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## Green Business Practices and the Success of Malaysia's Halal Food Companies

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### Abstract

This study examines the impact of green practise (GP) antecedents—green halal supplier selection (SUPP), green halal manufacturing (GHM), and green halal logistics (GHL)—on supply chain performance in the context of halal food small and medium enterprises (SME). The study examined the relationship between GP antecedent and supply chain performance using data from 115 halal SME. To test the proposed hypothesis, this study employed quantitative methodology with a purposive sampling technique. In addition, multiple regression employing structural equation modeling-partial least square (SEM-PLS) is used to examine the collected data while maximising the variance captured. This study found that GHL among supply chain partners has a greater impact on the performance of halal supply chains. In addition, empirical data validate the significance of SUPP and GHM in enhancing the performance of the halal supply chain in the context of halal food SME. Incorporating the GP as a strategic approach to boost supply chain performance while ensuring the halal credibility of the product, the findings of this study will assist halal small and medium-sized enterprises (SME) in refining their supply chain activity. This is the first study to examine the role of strategic green firm resources in enhancing supply chain performance.

**Keywords:** Green Practices, Halal Manufacturing, Halal Food, Small and Medium Enterprise

### Introduction

The collaborative relationship between green practises and supply chain performance has garnered increasing interest from researchers in recent years (Rao et al., 2005). Furthermore, it is evident that supply chain management (SCM) is a crucial factor in determining the firm's performance (Day & Lichtenstein, 2006; Kirchoff et al., 2016). Moreover, it is emphasised that the success of SCM is proportional to the level of collaboration between supply chain partners (Talib et al., 2015).

Mentzer et al (2001) noted that supply chain performance is highly correlated with supply chain members' willingness to invest their available resources, capabilities, and knowledge to

implement green practises in order to achieve sustainable business performance while meeting customer demands. These green practises are essential for a company's business stability in providing high-quality products as required by Islamic law (*Syariah*).

The increasing demand for halal-certified goods has prompted companies to adopt halal-compliant business practises (Abdul Rahman et al., 2013). In addition, the lucrative global halal market presents an opportunity for firms to enter a promising market segment (Muhamed et al., 2020; Halif, et al., 2022). The global halal market is estimated to be worth USD 1.292 billion in 2016 and is anticipated to reach USD 2.537 billion by 2019 (Zailani et al., 2017)

However, it is emphasised that the majority of halal firms are small and medium enterprises (SME) that lack resources including but not limited to financial, craftsmanship, and knowledge (Ali & Suleiman, 2016; Muhamed et al., 2020; Ab. Rahman, et al., 2022) to improve the supply chain performance (Kirchoff et al., 2016). To ensure the halal SME's competitiveness in the halal emerging market, it is essential for halal SME's to implement the strategic practise of GP. This strategy is essential for enabling a halal business to concentrate on its essential capabilities and accessible resources. Consequently, GP is one of the possible strategies that could help a business comply with environmental and *Syariah* regulations. As the to the best of author knowledge, there is a limited literature in determine the relationship between green practices and supply chain performance. Thus, this research is important in determine the influence of green practices in halal small and medium enterprise to alleviate the supply chain performance .

Six sections make up the remainder of this paper. Section 2 presents the literature review and conceptualization for this study. Methodology, study findings, and analysis are represented in Sections 3, 4, and 5, respectively. The conclusion and future research direction are presented in the final section.

### **Literature Review and Hypothesis Development**

Green practises must be incorporated into the entire halal food SC in order to achieve an effective SC and maintain the firm's competitive advantage (Ab. Rahman, et al., 2022; Rao et al., 2005), particularly in expanding markets such as halal industries. Green practises are defined by Chan et al (2012) as implementing green behaviour in food product design, material sourcing and selection, manufacturing process, logistic process, and product end-of-life management. In addition, Muslims are required to consume halal and healthy products on a daily basis (Muhamed et al., 2019; Tieman, 2015)

Nevertheless, the majority of halal supply chain key players (manufacturer, logistic, retail, and services) are non-Muslim SME (Muhamed et al., 2020; Zailani et al., 2015). Since consumer awareness of halal processes involves the entire supply chain and is not limited to the manufacturing process, the halal status of the product is debatable. Implementing a GP in halal supply chain operations is essential for a company to protect its halalness credibility by ensuring that supply chain members strictly adhere to halal and environmental requirements in managing the product.

