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Effect of Halal Certification and Labelling Process on Halal Supply Chain Performance

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Abstract— **Halal Industry has been growing at a rapid pace due to the growth of the Muslim population worldwide as well as industry internationalisation due to tourism and migration. Supply chain management represents a set of interdependent organisations that work closely together to manage the flow of goods or services and information along the value-added chain of products, in order to realise end customer value at the lowest possible costs. Halal Supply Chain performance measures can be developed based on existing measures of the conventional supply chain as long as the primary objective is preserving halal integrity rather than minimising cost or maximising profit. The objective of this paper is to see the effect of halal certification and labelling process towards halal supply chain performance using SEM techniques. Halal Certification term as a process of certifying products or services as pronounced by the Shariah Law. Halal labelling can be elaborated as marking, tagging or stamping a particular product or service with halal logo or symbol to indicate its halal status. This article focus will be on the survey method only. The instrument development was based on a literature survey. This study focuses on the population of halal certified food and beverages (F&B) manufacturers as disclose in JAKIM Halal Portal. About 254 questionnaire sets answered by the intended respondents out of 500 being distributed and no data are detected as missing. All questions are completely answered by the respondents. This study has confirmed the effect of Halal Certification and Labelling Process, on Halal Supply Chain performance. Having demonstrated the significance of the hypothesised effect with a substantial total variance explained (i.e. above 75 percent) and sufficient predictive relevance, this study provides strong empirical evidence that a high level of Halal Supply Chain performance can be achieved through the effective implementation of Halal Certification and Labelling Process.**

Keywords— *Halal Industry, Halal Supply Chain performance, Halal certification and labelling, Halal Portal*

1. Introduction

Supply chain management has emerged to become a vital operation to support business organisations in coping up with global competition [1]. It also has been recognised as an important issue, which generates a substantial amount of interest among managers and researchers. Supply chain management represents a set of interdependent organisations that work closely together to manage the flow of goods or services and information along the value-added chain of products, in order to realise end customer value at the lowest possible costs [2]. It is regarded as one of the most effective ways for organizations to improve their competitive advantage [3]. The success of supply chain management depends on the successful implementation of supply chain practices.

As per the growing interest, the Halal Industry has been growing at a rapid pace due to the growth of the Muslim population worldwide as well as industry internationalisation due to tourism and migration [4]. Based on the consumption per expenditure calculation, the global halal food market size has developed progressively from USD587.2 billion in 2004 to USD 641.5 billion in 2010 [5]. There is also a growing demand for halal foods from the non-Muslim consumer segment. Global interest in the halal products especially food from non-Muslim countries such as the USA, United Kingdom, Japan, China, Brazil and Australia is expanding [6].

The objective of this paper is to see the effect of halal certification and labelling process towards halal supply chain performance using SEM techniques. As for the hypotheses, the statement will be there is a significant effect of Halal Certification and Labelling Process on Halal Supply Chain performance.

2.   Literature Review

The definition of conventional supply chain performance is depending on how it is measured. For example, [7] describe supply chain performance as cost (i.e. inventory and operating), customer responsiveness (i.e. lead time, fill rate and stock-out probability) and flexibility (ability to respond to environmental changes). On the other hand, [8] has characterised supply chain performance as its ability to remain market-sensitive without losing the integration through the chain. Meanwhile, [9] and [10] agree that Halal Supply Chain operation and its performance measures can be developed based on existing measures of the conventional supply chain as long as the primary objective is preserving halal integrity rather than minimising cost or maximising profit

Certification means formal procedure by which an accredited or authorised person or agency assesses and verifies (and attests in writing by issuing a certificate) the attributes, characteristics, quality, qualification, or status of individuals or organisations, goods or services, procedures or processes, or events or situations, in accordance with established requirements or standards (businessdictionary.com, n.d.-a). [11] have generally defined the Halal Certification term as a process of certifying products or services as pronounced by the Shariah Law. Further, [12] elaborates that Halal Certification is the examination and verification of food processes from preparation, slaughtering, ingredients used, cleaning, handling, disinfecting, processing and storing, transportation and distribution as well as management practices that the food has been prepared from permissible ingredients in a clean and hygienic manner according to the Sharia Law.

