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The influence of education level, halal awareness, and halal certification costs on halal certification decisions with religiosity as a moderating variable: A case study of MSMEs in Kudus Regency

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ABSTRAK

Introduction

Currently, halal certification is crucial for Micro, Small, and Medium Enterprises (MSMEs). Halal certification, issued by BPJPH based on a fatwa from the Indonesian Ulema Council, acknowledges a product's halal status. Despite high education levels, strong halal awareness, and affordable certification costs, only a few MSMEs in the Kudus Regency have obtained halal certification. This study aims to analyze the influence of education level, halal awareness, and halal certification costs on the halal certification decisions of MSMEs in the Kudus Regency, with religiosity as a moderating variable.

Objectives

The objective of this research is to analyze the effects of education level, halal awareness, and halal certification costs on halal certification decisions and to examine the role of religiosity as a moderating variable in these relationships.

Method

This quantitative study utilized data from 144 MSMEs in the Kudus Regency, which have not yet obtained halal certification. The data were analyzed using multiple linear regression with moderating effects using EViews. This study tested hypotheses regarding the direct and moderating effects of education level, halal awareness, and certification costs on halal certification decisions.

Results

The findings indicate that educational level, halal awareness, and halal certification costs significantly influence halal certification decisions. However, religiosity did not moderate the relationship between these variables and halal certification decisions. Higher education levels

bring greater awareness of the importance of halal certification, while increased halal awareness positively affects certification decisions. Certification costs are also a significant factor, with lower costs encouraging MSMEs to seek certification.

Implications

These results suggest the need for broader educational campaigns focused on the importance of halal certification in increasing MSME awareness. Governments and related institutions should consider providing subsidies or financial assistance to reduce certification costs. Enhancing educational and training programs on halal certification can also drive market demand for halal products.

Originality/Novelty

This research contributes to the understanding of the factors influencing halal certification decisions among MSMEs, highlighting the roles of education, awareness, and cost, while questioning the moderating effect of religiosity. It provides practical recommendations for policymakers to support MSMEs in achieving halal certifications.

INTRODUCTION

In the era of globalization, the concept of halal has become a fundamental aspect of consumption and production practices for Muslims around the world. Halal principles are not only limited to religious aspects, but are also closely related to quality standards, food safety, and regulatory compliance. Halal products have wide appeal, including in countries with non-Muslim populations, as they are considered a guarantee of the hygiene and safety of the products consumed (Aliyanti et al., 2022; Fatmawati et al., 2023). Along with the increasing global awareness of the importance of halal product consumption, the demand for halal certification is also increasing. Halal certification serves as a mechanism to ensure that the products consumed have met standards in accordance with Islamic law and have transparency in the supply chain. However, despite the increasing awareness of the importance of halal certification, there are still significant barriers to its implementation, especially among Micro, Small and Medium Enterprises (MSMEs) (Waluyo, 2013).

Indonesia as a country with the largest Muslim population in the world has great potential in developing the halal industry. The government through the Halal Product Guarantee Agency (*Badan Penyelenggara Jaminan Produk Halal* abbreviated BPJPH in Bahasa Indonesia) has issued various policies to accelerate the halal certification process for MSMEs. However, the main obstacle faced is the low number of halal-certified MSMEs, even though business actors have a fairly high level of education, good halal awareness, and relatively affordable certification costs (Nuraliyah et al., 2023). This indicates that there are other factors that influence halal certification decisions,

which need to be further investigated. Several studies have shown that the religiosity factor can be a moderating variable that plays a role in making halal certification decisions. However, the extent to which religiosity can moderate the relationship between education level, halal awareness, and certification costs with halal certification decisions is still a question that has not been adequately answered in the academic literature.

In the context of MSMEs, the decision to obtain halal certification is influenced by various factors. The level of education is often associated with an increased understanding of the importance of halal certification, so individuals with higher levels of education are expected to be more likely to carry out halal certification. In addition, high halal awareness also contributes to increasing the tendency of MSMEs to register their products to obtain halal certification (Fatmawati et al., 2023). Another factor that is no less important is the cost of halal certification. Too high a cost can be a barrier for MSMEs to obtain certification, even though there is a free halal certification program provided by the government (Faridah, 2019). Therefore, this study seeks to examine the extent to which these factors influence halal certification decisions and whether religiosity can strengthen this relationship.

Several previous studies have highlighted the effect of education on halal certification decisions. Waluyo (2013) found that education level has a significant influence on the decision to obtain halal certification. The higher a person's level of education, the greater his understanding of the urgency of halal certification and its impact on business sustainability. In addition, research conducted by Fatmawati et al. (2023) shows that halal awareness also plays a crucial role in halal certification decisions. This awareness includes not only religious aspects but also economic and health factors related to the consumption of halal products. Another study by Nuraliyah et al. (2023) found that the cost of halal certification is one of the main obstacles for MSMEs to obtain certification, even though they have realized the benefits.

In addition to these factors, religiosity is also considered as a variable that can moderate the effect of education level, halal awareness, and certification costs on halal certification decisions. Previous research found that religiosity has an influence on purchasing decisions for halal products (Matondang et al., 2023; Nugroho et al., 2021), but its effect on halal certification decisions has not been widely studied. Some studies show that individuals with high levels of religiosity are more likely to adopt halal principles in their daily lives, including in business decisions (Prasetyo & Anitra, 2020). However, other studies show conflicting results, where religiosity does not always correlate with the decision to obtain halal certification, especially in the context of MSMEs (Fitriani, 2017). Thus, there is a gap in the literature regarding the role of religiosity in halal certification decisions that needs to be further explored.

Although various studies have examined the factors that influence halal certification decisions, there are still limitations in understanding how religiosity can moderate the relationship between these factors. Some previous studies have focused on the direct effect of religiosity on purchasing decisions for halal products (Rustandi & Marlina, 2022), but not many have discussed the role of religiosity in the context of halal

certification decisions for MSMEs. Therefore, this study seeks to fill the gap in the literature by examining the role of religiosity as a moderating variable in the relationship between education level, halal awareness, and certification costs with halal certification decisions.