Integration of GP into the entire halal food SC is essential for achieving a greener halal SC and maintaining a competitive advantage (Ortas et al., 2014; Salim et al., 2020). Consequently, Rejeb et al (2021) emphasised the significance of integrating environmental considerations into SCM such as halal SCM, including product design, material sourcing and selection, manufacturing processes, and delivery of the final product, to ensure that the quality and *halalness* of the product are maintained. According to Azevedo et al (2011), GP should

encompass all food SC activities, including procurement, production, and logistics. Several operational green practises are described in the literature, such as green halal supplier and green halal manufacturing (Ali et al., 2017; Ali & Suleiman, 2016)

Another practise referred to by researcher is green halal logistics (Haleem et al., 2021). In this paper, GP are defined as any action taken across the halal SC (into the focal company and involving relationships with partners upstream and downstream) to eliminate or reduce any negative environmental impact while maintaining the product's halal certification. Consequently, the GP can be identified at the strategic, tactical, or operational level and may be associated with the food supply process, the product itself, the delivery process, or innovative, advanced actions.

Existing literature provides empirical evidence of the impact of GP implementation on firm performance (Esper et al., 2010; Kirchoff et al., 2016). Min & Mentzer (2004) noted that there are five essential pillars of the GP of halal SCM, including supplier selection, green halal manufacturing, and green halal logistics.

Although extensive research has been conducted on the relationship between supplier selection, green manufacturing, and green logistics, this relationship remains unclear in the context of halal SME, particularly in terms of halal supply chain performance (Muhamed et al., 2020; Zailani et al., 2015). This is because the nature of SME businesses is distinct due to a lack of resources and inexperienced management to sustain business profit, particularly in emerging markets (Salavou et al., 2004; Zailani et al., 2018). Moreover, Muhamed et al (2020) noted that halal SMEs are likely to encounter challenges in ensuring that supply chain members protect halal credential and environmental quality, which is likely to have a negative impact on halal supply chain performance. Consequently, the following hypothesis is advanced: In line with this, Halif, et al (2022) emphasised that the inability of a company to ensure that its supply chain partners adhere to the same business objectives is one of the obstacles to delivering value and will likely impact supply chain performance. Consequently, the following hypothesis is advanced

H1: Green halal suppliers are positively associated with halal supply chain performance.

Second, a growing number of SMEs believe that going green will help them compete more effectively over time. In addition to long-term cost savings, manufacturing firms that adopt and implement green practises also benefit from customer brand enhancement, improved regulatory transactions, and increased investor interest. The key to competitiveness on the global market, regardless of industry size or sector, is the acknowledgment of GP as an essential factor. According to a number of studies, the successful implementation of green management practises results in increased profitability and organisational performance for businesses (Biswas & Roy, 2015). Consequently, the subsequent hypothesis is prompted:H2: Green halal manufacturing positively impacts the performance of the halal supply chain.

H2: The performance of the halal supply chain is enhanced by green halal manufacturing.

Researchers are still debating the strength of the connection between logistics and performance outcomes. Existing literature has explored the nomological relationship between the firm's green and halal marketing practises and the firm's overall performance (Oeyono et al., 2011; Saeidi et al., 2015). Several previous studies have examined the role of green logistic and halal logistic as a precursor to improve overall firm performance; however,

the impact of integrating halal and green logistic is still a matter of debate (Muhamed et al., 2020). These studies validate the association between logistic and halal supply chain performance outcomes. In this line of reasoning, the author hypothesises that the green halal logistic leverages superior value in the context of halal SME firms. Consequently, the following hypothesis is advanced:

H3: The performance of the halal supply chain is significantly impacted by green halal logistics.

