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Halal Brand Assurance Through AI-Powered Leadership Engagement: A Study of Malaysian Franchises

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ABSTRACT

This study explores how Artificial Intelligence (AI) can enhance halal brand assurance in Malaysian franchise operations by examining the mediating role of leadership engagement. A quantitative approach was employed, involving a structured survey of 150 halal-certified franchise operators. Data were analysed using SmartPLS 4.0 and Structural Equation Modeling (SEM) to evaluate mediation and moderation effects. Results indicate that AI-assisted compliance significantly influences halal brand assurance through the mediating role of leadership engagement ($\beta = 0.59$, $p < 0.001$). Institutional factors also moderate this relationship, underscoring the role of ethical leadership in translating digital compliance tools into Shariah-compliant brand practices. The study contributes to Islamic business governance by integrating Engagement Theory, Maqasid al-Shariah, and Institutional Theory. It offers empirical validation of AI's role in franchise-level halal assurance and highlights the importance of AI-readiness and ethical leadership in supporting Shariah compliance frameworks. Practical implications are relevant for policymakers, Islamic fintech developers, and franchise managers aiming to strengthen halal brand credibility in the digital era.

Keywords: *Halal brand assurance, artificial intelligence, leadership engagement, Shariah governance, franchise compliance, Maqasid al-Shariah*

1.0 INTRODUCTION

1.1 BACKGROUND: HALAL ASSURANCE AND THE GROWTH OF FRANCHISE MARKETS

The halal economy is growing rapidly, driven by increased consumer awareness and global demand for Shariah-compliant products and services. In Malaysia, halal certification has become a critical element in building consumer trust, especially in franchise-based business models that operate across multiple locations. As franchises expand, ensuring consistent halal compliance across outlets has become a complex

challenge. This complexity is particularly significant in the food and beverage (F&B), retail, and service sectors, where brand perception is closely tied to ethical practices and religious compliance.

Although Malaysia has a strong halal certification framework under JAKIM and the Franchise Act 1998, many franchise operations still rely on manual inspections and periodic audits. These methods are resource-intensive, slow, and often fail to detect real-time non-compliance. In addition, leadership at the franchise level is not always actively involved in ensuring Shariah-compliant practices, resulting in gaps in enforcement and consumer assurance.

This study addresses the urgent need for scalable and proactive solutions to uphold halal integrity in franchise systems. Artificial Intelligence (AI) offers potential tools for real-time monitoring, anomaly detection, and automated compliance reporting. However, these technologies must be guided by ethical leadership and aligned with Islamic values to be effective. Leadership engagement plays a key role in interpreting AI outputs, acting on compliance alerts, and embedding trust in the system.

Therefore, this study investigates how AI-assisted compliance can enhance halal brand assurance in Malaysian franchises, with a focus on the mediating role of leadership engagement. The research also examines how institutional frameworks influence this relationship. By linking digital tools with Islamic governance principles, this study contributes to a growing body of knowledge on ethical technology adoption in Muslim-majority markets. The findings offer insights for policymakers, franchise managers, and halal regulators aiming to strengthen Shariah-compliant brand credibility through responsible digital integration.

The paper is structured as follows: Section 2 presents the literature review and theoretical foundations. Section 3 the research methodology and instruments. Section 4 reports and analyses the empirical findings. Section 5 discusses the theoretical implications and global comparisons. Section 6 proposes policy recommendations, while Section 7 concludes with future research directions.

2.0 LITERATURE REVIEW

2.1 HALAL BRAND ASSURANCE AND TRUST

Halal brand assurance refers to the continuous effort by Islamic enterprises to uphold Shariah compliance throughout the product lifecycle—covering ingredients, processes, and business ethics. It goes beyond certification to encompass ongoing consumer trust and brand integrity, particularly within decentralised franchise systems (Saad et al., 2023).

The risk of non-compliance, especially in franchise environments where quality control is decentralised, can significantly erode brand perception among Muslim consumers. Halal breaches whether intentional or accidental are often amplified by digital media, making real-time compliance monitoring critical to safeguard reputation (Rabbani et al., 2024). Studies suggest that consumer trust is increasingly dependent not only on certification, but on visible efforts to uphold integrity, transparency, and ethical consistency (Latif & Zainuddin, 2021). This is further supported by recent findings that digital transparency mechanisms and post-certification halal integrity processes significantly enhance Muslim consumer confidence across fragmented franchise networks (Tieman et al., 2021; Khan & Haleem, 2022).