The main objective of this study is to analyze the effect of education level, halal awareness, and halal certification costs on MSME halal certification decisions in Kudus Regency and explore the role of religiosity as a moderating variable in the relationship. This study is expected to contribute to the academic literature by offering new insights into the factors that influence halal certification decisions and how religiosity can strengthen or weaken the relationship. In addition, the results of this study are also expected to provide practical recommendations for the government and other stakeholders in designing more effective policies to increase MSME participation in halal certification, so as to support the development of a more inclusive and sustainable halal industry.

LITERATURE REVIEW

Education Level and Halal Certification Decisions

The relationship between education level and halal certification decisions reflects the complexity of various aspects, including consumer awareness, business performance, and the social and cultural context of halal practices. Education plays an important role in shaping individuals' understanding of halal certification and influencing their attitudes and behaviors towards halal products. This relationship becomes even more relevant in the context of a rapidly evolving halal market, where informed decision-making is crucial for both consumers and businesses.

Research shows that higher education levels correlate with increased awareness and understanding of halal certification among consumers. Previous studies indicate that individuals with higher education levels are more likely to understand the importance of halal certification in ensuring food safety as well as ethical standards in food production (Boni & Forleo, 2019). This higher awareness drives the propensity to purchase halal-certified products, as educated consumers tend to prioritize quality and safety in their food choices (Talib et al., 2017). In addition, education also strengthens consumers' ability to evaluate claims made by halal certification bodies, thereby increasing the level of trust in the certification process (Boni & Forleo, 2019).

Furthermore, the influence of education is not only limited to consumer behavior but also affects business decisions related to halal certification. Companies that invest resources to improve their workforce's understanding of halal standards are better able to meet the increasing demands of the halal market. Previous study revealed that companies that have a workforce with a strong understanding of halal principles are more likely to pursue halal certification, as they realize its benefits in improving business performance and corporate social responsibility (Secinaro & Calandra, 2020). This is especially true in the food and beverage sector, where halal certification is increasingly considered a competitive advantage (Talib et al., 2017). Therefore, education plays a

major role in ensuring that businesses can effectively adapt to the increasingly stringent halal requirements and thrive in the global market.

Halal Awareness and Halal Certification Decisions

Halal awareness is a major factor influencing halal certification decisions, both at the individual and business level. It reflects a person's understanding of halal principles and the importance of halal certification in ensuring compliance with Islamic law. Studies show that individuals with a high level of halal awareness tend to pay more attention to the legality of the products they consume and prefer products with halal certification as a guarantee of compliance with sharia standards (Muslichah et al., 2019; Usman et al., 2021). This is particularly relevant for Muslim consumers who prioritize halal products in their purchasing decisions (Afendi, 2020; Usman et al., 2021). In addition, increasing halal awareness not only affects individual decisions, but also has an impact on broader market trends, where companies are trying to meet consumer demand by providing halal-certified products (Oemar et al., 2020; Utami et al., 2022).

The role of education in raising halal awareness is also very significant. Educational programs designed to increase understanding of the halal certification process and the importance of compliance with halal standards have been shown to increase awareness among both consumers and businesses (Jannah & Al-Banna, 2021; Oemar et al., 2022). For example, training focused on halal certification for micro, small and medium enterprises (MSMEs) has increased the desire of businesses to obtain certification, thus expanding the reach of halal products in the market (Nurjamin & Ariyanti, 2022). Thus, increasing halal awareness through education contributes to a stronger halal certification system, which benefits both consumers and producers in ensuring compliance with halal regulations.

Cost of Halal Certification and Halal Certification Decisions

The cost of halal certification is a major factor that can influence business decisions, especially for micro, small and medium enterprises (MSMEs). Although halal certification provides advantages in improving competitiveness in the global market, the high cost is often an obstacle for many businesses (Aziz, 2022; Santoso et al., 2021). Studies show that expensive certification costs can reduce the interest of MSMEs to obtain halal certification due to budget and resource constraints (Oemar et al., 2020; Santoso et al., 2021). In addition, the complexity of the certification process, which requires time and effort, is also a factor that increases the burden on business actors (Assagaf et al., 2022; Santoso et al., 2021). Therefore, simplifying procedures and reducing certification costs can increase business participation in obtaining halal certification and expand the scope of halal products in the market.

In addition to cost factors, businesses' perceptions of the benefits of halal certification also play an important role in decision making. Several studies have shown that although halal certification can increase consumer confidence and expand the market, not all businesses realize its long-term benefits (Hasan et al., 2020; Zailani et al., 2019). Businesses that understand that halal certification can increase sales and customer loyalty tend to be more willing to allocate funds to obtain certification (Hasan

et al., 2020; Ruhana, 2021). However, for most MSMEs, the high cost of certification remains a major obstacle, especially when the benefits have not been felt directly (Oemar et al., 2020; Santoso et al., 2021). Therefore, government intervention in the form of subsidies or financial assistance for MSMEs can be a solution to overcome cost barriers and encourage more businesses to obtain halal certification.

Religiosity, Education Level, and Halal Certification Decisions

Religiosity plays an important role in moderating the relationship between education level and halal certification decisions. Higher education is often associated with increased awareness of the importance of halal certification, but its effect on certification decisions may vary depending on the level of religiosity of the individual (Jannah & Al-Banna, 2021; Muslichah et al., 2019). Studies show that individuals with higher education levels have a better understanding of the halal certification process and its benefits, but without a strong religiosity drive, this awareness does not always lead to the decision to obtain halal certification (Silalahi et al., 2021; Suki & Suki, 2018). In populations with high levels of religiosity, educated individuals tend to be more motivated to obtain halal certification as they perceive it as a form of adherence to Islamic principles (Ayob & Nor, 2022; White & Samuel, 2016). In contrast, in groups with lower religiosity, higher education may increase understanding of halal certification, but does not necessarily result in a real commitment to applying certification to their products or businesses (Nadia, 2022; Usman et al., 2021).

