

Improving 3RD Party Halal Local Service Providers in Halal Logistics: The Driving Factors from Malaysian F&B Manufacturing Perspectives

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Abstract— The paper aims to identify the determinants of driving factors from F&B manufacturers, among the Small and Medium-sized Enterprises in Malaysia towards the acceptance of halal logistics services via 3rd party local service providers. The data for this quantitative study were obtained from 86 respondents via email approach. The research instrument was constructed from past studies and posted through Google Form and Gmail. The findings of this study exposed some important implications for academic's literature and practical for the halal logistics industry. The R² value for the research model shows 0.724, indicating that 72.4% of the variance in the extent of the relationship can be explained by halal international logistics, the halal industry, and halal collaboration. Clearly, high demand from the international halal logistics, halal collaboration between the F&B industrial sector and government agencies as well as high awareness of halal interests by customers are the factors that pressure on the SMEs to practice halal logistics services. Hopefully, the results of this study would contribute to the growth of research in the area of the halal industry.

Keywords— *F&B, halal, logistics, SMEs, services providers*

1. Introduction

The high demand for halal products, especially food and beverage (F&B), has had a profound impact on the logistics management such as how the processes of transportation and warehousing that operate the halal products of F&B are carried out. According to [1] the halal concept has been included in the logistics management which involves all the activities along the supply chain process. Activities in the supply chain including the source of supply, handling, storage, warehousing, manufacturing and transportation activities. This is

because, throughout these supply chain activities, various conditions could expose the halal product into risks of contamination with haram or hazardous goods that would affect the status of the halal product [2]. Nowadays, the production is getting more globalized, thus supply chain is getting lengthier and complex that leading to higher risks of getting contaminated. This scenario has led to the introduction of a fairly new concept of halal logistics or halal supply chain [3].

At first place, halal logistics involves with material flow throughout the supply chain in accordance with Shariah requirements [4]. The material flow from transportation mode, storage, and warehouse including the operations terminals. Importantly, halal materials must be segregated from non-halal materials in order to avoid physical cross-contamination. This is a fundamental phase where the process will ensure the halal integrity of the materials is preserved [5]. Thus, halal logistics is a method to achieve an intended F&B characteristic such as nutritious, safety, and quality via supply chain “farm to fork” that must be both effective and sustainable [6]. Some issues of cross-contamination still happened these days, particularly in the F&B sector. As an example back in 2010, Sg. Petani, Kedah the authorities found a small business produces frozen foods such as fish balls and cakes were mixed with pork. The company also used fake JAKIM halal certificate and utilized the same storage and truck before disseminated to local customers [7]. According to [8], so far the demand from the F&B manufacturers for using halal status logistics services supplied by the 3rd party halal logistics service providers (HLSP) in Malaysia is below than 15%. Hence, this study looked at the potential driving factors from the perspective of Malaysian F&B halal manufacturers (from the category of Small and Medium Size of

Enterprises/SMEs) in improving the practice of halal logistics services offered by HLSP. To achieve this aim, this study was conducted among the SMEs F&B that producing halal products locally and internationally. The findings of this study are expected to contribute to the literature on halal logistics management. On the other hand, this study urges the results can be a reference for government-related agencies to come out with new guidelines in encouraging the F&B manufacturers to make use of the HLSP for distribution activities.

2. Literature Review

Customers always choose products that are affordable and fit in with their respective religious preferences. The Muslim community as an example would certainly purchase halal status products in accordance with human nature and Shariah requirements. When this compulsory requirement be known by F&B producers, they will do their best to fulfill the demand. Therefore, the logo and halal certificate issued by JAKIM as a government agency that acts according to current needs [9]. At the same time, the Department of Malaysia Standards (MS) has also issued official halal standards that must be compiled by halal product manufacturers (i.e., MS1500:2009) and MS2400:2010 for halal logistics management - Halalan Toyyiban Assurance Pipeline. Presently there is an increasing number of halal export activities [10] but the demand for halal facilities such as halal warehousing and transportation was not satisfactory [8]. They also suggested the majority of halal manufacturers are still unwilling to implement halal storerooms or warehouses in their business operations. The same discoveries also are founded by [11] that halal F&B manufacturers at this time still not ready to commit themselves to apply halal logistics services as overall. According to [12] it is better if the manufacturer of halal F&B products to extend the utilization of halal application to the entire supply chain networks, such as transportation, storage and handling processes from one place to another.