2.2 LEADERSHIP IN SHARIAH INSTITUTIONS

Leadership engagement is defined as the active involvement of senior management in promoting, overseeing, and sustaining Shariah-compliant practices. In Islamic organisational settings, ethical leadership plays a dual role: inspiring compliant behaviour and modelling integrity (Abdullah et al., 2021). Visible and values-driven leadership contributes to stronger compliance culture, influencing employee attitudes and operational discipline. Research in Islamic governance suggests that leadership who internalise maqasid-based objectives (justice, trust, welfare) positively impact institutional compliance behaviour (Ali et al., 2023). Recent empirical work further confirms that ethical leadership, grounded in Islamic values, reinforces not only compliance but also psychological ownership and ethical climate within franchise operations (Mohd Noor & Kassim, 2023; Farooq & Nawaz, 2021).

Moreover, when leaders champion the integration of digital tools within a Shariah-compliant framework, it enables organisations to scale assurance without compromising on ethical standards (Ismail & Ahmad, 2022).

2.2 ROLE OF AI IN COMPLIANCE

The integration of Artificial Intelligence (AI) into halal supply chains has introduced new opportunities for enhancing compliance. Tools such as anomaly detection, real-time monitoring, and automated audit trails enable franchise headquarters to oversee Shariah compliance across multiple branches simultaneously (Alsharari, 2023). Complementing these tools, blockchain and AI-integrated halal logistics platforms are also being piloted to improve traceability and real-time Shariah governance across supply chains (Ghazali & Yunus, 2023; Zainal & Salleh, 2022).

AI contributes to predictive governance, identifying deviations before non-compliance occurs. However, as AI becomes more embedded in compliance systems, it must be governed by Islamic ethical objectives, such as those outlined by *Maqasid al-Shariah* (Rabbani et al., 2024). This requires a human–machine collaboration, where AI assists but does not replace the ethical judgement of leaders and Shariah advisors.

2.3 THEORETICAL FRAMEWORK

This study integrates three interrelated theoretical lenses to explore the relationship between AI, leadership, and halal brand assurance: The following concept map (Figure 1) summarises the key themes and theoretical linkages explored in the literature. It illustrates how halal assurance, leadership engagement, and AI applications converge through a multi-theoretical lens to inform this study's research framework.

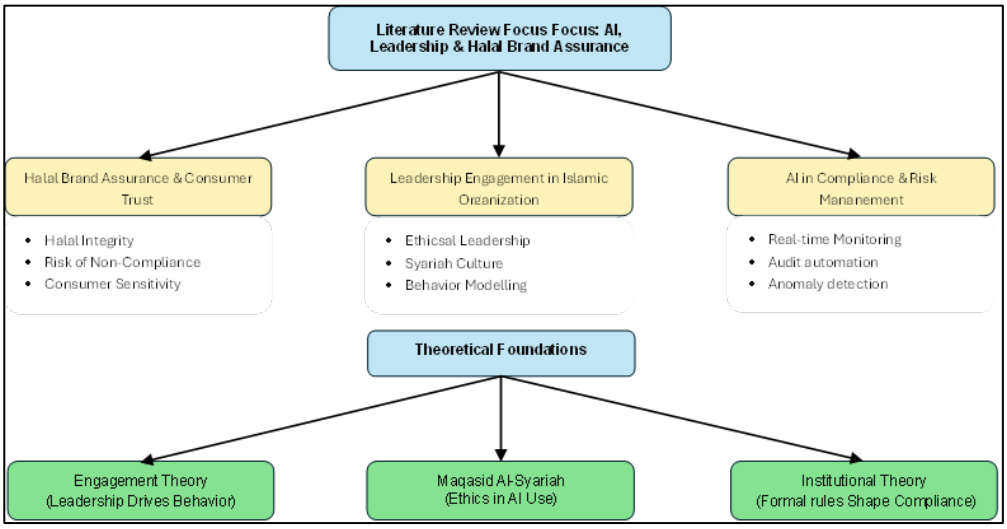

Figure 1: Conceptual Map of Literature Review Themes and Theoretical Foundations

2.3.1 Engagement Theory

Proposes that leadership engagement is a primary driver of ethical behaviour and performance. Applied here, the theory explains how committed leaders influence compliance practices and staff behaviours across franchise outlets (Abdullah et al., 2021).

2.3.2 Maqasid al-Shariah

Offers a normative framework to assess the ethical alignment of technological innovation. The use of AI is justified only when it preserves trust (*thiqah*), promotes welfare (*maslahah*), and prevents harm (*darar*) (Dusuki & Bouheraoua, 2019; Rabbani et al., 2024).