In addition, the influence of religiosity in halal certification decisions is also influenced by social and cultural factors. In countries with a Muslim majority, the education system often includes elements of religious education that can strengthen the link between education level and halal certification decisions (Anggraini & Dewanti, 2020; Praswati & Prijanto, 2017). High religiosity in society can strengthen the impact of education on halal business and consumption decisions, creating an environment where more educated individuals feel more compelled to obtain halal certification (Asnawi et al., 2018; Mursid, 2022). However, in societies that are more secular or lack a strong religious understanding, a higher level of education does not necessarily translate into a greater decision to obtain halal certification. This suggests that the combination of education and religiosity is critical in understanding the factors that influence halal certification decisions, as well as how these two variables interact to determine consumer behavior and business strategies in the halal industry.

Religiosity, Halal Awareness, and Halal Certification Decisions

Religiosity acts as a significant moderating variable in the relationship between halal awareness and halal certification decisions. Halal awareness, which includes understanding and recognition of halal products and the importance of halal certification in ensuring compliance with Islamic law, is often associated with increased demand for halal-certified products (Muslichah et al., 2019; Siska et al., 2020). However, this level of awareness does not always automatically drive halal certification decisions. Studies show that individuals with high levels of religiosity tend to consider halal certification as a religious obligation, so their halal awareness is more likely to be

realized in the decision to obtain halal certification (Ikawati & Rahman, 2022; Jannah & Al-Banna, 2021). Conversely, for individuals with low religiosity, despite having high halal awareness, the decision to obtain halal certification tends to be influenced more by economic and practical factors than by religious belief factors (Suki & Suki, 2018; Usman et al., 2021).

The effect of religiosity in moderating the relationship between halal awareness and halal certification decisions can also be observed in consumer behavior and business practices. In the business context, entrepreneurs with a high level of halal awareness but low religiosity tend to view halal certification as a marketing strategy rather than as compliance with religious values (Afendi, 2020; Sulaiman & Hashim, 2021). In contrast, for entrepreneurs with high religiosity, halal certification is not only a business strategy, but also part of their commitment to Islamic principles (Saifudin et al., 2020; Utami et al., 2022). This suggests that religiosity not only strengthens the relationship between halal awareness and halal certification decisions, but also influences how individuals and businesses interpret and implement halal principles in their daily practices.

Religiosity, Cost of Halal Certification, and Halal Certification

The cost of halal certification is a factor that is often an obstacle for businesses, especially for small and medium enterprises (SMEs), in obtaining halal certification (Aziz, 2022; Mellita et al., 2020). The costs involved include registration, regulatory compliance, and maintenance of halal certification, which can be perceived as a financial burden (Mellita et al., 2020; Wijaya et al., 2018). However, research shows that the perception of these costs is not universal, but is influenced by the level of religiosity of businesses (Damayanti et al., 2022; Ruhana, 2021). Business actors with a high level of religiosity tend to view the cost of halal certification as a moral investment in line with Islamic values, not just a business expense (Oemar et al., 2022; Šuligoj & Maruško, 2017). Thus, the level of religiosity acts as a moderating variable that determines whether the cost of halal certification will hinder or encourage business actors' decisions to obtain halal certification.

Conversely, for businesses with lower levels of religiosity, the cost of halal certification is often considered a major obstacle in making certification decisions (Annabi & Ibidapo-Obe, 2017; Herindar, 2022). This suggests that the effect of certification costs on the decision to obtain halal certification depends not only on economic factors, but also on individual religious commitment (Giyanti & Indriastiningsih, 2019; Utami et al., 2022). In addition, the preferences of consumers who have a high level of religiosity also play a role in shaping a market environment that is more supportive of halal certification (Noordin, 2021; Sulaiman & Hashim, 2021). Consumers with strong religious awareness are more likely to choose halal-certified products, thus providing an additional incentive for businesses to bear the cost of halal certification even though it is expensive. Therefore, in understanding the dynamics of halal certification, it is important to consider the role of religiosity not only in the context

of business decisions, but also in relation to consumer behavior and the broader economic environment.

Hypothesis

The hypotheses in this research are as follows:

H_1: The level of education influences the halal certification decision for MSMEs in Kudus Regency

H_2: Halal awareness influences the halal certification decision for MSMEs in Kudus Regency

H_3: The cost of halal certification influences the halal certification decision for MSMEs in Kudus Regency

H_4: Religiosity moderates the level of education on the halal certification decision for MSMEs in Kudus Regency

H_5: Religiosity moderates halal awareness of MSME halal certification decisions in Kudus Regency

H_6: Religiosity moderates halal certification costs on MSME halal certification decisions in Kudus Regency

METHOD

This research is categorized as field research because the sources of data and information used come from the field. The research approach used is quantitative with the help of the Eviews 9 application as a data analysis tool. The sampling technique used is purposive sampling, namely sample selection based on certain predetermined criteria. The criteria used in determining the sample are: (a) the business has been running for at least one year, (b) the research location only includes micro, small and medium enterprises (MSMEs) in Kudus Regency, (c) the type of business under study is engaged in the food and beverage sector, and (d) businesses that do not yet have halal certification. The data sources in this study consist of primary and secondary data. Primary data was obtained directly from respondents, namely MSME actors in Kudus Regency who filled out the research questionnaire. Meanwhile, secondary data is obtained from various sources such as books, journals, and relevant web pages.

Data collection in this study was carried out through observation and distributing questionnaires to respondents to obtain primary data. Secondary data is collected from previous publications that have been available, both in print and digital form. To ensure the accuracy of the measurement instrument, this study conducted validity and reliability tests. The validity test is used to measure the level of accuracy or accuracy of the research instrument as a flexible measuring tool. The measurement results are said to be valid if the instrument used is able to accurately measure the variable under study. In addition, the reliability test is carried out to assess the consistency of the measuring instrument. The research instrument is considered reliable if the measurement results are consistent every time it is used under the same conditions.

In data analysis, this study applies the classic assumption test to ensure that the regression model used meets statistical requirements. The normality test is carried out to determine whether the residual values in the regression are normally distributed, which is the main requirement in a good regression model. Furthermore, the multicollinearity test is used to detect the presence of high correlation between independent variables, because the absence of multicollinearity is an important requirement in regression analysis. Heteroscedasticity test is conducted to ensure that the residual variance is homogeneous or has the same distribution among different observations.

