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To cite this document:
Elahe Fathi Suhaiza Zailani Mohammad Iranmanesh Kanagi Kanapathy , (2016),"Drivers of consumers’ willingness to pay for halal logistics", British Food Journal, Vol. 118 Iss 2 pp. -
Permanent link to this document:
http://dx.doi.org/10.1108/BFJ-06-2015-0212

Received on: 25 December 2015, At: 16:47 (PT)
References: this document contains references to 0 other documents.
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Drivers of consumers' willingness to pay for halal logistics

Introduction
At the present time Muslims make up a quarter of the world population and many sources have revealed that 30% of the world population would consist Muslims by 2025 (Roberts, 2010). This increasing Muslim population will possibly alter the way economies operate and businesses work. Specifically, the “halal” concept will gain an elevated importance across continents all over the globe (Schiffman and Kanuk, 2010; Zailani et al., 2015). Globalization has highlighted the “halal” concept not only in Muslim territories but also in non-Muslim lands with respect to food and service certification, product delivery standardization, and so on.

The attention that the term “halal” has gained resulted in substantial growth in related businesses. The global halal industry is worth USD 2.1 trillion (Pahim et al., 2012). The need and demand for halal have led to the intensification of the halal certification services in both Muslim and non-Muslim states. Apparently the scope of the concept of halal has become encompassing and as a result, it is not restricted to the religion aspect anymore. Halal has gradually become an indirect quality standard even for non-Muslims as this standardization emphasizes the unique quality of products (Rajagopal et al., 2011). Therefore, committing to the halal standards and obtaining the halal certificates from related authorities provide an added value to customers and fulfill the requirement, which enhances the attractiveness to Muslim customers.

The halal label on products does not necessarily mean the end of the halal process because the contamination may occur during delivery and storage, or at the point of sale (Pahim et al., 2012). With the specialization of some halal products coming under fire, the industry demands even more intricate halal compliance strategies in relation to the supply chain process (Bonne and Verbeke, 2008). This scenario is caused by the contemporary Muslim behavior of demanding not only halal products but also halal processes (Omar and Jaafar, 2011). Hence, to meet the industry demand, logistic companies have introduced halal supply chain, a new concept that has been introduced not only in Malaysia but in many regions around the world. The term “halal” means permissible, allowable, or lawful according to Islamic teachings (Zakaria and Abdul-Talib, 2010).

Omar and Jaafar (2011) defined halal supply chain as a combination of business activities from the point of origin to the point of consumption performed in accordance with the Islamic law, known as Syariah. The main goal of introducing the halal supply chain is to offer Muslim consumers the confidence and satisfaction of consuming the halal products at all stages. The halal supply chain is purely based on Syariah; thus, it is being promoted as an important approach to confirming the integrity of the halal products at the point of consumption. Tieman (2011) also
considered the halal supply chain as a significant step to assure the authenticity of the halal products.

The halal supply chain includes such activities as halal warehousing, halal logistics, halal transportation, halal sourcing, and other halal supply chain activities. In this chain, the halal logistics must progress with both the upstream and downstream supply chains that include transportation and storage (warehousing). Scarce resources and core business pressures cause businesses to outsource the division of logistics to third-party logistics (3PL) service providers. The service capability of 3PL providers in Malaysia to meet halal standard indicates the improved efficiency performance in logistics operations. In offering the halal supply chain and broadening the services, several halal control and assurance exercises are prerequisites required from 3PL providers to ensure that the traditional supply chain can be avoided successfully.

Consequently, various control points are needed throughout the process because the risks of contamination exist in all stages. For instance, halal meat may become haram when it comes into contact with pork. According to Kirwan (2006), halal is a quality criterion built by a society as a whole, which adjoins not only the physical properties of the product but also the conditions under which the product is produced, distributed, and retailed. These control points have recently gained vital importance throughout the use of the halal supply chain as a monitoring mode and such importance is gradually developing. These control points serve as a means for the development of strategic relationships among producers, suppliers, and retailers; however, the capacity of 3PL providers to provide extensive halal logistics is relatively costly (Bohari et al., 2013). The Cargo Accounts Settlement System (CASS) divides the logistic costs into three categories, namely, inventory-carrying costs, transportation costs, and logistics administration costs.