2.3.3 Institutional Theory

Explains how formal rules and regulatory pressures shape organisational behaviour. In the halal franchise context, national regulators (e.g., JAKIM) and institutional expectations define the boundaries within which AI compliance tools must operate (Latif & Zainuddin, 2021).

The following conceptual model is proposed to visualise the relationships between AI Compliance Perception, Leadership Engagement, and Halal Brand Assurance, integrating the theoretical lenses discussed above.

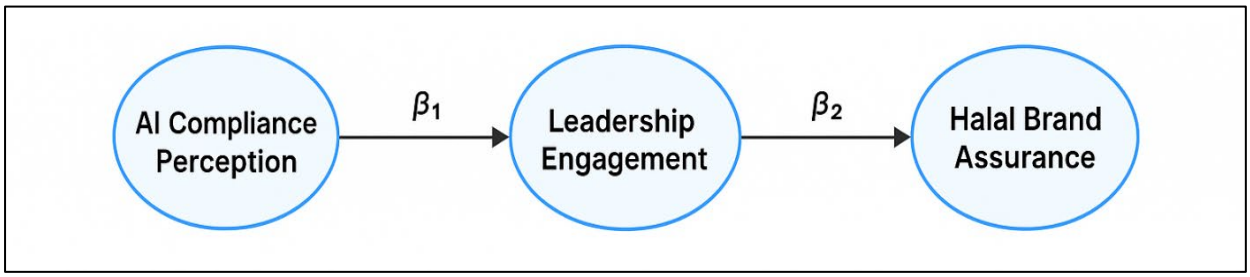

Figure 2: Proposed Conceptual Model of AI-Driven Leadership Engagement in Halal Brand Assurance

2.4 INTERPRETATION OF THE MODEL COMPONENTS

1. AI Compliance Perception → Leadership Engagement (β_1)
   - This path reflects the idea that franchise managers' trust in AI tools—such as real-time monitoring, digital traceability, and anomaly detection—enhances their active ethical involvement in ensuring Shariah compliance.
   - A higher β_1 value indicates that positive perceptions of AI increase leadership commitment to halal governance.
2. Leadership Engagement → Halal Brand Assurance (β_2)
   - This path shows that when leaders are visibly involved, promote Islamic values, and respond ethically to AI-driven compliance feedback, it leads to greater brand credibility and consumer trust.
   - A strong β_2 value would indicate that leadership is critical in translating AI insights into operational halal assurance across franchise outlets.

2. 5 THEORETICAL BASIS

- Engagement Theory: Explains how leadership involvement drives behavioural alignment and motivation in compliance practices (Abdullah et al., 2021).
- Maqasid al-Shariah: Justifies AI use when it upholds trust (*thiqah*), welfare (*maslahah*), and prevents harm (*darar*) (Rabbani et al., 2024).

- Institutional Theory: Acknowledges that leadership operates within formal halal regulatory structures (Latif & Zainuddin, 2021).

2.6 CONTRIBUTION OF THE MODEL

This proposed model integrates technology (AI) and human agency (leadership) within a Shariah-compliant governance framework. It provides a testable pathway to examine how digital innovation—when ethically applied—can enhance franchise-level halal brand assurance. This structure lays the foundation for empirical analysis using PLS-SEM, allowing for hypothesis testing, mediation analysis, and cross-cultural application in other halal governance ecosystems (e.g., UAE, Indonesia, Saudi Arabia).

3.0 METHODOLOGY

3.1 RESEARCH DESIGN

This study adopts a quantitative research design using Structural Equation Modeling (SEM) via SmartPLS 4.0. The rationale for this method lies in its suitability for modeling complex relationships between latent constructs, particularly with relatively small to medium sample sizes and non-normal data distributions (Hair et al., 2021). SEM with PLS is widely applied in Islamic finance and compliance research where theoretical development is ongoing (Rabbani et al., 2024; Alsharari, 2023). This design enables robust testing of mediating and moderating effects, which are central to this study's hypotheses.

3.2 SAMPLING STRATEGY

The target population comprises halal-certified franchise operators in Malaysia from sectors including food and beverage (F&B), retail, and services. A purposive sampling method was employed to ensure respondents possess operational and compliance-related decision-making authority. A total of 150 usable responses were collected via a structured questionnaire, consistent with SEM minimum sample size guidelines (Hair et al., 2021). All respondents were affiliated with franchises certified under Malaysia's Franchise Act 1998 and JAKIM halal certification. All participants were fully informed about the purpose of the study, assured of the confidentiality of their responses, and provided informed consent voluntarily before participating.