Hypothesis testing in this study was carried out using Moderated Regression Analysis (MRA) to test the effect of moderation in the relationship between variables. The regression model used consists of several regression equations that include moderating variables (Z) in the analysis. In addition, this study also applies the coefficient of determination (R^2) test to measure how much the independent variable is able to explain the variability of the dependent variable. The simultaneous F test is used to assess whether all independent variables together have an influence on the dependent variable, with the basis for decision making based on the comparison of the F-statistic value with the F-table. Finally, the partial t test is used to evaluate the effect of each independent variable on the dependent variable individually. The effect is considered significant if the probability value of t is smaller than 0.05, while if it is greater than 0.05, then the independent variable is considered to have no significant effect on the dependent variable.

RESULTS AND DISCUSSION

Validity and Reliability Test

Table 1 presents validity and reliability test results for this study. the The combined validity test results demonstrate the reliability of the measurement instruments used for five key variables: Education Level (X1), Halal Awareness (X2), Halal Certification Fees (X3), Religiosity (Z), and Halal Certification Decision (Y). Each variable consists of multiple items, and the results indicate that all items have an *r count* greater than the *r table* value of 0.163. This suggests that each item correlates significantly with the total score, confirming its validity. Specifically, the highest correlation was observed in the Cost of Halal Certification variable, with *r count* values reaching up to 0.814, while the lowest valid correlation appeared in the Religiosity variable at 0.390.

These results imply that the data collection instruments used in this study effectively measure their intended constructs. The high validity across all tested variables ensures that the responses collected are both accurate and representative of the underlying concepts being studied. This strengthens the credibility of the research findings, as the measured data reliably reflect the intended aspects of education level, halal awareness, certification costs, religiosity, and certification decisions. Consequently, these validated instruments can be confidently used for further analysis and interpretation within the research framework.

Table 1

Validity and Reliability Test Results

Variable & Items	*r* count	Validity	Cronbach's Alpha	Reliability
Level of Education (X1)			0.625	Reliable
Education1	0.678	Valid		
Education2	0.708	Valid		
Education3	0.671	Valid		
Education4	0.687	Valid		
Halal Awareness (X2)			0.827	Reliable
Awareness1	0.579	Valid		
Awareness2	0.544	Valid		
Awareness3	0.544	Valid		
Awareness4	0.732	Valid		
Awareness5	0.611	Valid		
Awareness6	0.649	Valid		
Awareness7	0.568	Valid		
Awareness8	0.634	Valid		
Awareness9	0.693	Valid		
Awareness10	0.640	Valid		
Cost of Halal Certification (X3)			0.812	Reliable
Cost1	0.737	Valid		
Cost2	0.742	Valid		
Cost3	0.814	Valid		
Cost4	0.622	Valid		
Cost5	0.719	Valid		
Cost6	0.669	Valid		
Religiosity (Z)			0.818	Reliable
Religiosity1	0.390	Valid		
Religiosity2	0.407	Valid		
Religiosity3	0.641	Valid		
Religiosity4	0.668	Valid		
Religiosity5	0.668	Valid		
Religiosity6	0.636	Valid		
Religiosity7	0.700	Valid		
Religiosity8	0.600	Valid		
Religiosity9	0.682	Valid		
Religiosity10	0.719	Valid		
Halal Certification Decision (Y)			0.853	Reliable
Certification1	0.564	Valid		
Certification2	0.585	Valid		
Certification3	0.564	Valid		
Certification4	0.616	Valid		
Certification5	0.616	Valid		
Certification6	0.689	Valid		
Certification7	0.680	Valid		
Certification8	0.674	Valid		
Certification9	0.563	Valid		
Certification10	0.608	Valid		

| Variable & Items	*r* count	Validity	Cronbach's Alpha	Reliability
Certification11	0.620	Valid		
Certification12	0.650	Valid		

Source: Primary data. Authors' estimation.

The reliability test results indicate that all variables in the study meet the reliability threshold, with Cronbach's Alpha values exceeding the critical value of 0.60. The Halal Certification Decision variable (Y) exhibits the highest reliability coefficient at 0.853, followed by Halal Awareness (X2) at 0.827, Halal Certification Fees (X3) at 0.812, and Religiosity (Z) at 0.818, demonstrating strong internal consistency. Although the Education Level variable (X1) has the lowest reliability at 0.625, it still surpasses the minimum threshold, ensuring its consistency in measurement. These findings suggest that the research instrument used in this study is stable and reliable across different instances of data collection, meaning that if the study were replicated, similar results could be expected, reinforcing the validity and robustness of the research outcomes

Classical Assumption Test

The classical assumption tests conducted in this study confirm the validity of the regression model used. The normality test results in Figure 1 indicate that the data is normally distributed, as evidenced by the probability value of 0.181, which is greater than the significance threshold of 0.05. This suggests that the residuals in the model are symmetrically distributed, meeting one of the key assumptions required for linear regression analysis.

Figure 1

Normality Test Results
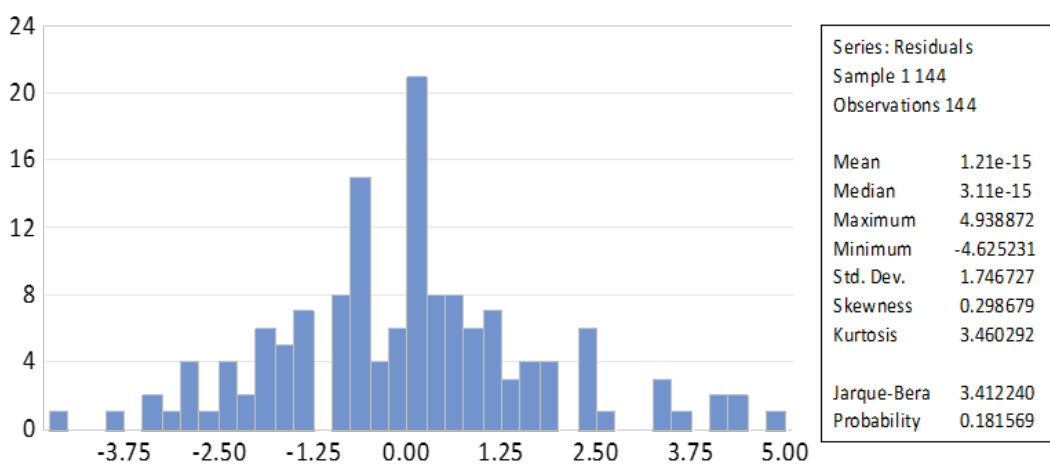
Source: Primary data. Authors' estimation.