In the context of halal SME, all three GP antecedents are significant as determinants of halal supply chain performance. Figure 1 depicts the relationship between the three GP's precursors and firm performance.

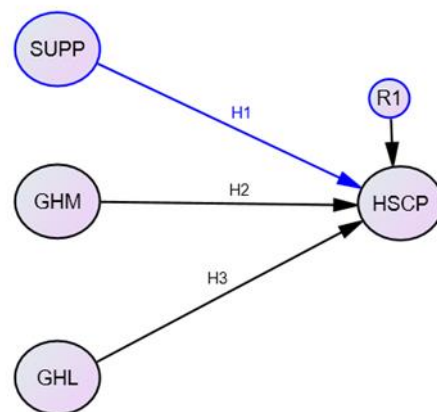


Figure 1 Theoretical framework

### Methodology

This study employed a quantitative methodology and a structured questionnaire to test the hypothesised proposition. Clearly, questionnaires are the most convenient data collection method (Frey, 1994). In addition, the use of a questionnaire in this study is intended to maintain the respondent's anonymity. The questionnaire consists of five sections, the first of which is devoted to respondent demographics and the second to green halal supplier selection (SUPP). Green halal manufacturing (GHM) and green halal logistics (GHL) come next. The final section of the questionnaire contains a dependent variable item, namely halal supply chain performance (HSCP). To preserve the content validity, the items used in this study were adapted from existing literature (Min & Mentzer, 2004; Sabbagh et al., 2017). The SUPP item is derived from Miocevic & Crnjak-Karanovic (2012), GHM from (Hernandez & Miranda, 2011), GHL from Acar et al (2017) and HSCP from (Theodosiou et al., 2012)

Respondents in this study were asked to indicate their level of agreement using a 5-point Likert scale (1=strongly disagree; 2=disagree; 3=neutral; 4=agree; 5=strongly agree), while the HSCP measure ranged from 1=very deteriorated; 2=deteriorated; 3=no improvement; 4=slightly improved; 5=very improved. The scale corresponds to the previous study. To ensure the clarity and readability of the primary components, they have all been pre-evaluated by academic experts. As a result, modifications have been made to clarify any inconsistencies.

**Sample Characteristic**

In this study, the sampling frame consisted of all West Malaysian halal food SMEs. The company's information was obtained from HDC. Given that there are 712 halal SME firms in West Malaysia, which is a small sampling frame the author chose an interactive web *Google Form* to increase the response rate, and the link was emailed to the purchasing manager and executive of the firms. Andrews et al (2007) emphasised that interactive web surveying is a cost-effective and time-efficient method for conducting surveys. In addition, the rationale for using an interactive web survey in this study is that interactive electronic surveys permit automatic authentication, and the survey data were securely stored in the cloud database. Out of 312 distributed questionnaires, 115 were returned during the specified time period (June 2022 to August 2022), for an effective response rate of 36.86 percent. This study employed a method of purposive sampling. The reason is to collect all of the information necessary to depict the phenomenon as intentional. In addition, it is consistent with the existing literature in the context. The respondent's demographic information is shown in Table 1.

Table 1  
*Demographic data*

		Frequency	%
Gender	Male	52	45.07
	Female	63	54.93
Age	20-29	49	42.25
	30-39	36	31.33
	40-49	21	18.66
	Above 50	5	4.26
Education	Certificate	2	2.11
	Diploma	40	34.51
	Degree	55	47.53
	Postgrad	18	15.85

The demographic information of the 115 participants in this study is presented in Table 1. This study's respondents are predominately female (54.93%) and predominantly male (45.07%). This demographic finding is consistent with Pitt & Khandker (1998) assertion that females are more likely to participate in surveys in order to express their feelings about a particular phenomenon. In the meantime, 47.53 percent of respondents held a bachelor's degree, followed by a diploma (34.51 percent), a postgraduate degree (15.85 percent), and a certificate (2.13 percent)..