2.1. Halal International Logistics

Halal business activities at the world level have increased drastically in line with the increasing population of Muslim communities. According to the report, halal foods had a global market value of approximately 1.4 trillion U.S. dollars in 2017 and are expected to reach 2.6 trillion U.S. dollars in 2023 [13]. In line with population growth as well as halal market value, this will lead to the growth of

the logistics of halal applications provided by halal service providers worldwide. In Malaysia particularly, the domestic halal demand has also increased rapidly. According to [14] most of the LSP has a strong stance and they can accept the procedures to become HLSPs and become a bridge between the halal F&B SMEs and customers in providing a high level of halal transportation integrity. At the same time, products movement from SME manufacturers will typically use HLSP facilities will be more than what has been utilized today. If an international halal activity can be standardized with reasonable costs, then it will be accepted by many countries. As consequences, more goods will be on board as well as more transportation activities and it makes the utilization of HLSP also will continue to rise [3]. At the same time, the extent of the halal industry and its supply chain around the world, the need of HLSP with a special design carrier also will be needed. To ensure the halal-ness of the products from SME manufacturers to halal international market and finally to consumers will definitely need the HLSP facilities much more than what can be offered by conventional LSP [15].

2.2. Halal Industry

An increase in the number of halal product demand has led to more organizations entering the halal industry sector, especially the SMEs. According to HDC, the majority of halal F&B product manufacturers are coming from SMEs level. Presently, about 1100 SMEs are halal certified that produce F&B products. And due to high demand from the international market, they targeted to have more than 1600 companies to do the exporting in 2020. The main goal is to supply halal products to Olympic 2020 in Japan which worth than RM45.9 billion. The second goal is to export more halal products to 30 million Muslim population in China that will generate income more than RM5.4 billion annually [16]. This is a good development which also good news for LSPs who have halal certificates from JAKIM. Now in Malaysia only a few LSPs are offering halal logistics services, for example, the Kontena Nasional, Gerimis Baiduri, and Bifrost. One of the factors to attract SMEs to utilize HLSP is via a lower transaction cost and a declaration of the halal dedicated storage or warehouses including the haulage [17].

2.3. Halal Collaboration

Collaboration among stakeholders such as JAKIM, HDC, and MS with LSP associations is the most important stage in ensuring that HLSP services are

reliable and cost-effective. However, the halal logistic acceptance rate among the current LSPs is still low due to some challenges. According to [18] LSP is a purely profit-oriented business, so they are very concerned with SOPs that must be clear and do not affect their business status. Moreover, the majority of LSPs are also found to have insufficient knowledge in carrying out the logistics halal as proposed by Shariah law. It also indicated that most of them are untrained to manage the *sertu* process or the ritual cleaning process for their containers, haulage and storage equipment. To date, SMEs' acceptance of the use of cargo has been very encouraging for export purposes even most of them are still using the conventional logistics approach. Among the problems arise when to make use the halal logistics is toward the increase in costs due to limited numbers of halal logistics service provided by LSP [19]. On the other hand, the dedicated areas in seaports and land ports should be controlled by government agencies so that the cost of halal logistics handlings will be much affordable for SMEs. As suggested by [3], halal logistics practices should not lead to disproportionate costs.

2.4. The 3rd Party Local Service Providers

According to a study conducted by [2], the LSP has faced a lot of challenges during their effort to be HLSP. Among of the challenges are; inadequate information in managing halal logistics processes, lack of knowledge to identify the causes of cross-contamination problems, the separation of dedication places for halal products are seem increasing the operating costs and due to that, a lot of logistics activities currently done via conventional approach throughout the supply chain is still existed [20]. But at the moment, less demand faced by LSP because of the SMEs are still using the conventional logistics. As claimed by [2] the halal dedicated areas such as storage, cold room and warehouses are not be filled up by the halal products. It only filled up but less than 30% of the overall spaces declared. Perhaps with the help of government and logistics organizations, the increase in the cost of handling halal logistics can be reduced or be implemented with more efficient.