Additionally, the multicollinearity test results show that all independent and moderating variables have Centered Variance Inflation Factor (VIF) values below 10, with the highest being 2.825889 for Halal Awareness (X2). This confirms the absence of multicollinearity, meaning that the predictor variables are not excessively correlated with each other, ensuring that the estimated coefficients are stable and interpretable.

Table 2

Multicollinearity Test Results

Variables	Coefficient Variance	Uncentered VIF	Centered VIF
C	11.64672	257.3118	NA
X1	0.038053	280.5203	2.003440
X2	0.012275	573.3898	2.825889
X3	0.006811	105.6936	1.131880
Z	0.010884	510.8226	2.482916

Source: Primary data. Authors' estimation.

Furthermore, the heteroscedasticity test using the Breusch-Pagan-Godfrey method confirms that the regression model does not exhibit heteroscedasticity, as the probability values for Obs*R-squared and Prob. Chi-Square (4) are greater than the α value of 0.05 (Table 3). This indicates that the variance of residuals remains constant across all levels of independent variables, satisfying another crucial assumption for reliable regression analysis. Overall, these findings confirm that the regression model adheres to the classical assumptions, ensuring that the results obtained are unbiased, consistent, and efficient, making them suitable for further interpretation and policy recommendations.

Table 3

Heteroskedasticity Test Results

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	2.450326	Prob. F(4.139)	0.0490
Obs*R-squared	9.485049	Prob. Chi-Square(4)	0.0501
Scaled explained SS	16.18366	Prob. Chi-Square(4)	0.0028

Source: Primary data. Authors' estimation.

Hypothesis Testing

The multiple regression analysis (MRA) results indicate varying degrees of influence between the independent variables and the halal certification decision (Y), particularly with religiosity as a moderating factor. Table 4 shows that education level (X1) and religiosity (Z) do not significantly influence halal certification decisions, as their probability values (0.6827 and 0.7813, respectively) exceed the 0.05 threshold. Similarly, in Table 5, halal awareness (X2) and religiosity (Z) also fail to show significant effects, with probability values of 0.9124 and 0.9770, respectively. However, Table 6 presents different findings, where the cost of halal certification (X3) has a probability value of 0.0562, which is close to the 0.05 significance level, suggesting a marginally significant impact. Additionally, religiosity (Z) in this model is statistically significant (p = 0.0036), indicating that religiosity plays a crucial role in influencing halal certification costs. These results highlight the importance of considering moderating effects when assessing the factors influencing halal certification decisions.

Table 4

Linear Regression Results using MRA (Education Level and Religiosity)

Variables	Coefficient	Std. Error	t-Statistics	Prob.
C	43.73315	35.95579	1.216303	0.2259
X1	-0.822204	2.007293	-0.409608	0.6827
Z	-0.220725	0.793685	-0.278101	0.7813
M1	0.042442	0.043835	0.968222	0.3346

Source: Primary data. Authors' estimation.

Table 5

Linear Regression Results using MRA (Halal Awareness and Religiosity)

Variables	Coefficient	Std. Error	t-Statistics	Prob.
C	35.14769	53.94669	0.651526	0.5158
X2	-0.129227	1.172165	-0.110246	0.9124
Z	-0.035002	1.210613	-0.028913	0.9770
M2	0.012594	0.026026	0.483912	0.6292

Source: Primary data. Authors' estimation.

Table 6

Linear Regression Results using MRA (Cost of Halal Certification and Religiosity)

Variables	Coefficient	Std. Error	t-Statistics	Prob.
C	-25.42828	23.11913	-1.099881	0.2733
X3	1.777008	0.922742	1.925790	0.0562
Z	1.462037	0.494069	2.959177	0.0036
M3	-0.028291	0.019600	-1.443400	0.1511

Source: Primary data. Authors' estimation.

The partial t-test results in Table 7 further validate the individual effects of the independent variables on the dependent variable. The first analysis examines the influence of education level (X1) on halal certification decisions, revealing a calculated t-value of 5.298, which exceeds the t-table value of 1.977. Additionally, the probability value of 0.000 is well below 0.05, confirming a positive and significant relationship. This suggests that individuals with higher education levels are more likely to make informed decisions regarding halal certification, possibly due to their greater awareness and understanding of halal-related regulations and requirements.

Table 6

Linear Regression Results using MRA (Cost of Halal Certification and Religiosity)

Variables	Coefficient	Std. Error	t-Statistics	Prob.
C	6.185515	3.419928	1.808668	0.0726
X1	1.050779	0.198322	5.298341	0.0000
X2	0.391515	0.095800	4.086802	0.0001
X3	0.417344	0.085600	4.875497	0.0000
F-statistic	69.80801			
Prob(F-statistic)	0.000000			

Variables	Coefficient	Std. Error	t-Statistics	Prob.
R-squared	0.599341			
Adjusted R-squared	0.590755			

Source: Primary data. Authors' estimation.

The second analysis investigates the effect of halal awareness (X2) on halal certification decisions. The results show a t-value of 4.086, surpassing the t-table value, with a significance level of 0.000. This indicates that halal awareness significantly influences certification decisions, as individuals with higher awareness levels are more likely to seek halal certification. This finding is consistent with previous studies suggesting that knowledge and awareness of halal principles drive consumer and business preferences for halal-certified products.

The third analysis evaluates the impact of halal certification costs (X3) on halal certification decisions. The obtained t-value of 4.875 exceeds the t-table value, with a probability value of 0.000, confirming that certification costs have a significant effect on halal certification decisions. This suggests that lower certification costs could encourage more businesses to obtain halal certification, while high costs may deter small enterprises from pursuing it. These findings imply that policymakers should consider cost-reduction strategies to facilitate broader halal certification adoption.