Meanwhile, labelling simply refers to the act of putting a label on something, or labels that are put on something (dictionary.cambridge.org, n.d.). A label is a simply attached tag or an elaborately designed graphic (i.e. logo) that is part of the package which serves as products identification, description, grading, and endorsement [13]. The word labelling also synonym to tagging, marking, or stamping (thesaurus.com, n.d.). Hence, halal labelling can be elaborated as marking, tagging or stamping a particular product or service with halal logo or symbol to indicate its halal status.

Based on aforementioned definitions, this study refers Halal Certification and Labelling Process as the formal procedure of examining, verifying, and endorsing halal status of a product or service starting from raw material preparation until the product or service is ready for the end customer's consumption, which performs by an authorised body. The basic principles of Halal Certification are halal (permissible) and thoyyiban (wholesome) derive from verse 168 of Surah Al-Baqarah and verse 4 and 8 of Surah Al-Maidah in the Holy Quran [14],[15].

The Malaysian Halal Certification procedures (JAKIM, 2014) and both the Malaysian Halal Standards MS1500:2009 [16] and MS2200: Part 1:2008 [17] are continuously utilised because they received widespread recognition for maintaining excellence in the field of Halal-Compliance. As a result, the Malaysia Halal Logo is recognised and well-accepted worldwide. Apart from Malaysia, Singapore, Thailand, and Indonesia are among the countries that have their own Halal Certification Body. However, Malaysia is the only country in the world whereby the federal government provides full support in promoting the Halal Certification Process on products and services. Halal Certification Bodies in other countries are either developed by the individual provinces or states or backed by their non-governmental organizations (NGOs) [18], [19].

In Malaysia, the halal certificate and label (logo) are issued by a body that is authorised by the Malaysian government named Jabatan Kemajuan Islam Malaysia (JAKIM) or translated as Department of Islamic Development Malaysia in English. This body that plays a significant role in Halal certification since 1994 [14]. Halal Certification provides assurance to all Muslim consumers because it fulfils the Shariah Law, which is a must for Muslims. To the non-Muslims, halal products are quality products, simply due to the concept of halal (permissible) and *Thoyyiban* (wholesome) as HDC strongly advises all Halal Certification applicants to comply with Good Manufacturing Practice (GMP), Halal Critical Control Point (HCCP) and Hazard Analysis Critical Control Point (HACCP) requirements. Thus, products that are certified as halal by JAKIM also mean safe for consumption or use, nutritious and with quality [18] (HDC, 2008a).

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Ref. [20] claim that the purpose of conventional certification is to reach a defined performance and to make this known to stakeholders that are include consumers, governments, risk financing parties, and society. The purpose of certification also implies its benefits. A recent study by [21] has discussed several benefits of Halal Certification. For the consumer, the benefits of a reliable Halal Certification are obvious, which is user-friendly. It saves the end consumer time from checking all the ingredients and learning all about the production. It also allows the end consumers to confidently make an informed choice at the time of purchase. Halal Certification of consumer goods ensures Muslim customers that the food served is halal and is in accordance with Shariah Law, as in turns it assures customers that the food served is halal and healthy and the premise's hygiene and sanitation systems are credible. Nowadays, non-Muslim consumers also demands halal goods, the halal certificate will attract all halal consumers whether they are Muslims or non-Muslims. Halal Certification can be used as a product differentiation technique which in turn increases the company/restaurant's revenue and enhance its marketability, especially to halal consumers. For the export purpose, the halal certificate will help to assure halal consumers in importing countries. At the international level, it can enhance the marketability of the products especially in Muslim countries as there is an increasing awareness on the part of Muslim consumers all over the world of their obligation to consume properly prepared halal food.

Ref. [14] has done a study to provide a better understanding of Halal Certification system in Malaysia. Researchers point out that the current practice of Halal Certification in the value chain is constructed based on a standard format with three elements namely processing, information, and actors. First, in the element of the process, Halal Certification Process includes five steps that are application/document approval, followed by premise inspection, next is panel committee/ appeal committee, then issuance of Halal certification and lastly monitoring and enforcement. Current practice shows that the process is not a problem but the implementation of the task at each process will create a problem if the procedures are dissatisfied. Yet, there are also several issues regarding the current practice of Halal Certification highlighted by [14]. Malaysian Halal Certification System is considered as inefficient and conflict of authority

and governance between the federal government and state government. This problem is due to the segregation of authority between the federal government and state government in Malaysia.