Due to the small sample size and well-established theory, the SEM-PLS analysis method is deemed suitable for analysing the data of this study. In this study, SEM was chosen because of its capacity to simultaneously analyse the causal path involved in the analysis. In addition, PLS is a well-established method for estimating causal relationships involving latent constructs that are directly constrained by observed item or indicator. Consequently, the author selected SmartPLS 3.0 to analyse the survey data.

Regarding sample size, this study employs a rule of 10 emphasising that the minimum data required for SEM-PLS is ten times the compelling structural path to the specific variable. Thus, the sample size of 284 exceeds the minimum amount of data necessary for SEM-PLS analysis. The Kaiser Meyer Olkin (KMO) and Bartlett's test of sphericity is conducted by Statistical Package for the Social Sciences (SPSS) to ensure the sampling adequacy of the data set.

SEM-PLS involved a two-stage analysis, the first of which is the measurement model, and the second of which is the structural model (Hair et al., 2012; Hulland, 1999). In the measurement model stage, the validity and reliability of each item are measured to ensure that only valid and reliable items are used in the study. Later, in the second phase, the proposed structural model is evaluated by estimating the path between independent and dependent variables to assess their predictive ability and significance.

### Result

SPSS initially evaluates KMO and Bartlett's test for sphericity of sampling adequacy. It is stressed that the minimum KMO value is 0.6 (0.6). (Saunders et al., 2008). In this study, the value of KMO was found to be 0.882, which indicates that 88.2% of the correlation number corresponds to the size of the partial correlation coefficient for the total analysis variable. Therefore, the KMO result of this study is deemed commendable as it exceeds the 0.6 threshold (Hair et al., 2012). In addition, the Bartlett's test of sphericity is significant ( $p < 0.001$ ) for an approximate chi-square (2) value of 937.38, which indicates that the coefficient is not equal to zero. Table 2 displays the results of KMO and Bartlett's sphericity test.

Table 2

#### *KMO and Sphericity test*

Kaiser Meyer Olkin Measurement of Sampling Adequacy		.882
Bartlett's test of sphericity	Approx. chi-square	937.38
	df	105
	Sig.	0.000

Later, a factor analysis was conducted to evaluate the discriminant validity of the item, resulting in the elimination of two items (GHM2 and HSCP3) with low factor loading (0.60).. Accordingly, the 4 respective constructs are labelled SUPP (SUPP1, SUPP2, SUPP3, SUPP4, SUPP5), GHM (GHM11, GHM3, GHM4, GHM5, GHM6), GHL (GHL1, GHL2, GHL3, GHL4, GHL5), and HSCP (HSCP1, HSCP2, HSCP4, HSCP5, HSCP6).

After the initial screening by removing items with low factor loading, the convergent validity of the item is evaluated using the Average Variance Extract (AVE) and the Composite Reliability (CR) values. Khan & Mohsin (2017) emphasised that convergent validity is essential in structural modelling research to ensure that the items involved in a particular construct are measuring a single conception of agreement, where the threshold value is 0.5 (Henseler et al., 2014) or 0.7 (Nunnally & Bernstein, 1994). In addition, the item's reliability is determined by the most stringent Cronbach alpha value. Henseler et al (2014) highlighted that the Cronbach- value exceeds 0.5. As depicted in Table 3, the results of AVE, CR, and Cronbach- have exceeded the threshold value. These results demonstrate the existence of convergent validity in this study, in which the item measures the intended construct.

In addition, the discriminant validity of the item is evaluated by Heterotrait-Monotrait Ration 0.9 (HTMT 0.9), which, interestingly, did not reveal any violations in which all the values are less than the threshold value of 0.9 (Table 4).