2.5. A Conceptual Framework

Based on the literature reviews, this study proposes a conceptual framework for studying the important factors from the perspective of halal F&B product manufacturers to practice the halal logistics services provided by HLSP in Malaysia. This framework emphasizes the following independent

variables: halal international logistics, halal logistics industry, and halal collaboration. The independent variables are related to a dependent variable which is HLSP (Figure 1):

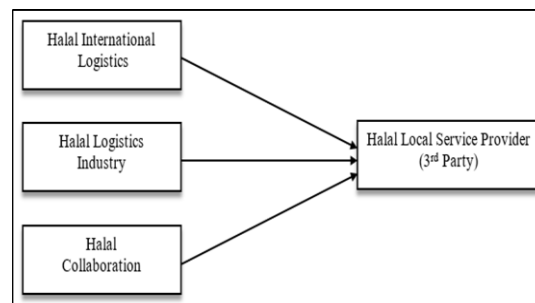


Figure 1. Conceptual Framework of the Study

This study proposes three hypotheses based on the literature reviews as well as the conceptual framework:

H1: The increase in SMEs' participation in halal international logistics activities will lead to an increase in the practice of halal logistics services provided by HLSP.

H2: The increase in SMEs' participation in halal logistics industry activities will lead to an increase in the practice of halal logistics services provided by HLSP.

H3: The increase in SMEs' participation in halal collaboration activities will lead to an increase in the practice of halal logistics services provided by HLSP.

3. Methodology

3.1. Population and Sampling Procedures

This study is a quantitative based with its main method of obtaining data through the distribution of survey forms via email. Respondents in this study were taken from the halal F&B manufacturing organizations in Malaysia. The responsible respondent for answering the email must be among the top management people such as the owner, general manager and CEO. Information about them is available from the online database (www.myhalal.gov.my). The population size of the potential respondents amounted to almost 5,300 including from large organizations and MNCs. Out of that, SME organizations are only about 1,100.

According to G-Power, the corresponding respondents should be 107. But 360 respondents have been randomly selected from the database. This is a proposal suggested by [21]. The same call was also made by some earlier researchers who studied the SMEs in Malaysia such as [15], [22]

and [23]. According to them, a study catches a reply from respondents about 13% to 25% is considered to be very satisfying.

3.2. Research Instruments

The research instrument comprised of three sections; section A for a profile of respondent, section B for a profile of the organization, and section C has been divided into four sub-sections labeled D through G. All questions except for profiles of respondent and organisation, were based on a five-point scale. The research instrument incorporated several established measures:

A. Halal International Logistics

To measure the halal international logistics, this study adopted six measurement items from past studies [24] and [2]. Some of the items include lack of halal logistics dedicated infrastructures, lack of information on domestics and abroad in handling halal logistics activities and more confidence if governments authorize international halal logistics management.

B. Halal Industry

The halal industry is galvanized by the Shariah requirements which all activities must be proven halal especially in F&B products, cosmetics, and pharmaceutical as well as trade practices. Thus, halal is a comprehensive set of regulations, which lays down the guidelines for the entire life in terms of permissibility and forbidding. There are items were six items adopted and modified from [8] and [18]. The examples of item are: lack of expertise and knowledge about halal logistics industry, and there is no model of successful halal logistics management to be a benchmarking.

C. Halal Collaboration

Among the advantages of halal collaboration are streamline the information and feedback along the supply chain and reduce the issue of bullwhip effects and distortion. In this study, there were five items adopted and modified from [24] and [25]. Respondents were asked to rate the items from “strongly disagree” to “strongly agree”, using the modified five-point Likert scale. Sample items include: not a cost-effective, and there is no halal logo primarily created for halal logistics.

D. 3rd Party Halal Local Service Providers

To measure the 3rd party halal service providers that offer the halal logistics services, six items were adopted from [2] and [18]. Some of the items are lack of dedicated halal assets and facilities/infrastructures, halal logistics training, and halal standard procedure practiced by HLSP.

The research instrument has been designed and constructed through Google Form and posted via Gmail. The delivery of the research instrument and getting back the response was completed within three months (July, August, and September 2017). A total of 360 emails containing the research instrument were sent to the respondents and 102 answers have been received. Then, only 86 respondents answered completely and can be further analyzed. Therefore, it can be concluded that this study receives a response rate of 23%. The background information of the respondents was presented in Table 1.