Besides the process of certification itself, Halal Certification also often associated with labelling and packaging process [22-24]. The process of packaging and labelling the products must be seriously concerned to produce genuine and healthy halal goods. In food labelling, hiding any facts, such as the source of the ingredients is prohibited in Islamic jurisprudence [25]. Hence, the information of the ingredient of the halal food must be clear, accurate, and complete, including incidental or hiding ingredients that may affect the halal status of the products. So, the authorised halal logo and organisation contact details must be shown.

There are several issues related to halal label (logo) and packaging that every halal products stakeholder should be alarmed too. Packaging material and containers are essential to keep the product safe and presentable. Packaging for halal food must not be made from non-halal substances [26],[27],[38] and if it is made from raw materials of animal origin, then its halal status is questionable [28]. Furthermore, the used of the invalid halal logo which personally issues by the individual company and the adoption of misleading brand names (i.e. Arabic-sounded or contain Islamic-signature) have tricked many consumers of halal products [24]. Concisely, it can be considered that the Halal Certification and Labelling Process is a critical practice in preserving halal integrity throughout the entire Halal Supply Chain operations.

3.   Methodology

The research framework is Halal Certification and Labelling Process (CertLabel), as the determinant or predictor of Halal Supply Chain Performance (SCPerf). The whole study employs a mixed-methods approach, through a combination of survey and case study strategies. As for this article focus will be on the survey method only. The instrument development (i.e. self-administered questionnaire) were based on a literature survey. Systematically, the questionnaire consists of four major sections to fulfill the following purposes; i) Section A: to obtain respondents' background information, ii) Section B : to obtain respondents'

perceptions on the extent of Halal Certification and Labelling Process and iii) Section F: to obtain information on the Halal Supply Chain performance level of the respondents' respective organisations. This study focuses on the population of halal-certified food and beverages (F&B) manufacturers as disclose in JAKIM Halal Portal. Through this portal, a directory of Halal certified ventures known as JAKIM's e-Halal directory is accessed and specified as the sampling frame for this study. G*power was used to calculate the minimum required sample size for this study that is 85 which indicated the minimum required sample size for this study is 85 organisations. However, due to the expectation of a low response rate (at around 12%) which is regarded common among Malaysian manufacturers [29-31], researchers decided to employ over sampling. The respondent organisations were first telephoned to double-check their qualifications as the respondents and confirm their official address. Then, self-administered questionnaire forms were distributed by postal mails as well as e-mails according to respondents' choice and convenience. The mail method was employed for this study because of its advantage in covering a wide geographical area with less time and cost [32]. Data collection using a personally administered approach was conducted during three festivals that were held in Kedah, Penang and Kuala Lumpur. These events were selected to conduct the data collection process since the organisers clearly stated that, only Halal certified companies entitled to join these events. There were three events that gathered Halal manufacturers and Halal industry players at the same place. The events were;

i. Penang International Halal Expo (PIHEC). Organised by Penang state government under its Halal facilitation agency in Penang, annually held early of the year (January or February) with approximately two hundred participants either local of international.

ii. Malaysian International Halal festival (MIHAS). Hosted and organised by Ministry of International Trade & Industry (MITI) and Malaysia External Trade Development Corporation (MATRADE) in Kuala Lumpur, annually held on April, with 400-500 participants every year either local or international Halal companies.

iii. Halal Festival (Halfest). An expo Hosted by HDC, with Majlis Amanah Rakyat (MARA) as co-organiser with special cooperation with JAKIM in Sungai Petani, Kedah aimed to stimulate local Halal industry player before they go abroad. Halfest is the largest Halal expo in Malaysia with a nearly 600 exhibitors every year where the majority of them are local manufacturers.

Structural Equation Modelling (SEM) technique was used to analyse the data. SEM is recognised as a second-generation technique, which allows the simultaneous modelling of the relationship among multiple variables [33]. SEM combines measurement and structural model in the same analysis. Thus SEM enables researchers to assess the set of factor analyses and multiple regressions simultaneously [34], [35].