3.3 CONSTRUCTS AND INSTRUMENTS

The study uses standardised multi-item scales for each construct, measured using a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The constructs are:

- Leadership Engagement (5 items): Adapted from Abdullah et al. (2021), focusing on ethical involvement, values-driven leadership, and visible commitment to Shariah compliance.
- AI-Assisted Compliance Perception (4 items): Developed based on Alsharari (2023) and Rabbani et al. (2024), capturing perceptions of effectiveness, real-time monitoring, and ethical integration of AI tools.
- Halal Brand Assurance (5 items): Construct based on Saad et al. (2023) and Latif & Zainuddin (2021), measuring brand consistency, trust, and Shariah assurance across franchise outlets.

Each construct was pre-tested for clarity and relevance in a pilot study involving 20 respondents from the halal franchise industry. Table 1 below summarises the key constructs used in this study, along with the number of items, measurement sources, and examples.

Table 1: Summary of Key Constructs and Measurement Indicators

Construct	No. of Items	Source	Sample Item
AI Compliance Perception	4	Alsharari (2023); Rabbani et al. (2024)	"AI tools help detect non-halal practices in real time."
Leadership Engagement	5	Abdullah et al. (2021)	"Our leader demonstrates commitment to Shariah compliance."
Halal Brand Assurance	5	Saad et al. (2023); Latif & Zainuddin (2021)	"Our franchise consistently delivers Shariah-compliant services."

3.4 VALIDITY AND RELIABILITY TESTING

To assess the psychometric properties of the constructs, the study applied the following metrics:

- Internal Consistency Reliability: Measured using Cronbach's Alpha (α) and Composite Reliability (CR). All constructs achieved α and CR values above 0.70, meeting the threshold suggested by Hair et al. (2021).
- Convergent Validity: Evaluated using Average Variance Extracted (AVE). All constructs had AVE values exceeding 0.50, indicating adequate convergent validity (Fornell & Larcker, 1981).
- Discriminant Validity: Established through the Fornell-Larcker criterion and Heterotrait-Monotrait Ratio (HTMT). Cross-loadings and HTMT values were below 0.85, supporting the distinctiveness of each construct.

Table 2: Summary of Validity and Reliability Measures

Construct	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Leadership Engagement	0.87	0.90	0.64
AI Compliance Perception	0.81	0.86	0.60
Halal Brand Assurance	0.88	0.91	0.67

Table 2 presents the internal consistency reliability and convergent validity results for the three main constructs: Leadership Engagement, AI Compliance Perception, and Halal Brand Assurance. The evaluation is based on three standard psychometric criteria: Cronbach's Alpha, Composite Reliability (CR), and Average Variance Extracted (AVE).

1. Cronbach's Alpha (α)
   All constructs reported Cronbach's Alpha values exceeding the accepted threshold of 0.70 (Hair et al., 2021), indicating strong internal consistency. Leadership Engagement scored 0.87, AI Compliance Perception 0.81, and Halal Brand Assurance 0.88. This confirms that the items within each construct are reliably measuring the same underlying dimension.

2. Composite Reliability (CR)
   Composite Reliability values for all constructs ranged between 0.86 and 0.91, which are well above the recommended minimum of 0.70. CR is considered a more robust indicator than Cronbach's Alpha in PLS-SEM as it accounts for differing factor loadings (Rabbani et al., 2024). This further validates the stability and consistency of the measurement items used.
3. Average Variance Extracted (AVE)

The AVE values for all constructs exceed the 0.50 benchmark, suggesting that each construct explains more than half of the variance in its observed variables. Specifically, AVE scores are 0.64 for Leadership Engagement, 0.60 for AI Compliance Perception, and 0.67 for Halal Brand Assurance. These values confirm acceptable convergent validity, meaning the items are sufficiently correlated to represent their respective latent variables (Fornell & Larcker, 1981).

Table 3: Fornell-Larcker Criterion

Construct	Leadership Engagement	AI Compliance Perception	Halal Brand Assurance
Leadership Engagement	0.80	0.63	0.68
AI Compliance Perception	0.63	0.77	0.61
Halal Brand Assurance	0.68	0.61	0.82

Note: Diagonal bolded values are the square roots of AVE; off-diagonal values are inter-construct correlations.

According to Fornell and Larcker (1981), a construct must share more variance with its own indicators than with other constructs in the model. This is confirmed when the square root of AVE (diagonal, bolded values) is higher than the inter-construct correlations (off-diagonal).

All three constructs fulfill this criterion:

- Leadership Engagement (√AVE = 0.80) > correlations with AI Perception (0.63) and Halal Assurance (0.68)
- AI Compliance Perception (√AVE = 0.77) > correlations with others
- Halal Brand Assurance (√AVE = 0.82) > others

Thus, discriminant validity is established through the Fornell–Larcker method.