Table 1. Descriptive Analysis

Demographic Factor	Total	%
1. Gender		
Male	46	53.5
Female	40	46.5
2. Age		
Up to 30 years old	12	13.9
31 – 40 years old	24	27.9
41 – 50 years old	36	41.9
51 years old and above	14	16.3
3. Level of Education		
Secondary High School	14	16.3
Certificate & Diploma	25	29.1
Bachelor’s Degree	37	43.0
Master’s Degree	8	9.30
Doctoral Degree	2	2.30
4. Position		
Owner	64	74.44
Managing Director	18	20.92
CEO	4	4.64
5. Market		
Domestic	29	33.72
International	18	20.93
Both	39	45.35

3.3. Convergent Validity Analysis

Convergent validity is the test to measure the degree to which multiple items measure the same concepts are in agreement. Also, convergent validity refers to all items measuring a construct actually loading on a single construct [26]. As suggested by [27] factor loadings composite reliability (CR), and average variance extracted (AVE) are used to assess the convergent validity. In addition, the Cronbach’s Alpha (CA) is also used to test the convergent reliability as well. Table 2 below presents the results.

Table 2. Convergent Validity (Confirmatory Factor Analysis)

Construct	Items	Loadings	CA	CR	AVE
Halal International Logistics	HIL1	0.940	0.924	0.941	0.731
	HIL2	0.951			
	HIL3	0.951			
	HIL4	0.953			
	HIL5	0.624			
	HIL6	0.631			
Halal Logistics Industry	IND2	0.900	0.867	0.907	0.671
	IND3	0.925			
	IND4	0.873			
	IND5	0.448			
	IND6	0.868			
Halal Collaboration	CLB1	0.829	0.930	0.948	0.784
	CLB2	0.940			
	CLB3	0.941			
	CLB4	0.914			
	CLB5	0.794			
3 RD Party Halal Local Service Providers	SVP1	0.901	0.957	0.966	0.827
	SVP2	0.930			
	SVP3	0.955			
	SVP4	0.930			
	SVP5	0.957			
	SVP6	0.770			

Notes: CA = Cronbach's Alpha; CR = Composite Reliability; AVE = Average Variance Extracted

Benchmarks given in the literature for loadings (> 0.7), CR (> 0.7) and AVE (> 0.5) to have sufficient convergent validity [28]. All values are above cut off values except factor loadings for items IND1 (0.241) and IND5 (0.468). According to [27] the items with factor loading range which is between 0.4 to 0.7 are acceptable if the AVE value is exceeding 0.5. Therefore, only item IND1 be deleted before next analysis.

3.4. Discriminant Validity

Discriminant validity is the degree to which items differentiate among constructs by examining the correlations between the measures of potentially overlapping constructs. Discriminant validity can be assessed in according to three criterions; i) Fornell and Larcker criterion, ii) Cross-loadings and iii) Heterotrait-Monotrait (HTMT) Ratio.

Table 3. Discriminant Validity (Fornell and Larcker)

	Halal Collaborati on	Halal Industr y	Halal Internatio nal	Service Providers
Halal Collaborati on	0.886			
Halal Industry	0.674	0.819		

Halal International	0.802	0.691	0.855	
Service Providers	0.747	0.753	0.794	0.909

The assessment of Fornell and Larcker criterion, discriminant validity are the values in the diagonal that should be higher than all other values in the row and column. The AVE for each construct should be greater than the squares of the correlations between the construct and all other constructs. Table 3 exhibited all diagonal values are higher than other values hence it can be concluded that measurements have discriminant validity for this criterion. Another way of assessing discriminant validity is by looking at the Heterotrait-Monotrait Ratio (HTMT) and cross-loadings. The HTMT was tested and the results show no value of the construct are above 0.85 (HTMT0.85) [29]. To determine if the items loaded on the other constructs equally as well as on their theorized construct, cross-loadings were computed and found that all the items have higher loading on their corresponding construct than the cross-loadings on the other constructs in the model, thus providing evidence of discriminant validity [28].

3.5. Data Analysis

For the purpose of data analysis, the SMART PLS version 3.0, which is a variance-based structural equation modeling (SEM), was used to test the hypothesis. As proposed by [27] the two-step analytical procedure was adopted to analyze the data. Before the two-step approach can be pursued, the data from the Google Form must be transferred to Ms. Excel. After data cleaning is completed, the clean data again be transferred into SPSS (version 23.0). The SPSS software produces some results (descriptive) that can be seen in Table 1 and 2. Then, by using the same data, it was moved into the PLS-SEM software and the first step is to evaluate the measurement model. The measurement model can be tested with the convergent validity and discriminant validity. Then after the validities can be confirmed, the second step is followed by a structural model to the hypothesis. Next, the bootstrapping procedure with 5,000 resamples will be tested.