Table 3

*Reliability and convergent validity*

Item	Loading	Cronbach $\alpha$	AVE	CR
SUPP1	0.827	0.869	0.75	0.94
SUPP2	0.864			
SUPP3	0.853			
SUPP4	0.901			
SUPP5	0.877			
GHM1	0.918	0.831	0.81	0.95
GHM3	0.897			
GHM4	0.877			
GHM5	0.901			
GHM6	0.899			
GHL1	0.755	0.742	0.71	0.92
GHL2	0.815			
GHL3	0.897			
GHL4	0.822			
GHL5	0.915			
HSCP1	0.812	0.796	0.67	0.91
HSCP2	0.799			
HSCP4	0.854			
HSCP5	0.772			
HSCPP6	0.841			

Table 4

*Discriminant validity*

	SUPP	GHM	GHL
SUPP			
GHM	0.769		
GHL	0.868	0.879	
HSCP	0.676	0.834	0.720

In addition, it is crucial to evaluate the multicollinearity problem in the proposed model, which is measured by the Variance Inflation Factor (VIF) (Haitovsky, 1969). The VIF is evaluated utilising a multiple regression. The evaluation of VIF reveals an acceptable value of less than 5 (5).. Consequently, all of the evaluations in the first stage of SEM-PLS analysis (measurement analysis) indicate that the proposed model exceeds the requirements for structural analysis.

In the structural analysis phase, to estimate the relationship between the variable and its significance, the bootstrapping method is used; 5000 subsamples are used with a sample size of 115 (Ketchen, 2013) to generate t-statistic and significance in PLS. The structural analysis of the model reveals a significant relationship ( $p < 0.001$ ) between SUPP and HSCP, which resulted in the acceptance of H1. This result suggests that top management plays a significant role in determining the firm's performance in the context of halal SME.

In addition, the path between GHM and HSCP reveals a significant relationship ( $p < 0.001$ ), supporting the hypothesis that green halal manufacturing has a substantial impact on the performance of the halal supply chain. The conclusion is that there is a significant ( $p < 0.001$ )



relationship between GHL and HSCP, supporting the hypothesis that GHL is important in determining HSCP for halal SME. This finding fills a current void by statistically demonstrating that the credibility of the supply chain among halal companies is essential for ensuring that the halal status of the product is not contested while environmental regulations are upheld. While the goal of using SEM-PLS in this study is to maximise the variance extracted (R<sup>2</sup>), the R<sup>2</sup> of SUPP, GHM, and GHL in determining the HSCP is found to be 0.672% (0.672). Table 5 provides a summary of the structural model's statistical analysis.

Table 5

*Hypothesis testing*

	Path	$\beta$	t-statistic	p-value	Significant
H1	HSCP ← SUPP	0.65	6.8	0.001	Yes
H2	HSCP ← GHM	0.57	4.5	0.001	Yes
H3	HSCP ← GHL	0.77	8.2	0.001	Yes

**Discussion**

In the context of halal SME, the existing literature does not adequately emphasise the concept of the precursor and impact of GP on HSCP. This study discourses this gap by providing understanding into relationship between GP antecedents and HSCP in the context of halal SME in Malaysia.

The outcome of this study delivers a pragmatic data for the projected hypothesis. Specifically, this study seeks to identify the most important factor influencing the performance of halal businesses by examining three significant factors: SUPP, GHM, and GHL on HSCP. Intriguingly, this is the first study to verify the influence of GP on HSCP in the context of halal small and medium-sized enterprises. Besides that, the enthusiasm to conduct this study is to integrate the distinct literature by considering the presence of halal credibility and environment concern in this research. Additionally, it is worthwhile to investigate the influence of credibility among the supply chain's key players in maintaining the halal credential when determining the supply chain's performance in light of environmental regulation.