The simultaneous F-test results in Table 7 confirm the overall significance of the regression model. The calculated F-statistic is 69.808, far exceeding the F-table value of 2.67, with a probability value of 0.000, which is well below 0.05. This indicates that education level, halal awareness, and halal certification costs collectively have a statistically significant influence on halal certification decisions. The strong F-statistic supports the robustness of the model, suggesting that these independent variables effectively explain variations in the dependent variable.

The coefficient of determination results in Table 7 further reinforce the explanatory power of the model. The R-squared value of 0.599 indicates that 59.9% of the variation in halal certification decisions can be explained by the independent variables, while the remaining 40.1% is influenced by external factors not included in the model. The adjusted R-squared value of 0.590 provides a more refined estimate, confirming that the model maintains its explanatory power even after adjusting for the number of predictors. These results suggest that while the selected variables significantly contribute to explaining halal certification decisions, additional factors such as regulatory policies, market demand, and cultural influences should also be considered in future research.

DISCUSSION

Influence of Education Level on Halal Certification Decisions

The findings of this study indicate that the level of education significantly influences halal certification decisions. The test results show that the calculated t-value for education level is 5.298, with a probability level of 0.000, which is greater than the t-table value of 1.977. This statistical outcome suggests that individuals with higher education levels are more likely to pursue halal certification. Supporting research by

Waluyo (2013) demonstrates that education significantly impacts awareness of halal certification, highlighting that producers with higher education levels exhibit a stronger intention to obtain certification. Similarly, Qomaro (2018) found that education level affects halal certification decisions, emphasizing that higher education enables individuals to access necessary information for their well-being and financial stability. These studies collectively reinforce the conclusion that education enhances awareness and decision-making regarding halal certification.

While no significant studies directly contradict these findings, additional research supports the relationship between education and halal certification decisions. Studies on consumer behavior indicate that higher education levels correlate with increased awareness and trust in halal certification as a marker of food safety and ethical standards (Boni & Forleo, 2019). Research also suggests that businesses investing in employee education about halal standards are more likely to pursue certification due to its advantages in corporate social responsibility and market competitiveness (Secinaro et al., 2021). Furthermore, in countries where halal certification is less prevalent, educational campaigns have proven effective in bridging knowledge gaps and fostering greater acceptance of halal-certified products (Oemar et al., 2020). These findings affirm that education plays a crucial role in shaping both consumer and business decisions related to halal certification.

The implications of this study are particularly relevant for micro, small, and medium enterprises (MSMEs) in Kudus Regency. The findings suggest that increasing educational outreach on halal certification could lead to higher adoption rates among MSMEs, ultimately enhancing their market competitiveness and consumer trust. Given that higher education levels facilitate better access to information and regulatory knowledge, MSME owners with greater educational backgrounds are more likely to recognize the benefits of halal certification. Therefore, policymakers and industry stakeholders should prioritize educational programs and awareness campaigns tailored to MSMEs to bridge knowledge gaps and promote certification adoption. Such initiatives can empower local businesses, improve food safety standards, and contribute to the broader halal industry's growth in the region.

Influence of Halal Awareness on Halal Certification Decisions

The findings of this study indicate that halal awareness significantly influences halal certification decisions. The test results show that the t-count value for halal awareness is 4.086, with a probability level of 0.000, which is greater than the t-table value of 1.977. This suggests that individuals with a higher level of halal awareness are more likely to pursue halal certification. Supporting research by Fatmawati et al. (2023) confirms that increased halal awareness positively impacts the decision of MSME actors to obtain halal certification. Similarly, A'yun (2023) found that halal awareness significantly affects compliance with halal certification, emphasizing that businesses with higher halal awareness are more careful in ensuring their products meet halal standards. These findings highlight the crucial role of halal awareness in shaping business decisions regarding halal certification.

There is limited research that directly contradicts these findings; instead, additional studies further support the positive relationship between halal awareness and certification decisions. Research on consumer behavior shows that individuals with a strong understanding of halal principles are more likely to prioritize halal-certified products (Muslichah et al., 2019; Usman et al., 2021). Moreover, businesses that recognize the significance of halal certification often integrate halal awareness into their operational strategies, improving compliance and enhancing consumer trust (Oemar et al., 2022; Utami et al., 2022). Educational initiatives that promote halal awareness have also been found to increase the likelihood of MSMEs applying for halal certification (Jannah & Al-Banna, 2021; Ikawati & Rahman, 2022). This growing body of research suggests that halal awareness not only influences individual purchasing decisions but also plays a vital role in shaping market trends and business strategies.

The implications of this study are particularly relevant for MSMEs in Kudus Regency, where halal certification is becoming an important factor in business competitiveness. The findings suggest that increasing halal awareness through targeted education and training programs can encourage more MSMEs to seek halal certification. This, in turn, can enhance consumer trust, expand market opportunities, and improve business sustainability. Given that halal certification is often perceived as a complex and costly process, policymakers and industry stakeholders should focus on simplifying certification procedures while simultaneously increasing awareness campaigns. By fostering greater halal awareness among MSMEs, businesses in Kudus Regency can better align with consumer expectations, comply with regulatory requirements, and strengthen their position in the halal market.

Influence of Cost of Halal Certification on Halal Certification Decisions

The findings of this study indicate that the cost of halal certification significantly influences halal certification decisions. The test results show that the t-count value for halal certification costs is 4.875, with a probability level of 0.000, which is greater than the t-table value of 1.977. This suggests that higher certification costs act as a barrier to obtaining halal certification. Supporting research by Nuraliyah et al. (2023) confirms that financial constraints discourage business actors, particularly MSMEs, from applying for halal certification due to unpredictable income and limited financial resources. Similarly, Ningrum (2022) found that the high costs associated with obtaining certification pose significant challenges for MSMEs, as they must allocate substantial funds to secure a halal certificate. These findings highlight that financial concerns remain a primary obstacle in the certification process, limiting MSMEs' ability to access broader halal markets.