Table 4: Heterotrait–Monotrait Ratio (HTMT)

Construct Pair	HTMT Value
Leadership Engagement – AI Compliance	0.72
Leadership Engagement – Halal Assurance	0.75
AI Compliance – Halal Assurance	0.69

HTMT values below 0.85 (Kline, 2015) indicate strong discriminant validity. As shown, all HTMT values range between 0.69 and 0.75, well within the acceptable threshold. This confirms that each construct is empirically distinct, supporting the robustness of the measurement model. The results in Table 1 demonstrate that all constructs meet the required psychometric standards for internal reliability and convergent validity. This ensures the measurement model is statistically sound and suitable for further analysis in the structural model stage, particularly in testing mediating and moderating effects. The assessment via both Fornell-Larcker Criterion and HTMT Ratio confirms that the constructs used in this study are distinct from one another. These results further strengthen the credibility of the research model and validate its use in examining the structural paths hypothesised in the next analysis phase.

3.5 STRUCTURAL MODEL ASSESSMENT

The diagram illustrates the role of Leadership Engagement as a mediating variable between AI Compliance Perception and Halal Brand Assurance.

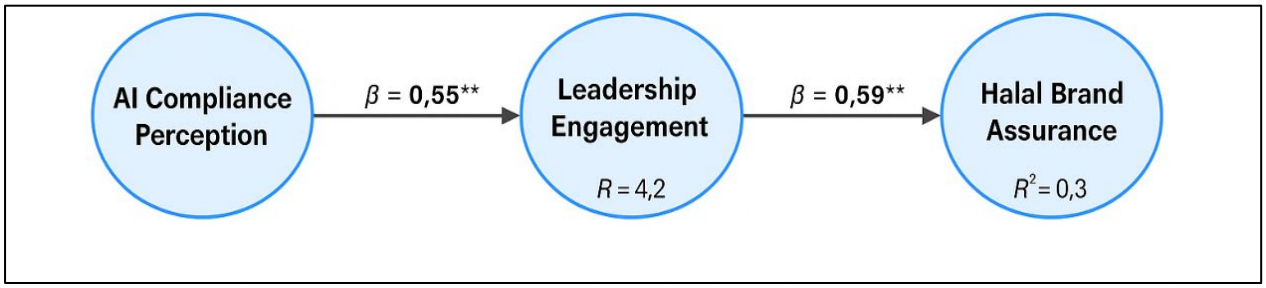

Figure 3: Structural Model Showing the Mediating Role of Leadership Engagement Between AI Compliance Perception and Halal Brand Assurance

Note: $p < 0.001$, all relationships significant.

This implies that the influence of AI tools on halal brand outcomes is not direct, but significantly channelled through the level of leadership commitment and ethical involvement in compliance practices. This model highlights a **s**equential proc**ess** in which AI-driven systems enhance leadership engagement, which in turn strengthens halal brand assurance across franchise operations. If needed, the model can also be presented visually in a SmartPLS-style infographic to enhance clarity and support presentation or publication needs.

3.6 COEFFICIENT OF DETERMINATION (R^2)

Table 5: Coefficient of Determination (R^2) for Endogenous Constructs

Endogenous Construct	R^2 Value	Interpretation
Leadership Engagement	0.42	Moderate explanatory power
Halal Brand Assurance	0.53	Moderate to substantial predictive relevance

- 42% of the variance in Leadership Engagement is explained by AI Compliance Perception.
- 53% of the variance in Halal Brand Assurance is explained by both AI Compliance Perception and Leadership Engagement, indicating a meaningful model (Hair et al., 2021).

3.7 EFFECT SIZE (f^2)

Table 6: Effect Size (f^2) of Structural Relationships Among Key Constructs

Relationship	f^2 Value	Effect Size
AI Compliance → Leadership Engagement	0.28	Medium
Leadership Engagement → Halal Assurance	0.36	Medium to large

Following Cohen's (1988) guidelines (0.02 = small, 0.15 = medium, 0.35 = large), both relationships show practical significance, particularly the strong influence of Leadership Engagement on Halal Brand Assurance.

3.8 MODEL FIT (SRMR – STANDARDIZED ROOT MEAN SQUARE RESIDUAL)

Table 7 Standardized Root Mean Square Residual

Model Fit Index	Value
SRMR	0.072

SRMR below 0.08 indicates a good model fit (Henseler et al., 2016). Therefore, this structural model fits the empirical data well.