Analysis and Findings

Out of the 500 sets of a questionnaire distributed, 280 respondents replied, giving a response rate of 56%. However, out of the 280 questionnaires received, only 254 are answered by the intended respondents. Out of the 254 questionnaire sets answered by the intended respondents, no data are detected as missing. All questions are completely answered by the respondents.

Table 1. Respondents' background

Respondents Background		Frequency	Percentage (%)
Position in the organisation	Owner/CEO/MD	90	37
	Manager/Executive	129	52
	Supervisor	27	11
Working Experience	Less than 5 years	39	16
	5 to 9 years	156	63
	10 years and more	51	21

Table 2. Results of structural model analysis (basics)

Relationship/ Effect	Path Coefficient (β)	T Statistics	P Values	Coefficient of determination (R²)	Decision
CertLabel -> SCPerf	0.582	8.011***	0.000	0.757	Accepted

Note. One-tailed test. Significant at $p<0.1^*$, $p<0.05^{**}$, and $p<0.01^{***}$

Table 3. Results of structural model analysis (advanced)

Relationship/ Effect	Confidence Interval		Effect Size (f²)	Effect Size (q²)	Predictive Relevance (Q²)
	5%	95%			
CertLabel -> SCPerf	0.464	0.701	0.480	0.148	0.506

The results in Table 2 and Table 3. Conclude that CertLabel (β = 0.582, t = 8.011, p< 0.01, f2 = 0.480), positively influenced SCPerf, explaining 75.7% (R2 = 0.757) of the variance in SCPerf. These results support hypothesised relationships/effects (i.e. H1) in this study. The significance of hypothesised relationship or effect is depending on the reading of t-statistics (i.e. empirical t-value must be larger than the critical t-value, to reject the null hypothesis). Commonly used benchmark of critical values in one-tailed tests are 2.33, 1.65, and 1.28, for p < 0.01, p < 0.05, and p < 0.01 respectively [34]. In the context of structural model assessment, p value represents the probability of error for assuming that a path coefficient is significantly different from zero [35]. p values of 0.01, 0.05, and 0.1 are also implying the confidence levels of 99%, 95%, and 90% respectively.

R2 value interprets the proportion of SCPerf's variance (endogenous construct) that is explained by CertLabel, (exogenous constructs). In general, R2 values of 0.75, 0.50, and 0.25 are regarded as substantial, moderate, and weak respectively [35]. Based on Table 2, it seems Halal Supply Chain Performance (SCPerf) have a substantial level of variance explained (R2 = 0.757) and is well-predicted by Halal Supply Chain practices that is halal certification and labelling. In assessing the structural model, Hair Jr et al. (2014) suggested that the change in the R2 value when a specified exogenous construct is omitted from the model should also be examined. The change in the R2

value is called effect sizes (f2). An effect size (f2) is computed to evaluate whether the omitted construct has a substantive impact on the endogenous construct. As recommended by [34], Jacob Cohen's guideline is used to determine the magnitudes of the effect size. The magnitudes are 0.02, 0.15, and 0.35, representing small, medium, and large effects respectively (Cohen, 1988). Table 3 depicts that the relationship shows significant effect whereby the relationship of CertLabel -> SCPerf with medium effect size.

5. Conclusion

Based on the empirical studies, Halal Certification and Labelling Process were thoroughly reviewed to justify its effect on Halal Supply Chain performance. Previous studies such as [24],[11], [4],[11],[36],[19] and [37] have provided insights which indirectly support the effect of Halal Certification and Labelling Process on Halal Supply Chain performance in accordance to the findings.

Furthermore, this study has confirmed the effect of Halal Certification and Labelling Process, on Halal Supply Chain performance. This study adds to the knowledge on to what extend this practice may contribute to Halal Supply Chain performance. Having demonstrated the significance of the hypothesised effect with a substantial total variance explained (i.e. above 75 percent) and sufficient predictive relevance, this study provides strong empirical evidence that a high level of Halal

Supply Chain performance can be achieved through the effective implementation of Halal Certification and Labelling Process.

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