Statistical evidence indicates that SUPP play a significant role in HSCP. This finding is in line with Lee et al (2015) which highlight that SUPP is crucial factor in determining the successes of the firm in penetrating the challenging global market. This offers solid ground for the inference that GP antecedent is prerequisite in determining the firm performance in the halal SME. GP recognises the significance of SUPP in the value creation process for managing upstream and downstream supply chain members. This finding refutes the claim of Lee et al. (2015) that SUPP has a negligible effect on firm performance; however, the finding of the study can be attributed to the statistical analysis method (SEM-PLS) that is similar to this study in that it captures the maximum shared variance (Sarstedt et al., 2016)

Additionally, while SUPP is found significantly impact towards HSCP, another antecedent of GP which is GHM shows significant positive relationship towards HSCP in the context of halal SME led to the acceptance of H2. This is consistent with the previous study by Stanko et al (2007), which emphasised that the manufacturing process plays a crucial role in ensuring the success of the supply chain, and consequently has a substantial impact on the firm's performance. On the other hand, this study's findings contradict those of Ashby et al (2012), who asserted that green manufacturing practises are more likely to improve the overall performance of the firm than supply chain performance. Yet, the study is contributed to the

sampling methodology which is random sampling methodology in collecting the data; in which the data of the study probably not gather within the target group, thus the outcome of the finding is considered as insignificant to represent the targeted segment of respondent (Herzog & Boomsma, 2009; Ab. Rahman, et al., 2022). Apparently, the sampling methodology play a vital role in determining the outcome of the result.

Remarkably, while SUPP and GHM play a significant role in determining the HSCP in the context of halal SME, this study enclosed that the importance of GHM among the supply chain partner in ensuring the halal credence and environmental concern is highly significance towards halal supply chain performance which led to the acceptance of H3. It is emphasised that GHM plays a crucial role in ensuring that the halal product's quality is not jeopardised by possible cross-contamination during the handling process or the purchase of halal-compliant raw materials (Poniman et al., 2015). All of these can be achieved by selecting the right and halal certified green halal supply chain partner in term of logistic, warehousing, and retailing. The best explanation is that by choosing the credible supply chain partnership will portray a good halal governance of the firm in Syariah and environmental compliance, simultaneously increased the supply chain performance.

### **Conclusion**

Although the ideas presented in this study are widely used in the setting of large corporations, they have not previously been studied in the context of small and medium-sized enterprises (SMEs) providing halal products and services in developing countries like Malaysia. Therefore, the application of this model to the halal SME, where the firm is confronting the shortage of resources in facing a worldwide competitive halal market, and where the market typically involves a complicated supply chain partnership, contributes valuable insight to the literature on an SCM and HSCP.

This study's findings suggest that strong ties between SUPP, GHM, and GHM are precursors to improved halal supply chain performance. This paper argues that, in order to boost halal supply chain performance, businesses should invest time and resources into teaching their employees about the crucial role that supply chains play in ensuring a company's long-term success, and they should maintain a flexible and cooperative stance within their networks of suppliers and partners at all times. Furthermore, the study offers a useful guidance for halal SMEs, especially in regards to the management of SCM, by centering on the GP.

When evaluating the hidden impact of GP in the halal SCM, halal SMEs must look beyond halal compliance, cost efficiency, and productivity. The results of this research contribute evidence that a company's performance may be sustained by the incorporation of GPs into day-to-day operations.

The present investigation opens up a few avenues for future research. First, the proposed model should be used in further studies to inquire into the connection with market performance. To fully grasp the influence of economic, cultural, and ethical positions on the implementation of GP in the context of a halal enterprise, future studies must also examine the locational issue in managing GP.

Second, studies also look into how GP's other dimensions affect the firm's bottom line. Due to rising consumer demand, the halal and green practises in SCM continue to attract attention, providing a window of opportunity for researchers to examine the results of GP implementation in a halal context and consider how halal SMEs can best position themselves to capitalise on the expanding halal market. The findings presented here serve as a

groundwork for future studies and as a pioneering study that will help shape the field and inform practise in this promising area.

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