantly influences behavioral halal ecosystem awareness, the magnitude of its explanatory power is comparatively lower than that observed for the affective dimension. This discrepancy reflects an important characteristic of educational processes: changes in attitudes generally occur earlier than observable behavioral transformation. Educational psychology has long suggested that knowledge acquisition and value internalization do not automatically translate into consistent behavioral implementation because actual behavior is conditioned by situational opportunities, environmental support, and social reinforcement (Bandura, 1986). Students may possess strong beliefs regarding halal values while simultaneously encountering practical constraints such as limited availability of halal-certified products, peer influence, digital consumption trends, or family purchasing habits. Similar observations have been reported in previous halal behavior research, which identifies accessibility, institutional support, and social environment as important determinants of halal-related practices (Fatmasaria et al., 2024; Mardhiyah et al., 2023). Consequently, strengthening halal-oriented behavior requires educational strategies that extend beyond classroom instruction through experiential learning, school culture, parental involvement, and community participation that consistently reinforce halal values in authentic contexts.

An important contribution of this study lies in reconceptualizing halal ecosystem awareness as a multidimensional educational construct consisting of cognitive, affective, and behavioral dimensions. Previous studies have predominantly investigated halal awareness within marketing, consumer behavior, or purchasing intention frameworks, often treating it as a relatively narrow outcome associated with consumption decisions (Albra et al., 2023; Aslan, 2023). In contrast, the present findings suggest that halal awareness should be understood as a broader educational outcome reflecting the gradual integration of knowledge, values, and behavioral tendencies. This multidimensional perspective contributes to Islamic education scholarship by demonstrating that effective religious education can function as an institutional mechanism supporting holistic character development. The findings therefore extend the application of Social Learning Theory and Transformative Learning Theory to halal education by illustrating how structured instructional experiences facilitate not only conceptual understanding but also ethical commitment and behavioral orientation within formal secondary education.

The findings also generate several practical implications for curriculum development and educational practice. The significant influence of Islamic Religious Education across all dimensions indicates that halal ecosystem education should move beyond conventional discussions centered primarily on religious obligations or halal food regulations. Instead, instructional content should integrate contemporary issues such as halal entrepreneurship, sustainable production, ethical consumption, environmental stewardship, digital commerce, and responsible citizenship. Such contextualization would enable students to appreciate the relevance of halal principles within modern social and economic life. Teachers should likewise employ more student-centered pedagogical approaches—including project-based learning, inquiry-based learning, reflective discussion, case analysis, and community-based learning—to strengthen students' opportunities to apply halal values in authentic situations. Experiential learning activities involving local halal industries, certification institutions, or community organizations may further facilitate the transition from cognitive understanding to sustained behavioral practice. Accordingly, educational policymakers should consider strengthening halal literacy within curriculum frameworks while simultaneously providing professional development opportunities that equip teachers with innovative pedagogical strategies capable of integrating halal ecosystem education into broader character education initiatives.

Finally, the relatively modest explanatory power observed across the structural model indicates that halal ecosystem awareness represents a complex educational outcome influenced by multiple interacting factors. Although Islamic Religious Education serves as a significant institutional mechanism, students' halal awareness is also shaped by religiosity, family socialization, school climate, peer relationships, digital media exposure, and wider socio-cultural environments. Future studies should therefore adopt more comprehensive conceptual models incorporating mediating and moderating variables to explain how educational experiences interact with broader ecological influences in shaping halal awareness. Longitudinal and mixed-method research designs would further enrich understanding of how cognitive knowledge gradually evolves into enduring ethical commitment and consistent halal-oriented behavior throughout students' educational trajectories. Such investigations would contribute to developing a more comprehensive evidence base for designing effective halal education that supports both educational excellence and sustainable halal ecosystem development.

#### 4. CONCLUSION

This study demonstrates that the effectiveness of Islamic Religious Education (IRE) has a positive and significant influence on students' halal ecosystem awareness across the cognitive, affective, and behavioral dimensions, with the strongest effect observed in the affective domain, indicating that IRE plays a particularly important role in fostering students' ethical commitment and value internalization toward halal principles. These findings extend the literature by conceptualizing halal ecosystem awareness as a multidimensional educational outcome rather than merely a consumer behavior

construct, highlighting the contribution of formal religious education to the development of knowledge, attitudes, and halal-oriented behavior among secondary school students. The results further suggest that while IRE serves as an important institutional mechanism for promoting halal awareness, the relatively modest explanatory power of the model indicates that students' halal-related attitudes and behaviors are also shaped by broader educational, social, and environmental influences beyond classroom instruction. Nevertheless, this study has several limitations. The use of a cross-sectional design limits causal interpretation and does not capture changes in halal awareness over time, while the sample, drawn exclusively from secondary schools in West Java Province, restricts the generalizability of the findings to other educational and cultural contexts. Furthermore, the study focuses solely on the effectiveness of Islamic Religious Education as the primary explanatory variable, without considering other potentially influential factors such as religiosity, family environment, peer influence, school culture, or digital media exposure. Therefore, future research is encouraged to employ longitudinal or mixed-method designs, involve more diverse geographical and educational settings, and incorporate mediating and moderating variables to develop a more comprehensive understanding of how educational, social, and contextual factors interact in shaping halal ecosystem awareness among adolescents. Additionally, intervention-based studies examining innovative pedagogical approaches, including experiential learning, project-based learning, and technology-enhanced halal education, would provide valuable evidence for designing more effective educational strategies that strengthen students' halal literacy and support the sustainable development of the halal ecosystem.

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