While no significant research contradicts these findings, additional studies reinforce the idea that certification costs influence business decisions. Research by Santoso et al. (2021) and Oemar et al. (2020) highlights that the lengthy and costly certification process prevents many small businesses from pursuing halal certification, ultimately restricting their market reach. However, other studies argue that businesses that view certification as a long-term investment are more likely to absorb the costs,

recognizing the potential for increased market access and consumer trust (Zailani et al., 2019; Hasan et al., 2020). Furthermore, research by Karimah & Darwanto (2021) suggests that businesses targeting international markets are more willing to pay certification fees, as halal certification enhances their competitiveness globally. These findings suggest that while cost is a critical factor, the perceived benefits of halal certification can sometimes outweigh financial constraints, particularly for businesses with growth ambitions.

The implications of this study are particularly relevant for MSMEs in Kudus Regency, where financial limitations remain a significant challenge for obtaining halal certification. To address this issue, local governments and relevant institutions should consider implementing subsidy programs or financial assistance initiatives to ease the financial burden of certification. Reducing certification costs through government incentives could encourage more MSMEs to pursue halal certification, thereby enhancing their marketability and consumer trust. Additionally, simplifying the certification process and providing educational resources about its long-term benefits can help MSMEs perceive halal certification as a valuable investment rather than a financial burden. By addressing cost-related barriers, stakeholders can foster greater participation in halal certification, ultimately strengthening the halal market and supporting the growth of MSMEs in Kudus Regency.

Moderating Effect of Religiosity on Education Level on Halal Certification Decisions

The findings of this study indicate that religiosity does not significantly moderate the relationship between education level and halal certification decisions. The test results show that both education level and religiosity have probability values of 0.6827 and 0.7813, respectively, exceeding the 0.05 threshold, suggesting that neither factor significantly influences halal certification decisions when considered independently or in interaction. These results align with research conducted by Nurudin et al. (2021) which found that religiosity does not enhance the influence of education on halal certification decisions. Their findings suggest that a higher education level alone does not necessarily lead to increased engagement in halal certification, as individuals may not perceive education as a sufficient driver for religious-based decision-making. This underscores the complexity of halal certification behavior, where other factors, such as financial constraints and regulatory awareness, may play a more substantial role.

While no significant studies contradict these findings, additional research supports the notion that education and religiosity independently contribute to halal certification decisions rather than interact as moderating variables. Studies have shown that individuals with higher education levels tend to have better access to information and resources about halal certification, yet this does not always translate into certification decisions unless there is an external motivator, such as regulatory enforcement or market demand (Jannah & Al-Banna, 2021; Oemar et al., 2022). Likewise, religiosity has been found to influence consumer behavior and preferences for halal-certified products, but its direct impact on business owners' decisions to certify their products

remains inconsistent (Usman et al., 2021; Karimah & Darwanto, 2021). This suggests that while both education and religiosity are important in shaping halal awareness, they may not be the primary determinants of halal certification adoption among businesses, especially MSMEs.

The implications of these findings for MSMEs in Kudus Regency highlight the need for targeted interventions beyond educational or religious initiatives alone. Policymakers and industry stakeholders should consider integrating halal certification awareness into both formal education and community-based religious programs while addressing practical barriers such as certification costs and bureaucratic complexity. Additionally, providing direct incentives, such as financial assistance or simplified certification procedures, may be more effective in encouraging MSMEs to obtain halal certification. By recognizing that education and religiosity alone may not drive certification decisions, efforts should focus on practical solutions that align business interests with regulatory compliance, ultimately fostering greater participation in the halal market.

Moderating Effect of Religiosity on Halal Awareness on Halal Certification Decisions

The findings of this study indicate that religiosity does not significantly moderate the relationship between halal awareness and halal certification decisions. The test results show that both halal awareness and religiosity have probability values of 0.9124 and 0.9770, respectively, exceeding the 0.05 threshold, meaning neither variable has a significant effect on halal certification decisions when considered in interaction. These findings align with research conducted by Fitriani (2017), which found that religiosity does not enhance the effect of halal awareness on certification decisions. Her study suggests that while religious commitment strengthens group solidarity and social ties, it does not necessarily translate into a higher likelihood of obtaining halal certification. This implies that although individuals may have high halal awareness and strong religious beliefs, other factors, such as financial constraints and regulatory challenges, may play a more decisive role in influencing their certification decisions.

While no significant research contradicts these findings, other studies further support the notion that halal awareness and religiosity independently contribute to halal certification decisions rather than interacting as moderating variables. Studies have shown that individuals with higher halal awareness tend to seek halal-certified products, yet this does not always lead to businesses actively obtaining certification unless there is a strong external motivator, such as government incentives or market demand (Jannah & Al-Banna, 2021; Oemar et al., 2022). Similarly, religiosity has been found to shape consumer preferences for halal-certified products, but its direct impact on business owners' certification decisions is inconsistent (Usman et al., 2021; Karimah & Darwanto, 2021). This suggests that while both factors are important in shaping halal consumption behavior, they may not be the primary drivers behind MSMEs' decisions to pursue halal certification, especially in cases where financial and administrative barriers exist.

The implications of these findings for MSMEs in Kudus Regency highlight the need for more practical interventions beyond religious or awareness-based initiatives alone. While promoting halal awareness and religious values remains important, policymakers and industry stakeholders should also focus on reducing certification costs, simplifying bureaucratic procedures, and offering financial incentives to encourage MSMEs to obtain halal certification. Furthermore, integrating halal certification education into business training programs and community outreach efforts could help entrepreneurs understand both the economic and ethical benefits of certification. By addressing the practical challenges MSMEs face, regulatory bodies can foster greater participation in halal certification, ultimately strengthening the halal market and enhancing consumer trust in Kudus Regency's local businesses.

Moderating Effect of Religiosity on Cost of Halal Certification on Halal Certification Decisions

The findings of this study indicate that religiosity significantly moderates the relationship between the cost of halal certification and the decision to obtain certification. The test results show that while the cost of halal certification (X3) has a probability value of 0.0562, which is marginally significant, religiosity (Z) is statistically significant (p = 0.0036). This suggests that religiosity plays a crucial role in influencing how businesses perceive and respond to certification costs. These findings align with research conducted by Imamuddin et al. (2020), which found that religiosity does not directly moderate the cost of halal certification but remains an influential factor in certification decisions. Their study suggests that while financial constraints are a major barrier, individuals with strong religious beliefs may be more willing to bear certification costs due to their commitment to halal compliance.