4. Findings

4.1. Demographic Profile of the Respondents

There were 86 sets of research instrument were completed and analyzed for this study. In relation to the respondent's profile, Table 1 shows the following information: (a) from a total of respondents, 53.6% are male and 46.5% are female, (b) regarding the age of the respondents, the result indicates 41.9% are among 41 to 50 years old and 27.9% are them between 31 to 40 years old, (c), the

interesting results show that 43% of the respondents hold bachelor degree in various academic background and 29.1% possessed certificate and diploma. Interestingly, this study manages to get the owner of the SMEs to answers the survey questionnaire which is (74.4%). And 20.92% of them are positioning as managing director.

4.2. Path Analysis Using Bootstrapping Procedure

To assess the structural model, path analysis via a bootstrapping procedure with a resample of 5,000 is conducted. Bootstrapping is a procedure whereby a large number of subsamples are taken from the original sample with replacement to give bootstrap standard errors, which in turn gives approximate t-values for significance testing of the structural path and the bootstrap result approximates the normality of data [30]. As suggested [27] by looking at the R², beta (β) and the corresponding t-values.

In addition to these basic measures, they also recommend researchers should also report the predictive relevance (Q²) the effect sizes (f²). Besides, [27] have summarized some of the recommended rigor in reporting results in quantitative studies which include the use of effect size estimates (f²) and confidence intervals (lower limit and upper limit). As suggested this study includes the effect sizes and confidence intervals as part of the reporting (Table 4).

Table 4. Path Analysis

Hypothesis	Relationship	Std. Beta	Std. error	t-value	p-value	Decision	f ²	R ²	Q ²
H1	HIL -> SVP	0.382	0.086	4.425	0.000	Supported	0.15	0.72	0.55
H2	IND -> SVP	0.341	0.070	4.899	0.000	Supported	0.19		
H3	CLB -> SVP	0.210	0.086	2.438	0.015	Supported	0.04		

Table 4 shows the results of the study confirmed that halal international logistics (HIL), halal industry (IND) and halal collaboration (CLB) are the significant determinants for the SMEs F&B halal product (manufacturers) to utilize the halal logistics by HLSP. As according to [26] the value of R² for the study is more than 0.67 so that the results are more than substantial. In addition, as the rule of thumb indicates that cross-validated redundancy or Q² > 0.50, is regarded as a predictive model. Therefore, the study's Q² value

is found to be 0.55, and then it becomes a sufficient predictive model. Next section shows the hypothesis testing's result.

4.3. PLS-SEM

The results of the PLS-SEM can be presented in a two-step analytical procedure. The measurement model which has the convergent validity and discriminant validity is presented in figure 2 below.