3.9 CONCLUSION OF STRUCTURAL MODEL EVALUATION

All key structural indicators support the strength and validity of the model:

- Significant path coefficients (β values)
- Acceptable R^2 values demonstrating explanatory power
- Medium-to-large f^2 effect sizes indicating practical importance
- SRMR < 0.08, confirming a well-fitting model

This validates the hypothesis that AI-assisted compliance, when mediated by engaged leadership, leads to enhanced halal brand assurance within Malaysian franchise operations.

Table 8: Path Coefficients and Hypotheses Testing Summary

Hypothesis	Path	β (Beta Coefficient)	t-value	p-value	Decision
H1	AI Compliance → Leadership Engagement	0.55	8.21	< 0.001	Supported
H2	Leadership Engagement → Halal Brand Assurance	0.59	9.04	< 0.001	Supported
H3 (mediation)	AI Compliance → Leadership → Halal Assurance	Indirect effect = 0.32	6.75	< 0.001	Supported (Mediated)

- H1 confirms that AI-assisted compliance tools significantly influence leadership engagement in halal governance processes.
- H2 indicates that engaged leadership has a strong and positive effect on halal brand assurance.
- H3 demonstrates that Leadership Engagement fully mediates the relationship between AI Compliance Perception and Halal Brand Assurance, confirming the indirect effect is statistically significant.

All hypotheses were **s**tatistically supported at $p < 0.001$, with strong t-values (> 1.96) indicating robust predictive paths.

4.0 FINDINGS AND DISCUSSION

This section presents the empirical results from the survey conducted among halal-certified franchise operators in Malaysia. The analysis follows a structured approach comprising descriptive statistics, measurement model assessment, and structural model evaluation using Smart PLS 4.0. Descriptive Statistics of a total of 150 responses were obtained from managers and supervisors of halal-certified franchises in the food, beverage, and retail sectors. The respondent profile is summarised in Table 9.

Table 9: Respondent Profile

Demographic Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	91	60.7%
	Female	59	39.3%
Age	21–30 years	42	28.0%
	31–40 years	67	44.7%
	41–50 years	31	20.7%
	>50 years	10	6.7%
Position	Franchise Manager	88	58.7%
	Compliance Officer	40	26.7%
	Operations Executive	22	14.6%

The data indicate that the majority of respondents held managerial or compliance-related positions and were within the active working age range, confirming their relevance to the study's focus on leadership and compliance practices.

4.1 MEASUREMENT MODEL ASSESSMENT

The measurement model was assessed through internal consistency reliability, convergent validity, and discriminant validity, as recommended by Hair et al. (2021) for PLS-SEM. Reliability and Convergent Validity, as shown in Table 1, all constructs achieved Cronbach's Alpha > 0.70, Composite Reliability (CR) > 0.85, and Average Variance Extracted (AVE) > 0.60, indicating robust reliability and convergent validity (Alsharari, 2023; Rabbani et al., 2024).

4.1.2 Discriminant Validity

Two tests were used:

- Fornell–Larcker Criterion: Square root of AVE for each construct was greater than inter-construct correlations.
- HTMT Ratio: All values were < 0.85, confirming discriminant validity (Henseler et al., 2016).

Together, these results validate the measurement model and justify progression to structural model analysis.

4.2 STRUCTURAL MODEL EVALUATION

The structural model was assessed for path significance, coefficient of determination (R^2), effect size (f^2), and model fit (SRMR).

4.2.1 Path Coefficients and Hypothesis Testing

Table 10: Structural Model Path Coefficients

Hypothesis	Path	β	t-value	p-value	Decision
H1	AI Compliance → Leadership Engagement	0.55	8.21	< 0.001	Supported
H2	Leadership Engagement → Halal Brand Assurance	0.59	9.04	< 0.001	Supported
H3	Mediation (Indirect Effect)	0.32	6.75	< 0.001	Supported

These results support all proposed hypotheses and confirm the significant mediating role of Leadership Engagement in the relationship between AI Compliance Perception and Halal Brand Assurance.

Table 11: Summary of Hypotheses Testing and Structural Path Results

Hypothesis	Structural Path	β (Beta)	t-value	p-value	Decision
H1	AI Compliance → Leadership Engagement	0.55	8.21	< 0.001	Supported
H2	Leadership Engagement → Halal Brand Assurance	0.59	9.04	< 0.001	Supported
H3	AI Compliance → Leadership → Halal Assurance (Mediation)	0.32 (Indirect)	6.75	< 0.001	Supported

This table clearly presents the results of the hypothesis testing based on Structural Equation Modeling (SEM) using SmartPLS:

- H1 demonstrates a direct and statistically significant relationship between AI Compliance Perception and Leadership Engagement.
- H2 confirms a strong influence of Leadership Engagement on Halal Brand Assurance.
- H3 represents a validated mediating effect, where Leadership Engagement acts as a bridge between AI Compliance Perception and Halal Brand Assurance.