While no major studies contradict these findings, other research has also emphasized the independent influence of religiosity on halal certification decisions. Studies have shown that businesses owned by individuals with high religiosity tend to view halal certification not just as a regulatory requirement but as a religious obligation, motivating them to pursue certification despite high costs (Ruhana, 2021; Santoso et al., 2021). Conversely, businesses with lower religiosity levels are more likely to perceive certification costs as prohibitive, leading to reluctance in obtaining certification (Annabi & Ibidapo-Obe, 2017; Herindar, 2022). Additionally, consumer behavior research indicates that highly religious consumers prefer to purchase from halal-certified businesses, creating a market environment where businesses are encouraged to obtain certification to meet consumer expectations (Utami et al., 2022; Noordin, 2021). This highlights that while religiosity may not directly lower certification costs, it plays a role in how business owners prioritize halal certification as part of their ethical and market-driven decisions.

The implications of these findings for MSMEs in Kudus Regency suggest that financial constraints remain a significant hurdle in obtaining halal certification, but religiosity can serve as a motivating factor. This underscores the need for government intervention, such as subsidy programs or financial assistance, to help MSMEs

overcome cost barriers while capitalizing on their religious commitment to halal principles. Additionally, integrating halal certification education with religious and business training programs could further enhance MSMEs' understanding of the long-term benefits of certification. By addressing both financial and religious motivations, policymakers and industry stakeholders can create a more inclusive halal certification ecosystem, fostering increased participation from MSMEs and strengthening the halal market in Kudus Regency.

CONCLUSION

This study examines the factors influencing MSMEs' decisions to obtain halal certification in Kudus Regency, focusing on education level, halal awareness, and certification costs, with religiosity as a moderating variable. The findings reveal that education level and halal awareness significantly influence certification decisions, as MSMEs with higher education and greater awareness are more inclined to pursue certification. Additionally, the cost of halal certification serves as a critical barrier, discouraging many MSMEs from obtaining certification.

Interestingly, religiosity does not moderate the relationship between education and halal certification decisions, nor does it influence the impact of halal awareness on certification decisions. This suggests that while religiosity plays a role in shaping beliefs, it does not necessarily translate into certification behavior unless supported by external motivators such as regulatory incentives or financial assistance. However, religiosity does moderate the relationship between certification costs and certification decisions, indicating that highly religious entrepreneurs may be more willing to pursue certification despite financial constraints.

These findings contribute to the existing body of knowledge by clarifying the nuanced role of religiosity in halal certification adoption. The study highlights the importance of financial accessibility, targeted education, and regulatory support in promoting halal certification among MSMEs. Given the growing demand for halal products, policymakers should consider measures such as subsidies and awareness programs to enhance certification adoption. Future research should explore additional moderating factors, such as business size or government incentives, to further understand the dynamics of halal certification decisions.

Limitations of the Study

While this study provides valuable insights into halal certification decisions among MSMEs in Kudus Regency, several limitations should be acknowledged. First, the study is geographically limited to a single region, which may affect the generalizability of the findings to other areas with different economic and cultural contexts. Future research should consider expanding the scope to include MSMEs from multiple regions or countries to enhance external validity.

Second, the study relies on cross-sectional data, which captures responses at a single point in time. This approach may not fully reflect changes in business owners' attitudes or financial conditions over time. A longitudinal study could provide a more

dynamic understanding of how MSMEs' certification decisions evolve. Third, the study primarily focuses on three independent variables—education level, halal awareness, and certification costs—while other potential factors, such as government policies, market competition, and consumer demand, are not included. Future studies could incorporate these additional variables to provide a more comprehensive analysis.

Finally, religiosity is measured as a moderating factor without considering its potential interaction with external pressures, such as industry regulations or consumer expectations. Further research could explore how religiosity interacts with these external factors to influence certification decisions more holistically. Despite these limitations, this study offers meaningful contributions to the understanding of halal certification dynamics and provides a foundation for future research.

Recommendations for Future Research

Future research should explore additional variables that influence halal certification decisions beyond education, awareness, and costs. For example, factors such as government incentives, consumer demand, and competitive market pressure could provide a more comprehensive understanding of MSME behavior regarding certification. Another promising avenue for research is the role of digital platforms and e-commerce in shaping halal certification decisions. With the increasing importance of online markets, investigating how digital business strategies affect certification adoption could yield valuable insights.

Additionally, future studies could adopt a longitudinal approach to track changes in MSMEs' certification decisions over time. This would help identify whether financial improvements, regulatory shifts, or increased consumer awareness influence long-term certification trends. Cross-country comparative studies could also be valuable in examining how different regulatory environments and cultural attitudes impact MSMEs' certification decisions. Such research could inform policymakers on best practices for promoting halal certification at national and international levels.

Lastly, experimental research could assess the effectiveness of interventions such as financial subsidies or halal certification training programs in increasing certification adoption. By testing the impact of specific policy measures, future studies could provide evidence-based recommendations for government agencies and halal industry stakeholders.

Author Contributions

Conceptualization	W.F.A. & R.A.	Resources	W.F.A. & R.A.
Data curation	W.F.A. & R.A.	Software	W.F.A. & R.A.
Formal analysis	W.F.A. & R.A.	Supervision	W.F.A. & R.A.
Funding acquisition	W.F.A. & R.A.	Validation	W.F.A. & R.A.
Investigation	W.F.A. & R.A.	Visualization	W.F.A. & R.A.
Methodology	W.F.A. & R.A.	Writing – original draft	W.F.A. & R.A.
Project administration	W.F.A. & R.A.	Writing – review & editing	W.F.A. & R.A.

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Informed Consent Statement

Informed consent was obtained before respondents filled out the questionnaire for this study.

Data Availability Statement

The data presented in this study are available on request from the corresponding author.

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Conflicts of Interest

The authors declare no conflicts of interest.

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