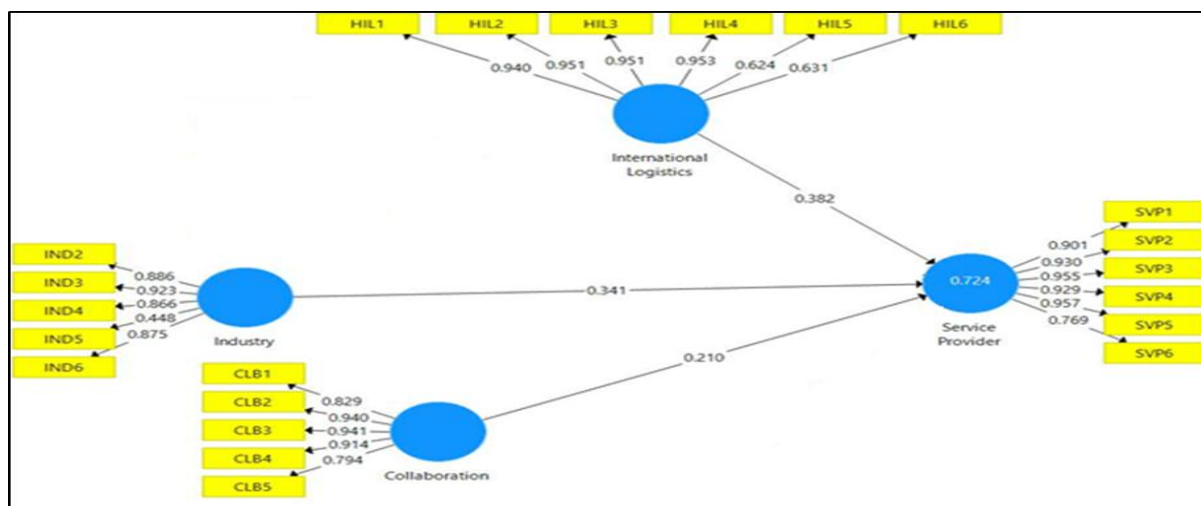


Figure 2. Measurement Model

Next, after analyzing the measurement model, the next step in a PLS-SEM analysis is to create a structural model, by analyzing the inner model. The structural model can only be analyzed after the measurement model has been validated successfully. To do this, the researcher first examined the path coefficients (β value) between constructs to identify significance using computed T-statistics (t-value).

5. Hypothesis Testing

Path analysis results from the bootstrapping procedure show that:

- i. H1: Halal International Logistics (HIL) is positively significant with HLSP (SVP) at $p < 0.01$ with t-value = 4.425 and medium effect size of 0.153.
- ii. H2: Halal Industry (IND) is positively significant with HLSP (SVP) at $p < 0.01$ with t-value = 4.899 and medium effect size of 0.199.
- iii. H3: Collaboration (CLB) is positively significant with HLSP (SVP) at $p < 0.05$ with t-value = 2.438 and small effect size of 0.048.

6. Discussion and Conclusion

The purpose of the study was to examine the potential driving factors; the halal international logistics, halal industry and halal collaboration from the perspectives of SMEs in order to utilize the HLSP. The results from PLS-SEM analysis showed that those driving factors have a significant positive relationship with HLSP. This finding is consistent with previous studies. For instance, [2] found that the lack of demand from the F&B product manufacturers to make use of the HLSP

was the truth. Majority of the manufacturers know the best on halal operations in the facilities but lack of knowledge towards the logistics management. The F&B manufacturers actually are faced a high risk in losing halal-ness status during the handling process in warehouses, storages, and terminals. They claimed that if more awareness towards benefits can be realized by those manufacturers, the more intention will be possible to utilize the HLSPs are higher. Another finding that consistently with the results of the study is concerning the halal industry. The high demand from local customers either Muslim or not, makes the halal market becomes more open and accessible [14] and [17]. The world's Muslim population is expected to increase by about 35% in the next 20 years, rising from 1.6 billion in 2010 to 2.2 billion by 2030. The increase in the number of local halal F&B producers has also increased by almost 6,000 in 2017. According to statistics released by [31] from a very small number of starts with only 127 organizations acquired halal certificates in 1997, now the number growing in every year. Other than high demand, cooperation from the government in terms of financial loaning, technology transfer and the establishment of agencies like JAKIM and HDC have facilitated a lot. Directly these have forced SMEs F&B to make use the HLSP receptively [32].

According to [10] the value exports of halal has increased, for example, RM37.7 billion in 2014, RM39.3 billion in 2015, and RM42.1 billion in 2016. With the continued increase in exports, it will directly motivate F&B SMEs to use HLSP services intensively. In addition, to recognize halal operators in manufacturing facilities, they are now pursuing halal operations in the transportation process which promises a variety of benefits, and one of them is the customer's trust [14].

Collaboration among the players in the supply chain as well as in the halal industry is a very important key enabler to streamline the logistics activities. And one of the factors why HLSP should be practiced is because of customers are willing to pay a higher price as it associates with the belief in Islam that the Muslim must consume clean, safe and quality products [31]. In addition, the increase of trust and cooperation between SMEs F&B and the HLSP associations has been organized by JAKIM and HDC, as well as other government agencies (i.e., Malaysia International Trade and Industry & Malaysia External Trade Development Corporation) through halal exhibitions such as MIHAS (Malaysia International Halal Showcase) and Halal Festival. According to [31]. The HLSP has no hindrance in providing the halal services for SMEs as in line with Shariah requirements. One of the HLSP managers claimed that HLSP has no objection to following the SOP as directed by laws to provide halal logistics services. In closing the study, three constructs have been successfully analyzed empirically and confirmed that they can support the authorities (i.e., JAKIM, HDC & SME Corporation) to attract more SMEs to use HLSP at this moment. At the same time, other constructs are also very important to be examined such as halal integrity and halal recognition whether they are able for SMEs to continue applying HLSP more favorably.

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