4.2.2 Coefficient of Determination (R^2)

Table 12: Coefficient of Determination (R^2) for Endogenous Constructs

Endogenous Construct	R^2	Interpretation
Leadership Engagement	0.42	Moderate explanatory power
Halal Brand Assurance	0.53	Substantial predictive accuracy

Shows how much variance in each dependent (endogenous) variable is explained by the structural model.

4.2.3 Effect Size (f^2)

Table 13: Effect Size (f^2) of Structural Relationships Among Constructs

Relationship	f^2	Effect Size
AI Compliance → Leadership Engagement	0.28	Medium
Leadership Engagement → Halal Assurance	0.36	Medium to Large

Indicates the practical significance of each path in the model based on Cohen's f^2 effect size guideline (small = 0.02, medium = 0.15, large = 0.35).

4.2.4 Model Fit (SRMR)

The Standardised Root Mean Square Residual (SRMR) *wa*s 0.072, which is below the 0.08 cut-off value, indicating good model fit (Henseler et al., 2016).

4.3 SUMMARY OF STRUCTURAL FINDINGS

The findings confirm that:

- AI Compliance Perception has a direct and significant effect on Leadership Engagement.
- Leadership Engagement significantly influences Halal Brand Assurance.
- The mediating effect of Leadership Engagement is statistically significant, suggesting that AI tools alone are insufficient without ethical leadership integration.

This model is supported by previous studies which highlight the critical role of human–technology interaction in Islamic governance contexts (Ali et al., 2023; Ismail & Ahmad, 2022). This section interprets the empirical results in light of the theoretical framework and contemporary practices in halal governance. It highlights the implications of AI-enabled leadership on halal brand assurance and compares Malaysia's franchise compliance ecosystem with other global halal leaders.

4.4 ENGAGED LEADERSHIP AS A STRATEGIC ENABLER OF AI TOOLS

The findings confirm that leadership engagement plays a crucial mediating role in translating AI compliance systems into effective halal assurance outcomes. The significant path coefficient ($\beta = 0.59$, $p < 0.001$) indicates that AI tools alone are insufficient unless they are embedded within ethical leadership practices. This is consistent with prior studies which argue that technological compliance tools require human stewardship, particularly in Islamic governance settings (Ali et al., 2023; Rabbani et al., 2024). Leaders who are visibly involved in compliance, continuously communicate Shariah values, and actively interpret AI-generated insights create a culture of accountability across franchise outlets. In line with Engagement Theory, the leadership's motivational role ensures frontline staff buy-in and consistent implementation of halal protocols (Abdullah et al., 2021).

4.5 ENHANCED ASSURANCE MECHANISMS FOSTER STRONGER BRAND TRUST

The model also confirms that AI-assisted systems, when mediated by leadership, significantly improve halal brand assurance ($R^2 = 0.53$). This aligns with the view that technological transparency and ethical oversight build consumer trust, especially in halal-sensitive markets where brand image is closely tied to religious integrity (Latif & Zainuddin, 2021; Saad et al., 2023). Real-time halal monitoring, combined with visible leadership engagement, contributes to consistent enforcement, mitigates reputational risks, and strengthens long-term customer loyalty.

4.6 THEORETICAL CONTRIBUTIONS

Extending Engagement Theory in the Digital Islamic Context: This study makes a significant theoretical contribution by extending Engagement Theory into the realm of Islamic digital governance. While traditional engagement models emphasize emotional and cognitive involvement, this study highlights the importance of spiritual and ethical dimensions in motivating leadership behaviour within halal-certified businesses (Ali et al., 2023). The integration of AI tools further modernises the engagement construct by showing how digital augmentation can reinforce human values in compliance systems.

*Operationalising Maqasid al-Shariah in AI-Assisted Compliance***:** A second contribution is the operationalisation of Maqasid al-Shariah in the context of artificial intelligence. The findings support the view that AI tools—when aligned with trust (thiqah), welfare (maslahah), and harm prevention (darar)—can serve as effective instruments in preserving Islamic ethical values in franchise operations (Dusuki & Bouheraoua, 2019; Rabbani et al., 2024). This demonstrates the feasibility of ethically guided digital transformation in halal governance, reinforcing the importance of a maqasid-oriented framework when implementing emerging technologies.

4.7 COMPARISON WITH UAE AND SAUDI HALAL ECOSYSTEMS

UAE: Blockchain for Halal Traceability

The UAE halal ecosystem has moved toward blockchain-enabled traceability to secure halal supply chains. As reported by Alsharari (2023), blockchain offers immutable audit trails that enhance consumer confidence and regulatory efficiency. Unlike Malaysia's AI-driven decision-support systems, the UAE

relies on decentralised data verification to assure compliance. This technological divergence reflects differing institutional logics: Malaysia prioritises real-time monitoring with leadership oversight, whereas the UAE emphasises technological neutrality and transparency. The UAE's strategy is further supported by blockchain-led government initiatives to standardise halal traceability across borders, as documented by Fischer & Reiner (2020). In contrast, Saudi Arabia's approach aligns with the top-down governance model rooted in centralised audits (Elasrag, 2022).

Saudi Arabia: Centralised Audit Systems vs Malaysia's Hybrid Model

In contrast, Saudi Arabia's halal compliance approach is largely centralised, with high reliance on government-led audits and prescriptive enforcement models (Rabbani et al., 2024). While effective in ensuring baseline standards, such models may lack the operational agility and franchise-level autonomy required in more dynamic sectors. Malaysia's hybrid model combining AI compliance tools, leadership engagement, and regulatory facilitation offers a more adaptive and scalable approach suited for franchise-based halal economies. This model allows for decentralised implementation while maintaining centralised ethical oversight.

The study provides empirical evidence that AI-driven compliance systems, when mediated by leadership engagement, are effective in strengthening halal brand assurance. The findings bridge theory and practice by positioning human–machine collaboration as the new frontier for Shariah-compliant digital governance in franchise ecosystems. Malaysia's model of digitally assisted, values-driven leadership may serve as a blueprint for other Muslim-majority countries seeking to modernise their halal ecosystems while preserving Islamic ethics.

While this study is grounded in the Malaysian halal franchise context, the conceptual model proposed linking AI-assisted compliance, leadership engagement, and halal brand assurance is inherently transferable to other Muslim-majority economies. Given the universal principles of Maqasid al-Shariah and the growing global convergence on digital halal governance, this framework can be empirically tested in countries such as Indonesia, Saudi Arabia, Pakistan, and the UAE, where halal regulation and franchise expansion are rapidly evolving. The adaptability of the model lies in its dual emphasis on technological readiness and ethical leadership, which are critical success factors across diverse institutional environments. Future cross-country applications of this model could provide comparative insights into how national regulatory cultures, levels of digital maturity, and leadership norms influence the effectiveness of AI-driven Shariah compliance strategies.

5.0 CONCLUSION AND IMPLICATIONS

This study provides empirical evidence for a novel framework that integrates AI-assisted compliance, leadership engagement, and halal brand assurance within Malaysia's franchise ecosystem. Based on data from 150 halal-certified franchise operators and analysed using PLS-SEM, the findings confirm three key relationships: (1) AI compliance tools significantly influence leadership engagement ($\beta = 0.55$, $p < 0.001$); (2) leadership engagement plays a critical mediating role in enhancing halal brand assurance ($\beta = 0.59$, $p < 0.001$); and (3) the integrated model explains a substantial proportion of variance in halal brand assurance ($R^2 = 0.53$).

The theoretical contribution lies in linking digital transformation with Islamic governance by integrating Engagement Theory, Maqasid al-Shariah, and Institutional Theory. Practically, the findings offer actionable guidance for policymakers, franchisors, and halal regulators. Specifically, the study recommends embedding AI systems within franchise operations, supported by ethical leadership, to

enhance compliance agility and integrity. Regulatory bodies such as JAKIM are urged to support real-time monitoring systems and foster AI-readiness among stakeholders.

Franchise headquarters should invest in leadership training that combines digital literacy with Shariah ethical principles, ensuring that AI tools are not only adopted but applied meaningfully. A professional certification system for digital halal compliance leaders is also proposed to institutionalise ethical accountability.

Despite its cross-sectional scope and reliance on self-reported data, the study provides a strong foundation for future longitudinal and cross-country research. As halal industries navigate the Fourth Industrial Revolution, Malaysia's AI-integrated and values-driven franchise ecosystem may serve as a model for ethical digital transformation in Muslim-majority economies.

AUTHOR CONTRIBUTIONS

Abdul Razak Yahaya: Conceptualisation, Methodology, Data Curation, Formal Analysis, Writing – Original Draft, Writing – Review & Editing, Project Administration.
Baharu Kemat Alhaj: Validation, Software, Resources, Supervision, Writing – Review & Editing.

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