To obtain insights on the level of halal that adds value to their logistics activities, 3PL providers must look beyond the implementation of the halal activities of their own firms as well as the concerns of their immediate consumers. Instead, they take into account the halal requirements from the end consumers’ perspective (Rajagopal et al., 2011). Is there really a demand from the end consumers of halal logistics? According to Thatte et al. (2009), the excellence of logistics is measured by consumer satisfaction, service level improvements, and lead-time reduction. Thus, 3PL providers should simultaneously manage their logistics activities and increase their responses to consumer’s needs, which could positively affect the company’s performances (Asree, 2010; Gunasekaran et al., 2008). Nevertheless, the current situation in Malaysia has to reflect the end consumer’s requirements or demands on the halal logistics. Minimal knowledge is available with regard to what end consumers perceive as important and what other stakeholders need from the halal logistics.

The dynamic business environment has dramatically altered the nature of the logistics industry through the diverse requirements among nations. These
requirements vary based on the differences in the nature of the products and services. Kamaruddin et al. (2012) state that the halal logistics are complex because they need specific standards and parameters in relation to the halal compliance. These operational adaptations are quite easy to implement but involve high capital investment. Are Malaysian consumers willing to pay for the halal activities during transportation and storage to guarantee the quality of halal food products and to eliminate the threat of cross-contamination? The aim of this study is to identify the drivers of consumers’ willingness to pay for the halal logistics. The findings are expected to contribute to the diffusion of the halal logistics to the actual action.

Following this introductory section, which gives a general picture of the research topic and problem of the study, a background that includes an explanation of the halal logistics and the theoretical framework is provided. Subsequently, the research methodology is discussed and the findings are explained. Finally, the discussion and conclusion are presented.

**Literature Review**

*Halal Certification*

According to Islamic instructions, Muslims are supposed to use halal foods and eschew from *haram* ones (Al-Qaradawi, 2007). Most sections of the food supply chain (farming, manufacturing food, restaurant policies, and retail marketing); however, are managed by non-Muslim businesses and countries (Tieman, 2015). Hence, a halal certification association has been founded to make sure that food products fulfill the halal benchmarks (Latif et al., 2014). Today, it is highly prevalent among food service industries to demand halal certifications from companies to to comply with sharia and halal activities (Shafie and Othman, 2006).

As Muslim customers’ religion knowledge increases, they appear to become more selective about the kind of services and foods they consume. To motivate their target customers, firms and companies draw on halal certification which has been marked by a halal logo in order to convince target Muslim clients that their services and products conform to halal and sharia (Shafie and Othman, 2006). In Malaysia, the Department of Islamic Development Malaysia (JAKIM), as a government agency, has halal stipulation under its control. In spite of introducing and passing laws, acts, and rules and regulations related to the halal demands in Malaysia, this organization plays a crucial role in international activities through its halal criteria such as MS 1500:2009 (Tieman and van Nistelrooy, 2014).

*Halal Logistics*
Logistics actions entail transporting, warehousing, handling materials, procuring, and so on. Halal logistics is mainly a constraint act on contamination between Haram and Halal during the logistics procedure. As Tieman (2013) puts, halal logistics has to do with the procedure of managing the purchase, transferring, storing, and controlling livestock, material components, partially completed or completed inventory of non-consumable and consumable products. They also deal with relevant certification and data services in the supply chain and the business to ensure their compliance with the general rules of Shariah. A comprehensive halal logistics have to be guaranteed at the fundamental stages in supply chain activities and the logistics to make sure that all halal foods are sheltered from non-Halal products until they are delivered safe and sound at their final stage (Lodhi, 2009). Then, Halal LSPs should provide more measures to preserve halal products from potentially contaminated ones. For instance, the equipments exploited in both non-halal and halal products could probably give rise to contaminations (Talib et al., 2010). Further, non-halal and halal foods should be preserved conspicuously in transportation and warehousing to prevent any contamination (Riaz and Chaudry, 2004; Jaafar et al., 2011). Logistic firms should also exploit halal materials in order to package halal products (Soong, 2007).

Halal logistics have academically and practically received remarkable attention. Muslims, as the world’s second biggest religious community, need to make sure that their foods and products are prepared according to the Islamic rules and principles. As a result, the international halal industry is burgeoning very rapidly (Pahim et al., 2012). Not only does halal accord to Muslim standards, it is also turning out to be a worldwide symbol for quality undertaking and lifestyle option (Lada et al., 2009). Halalness of products and foods could go under question being in direct contact with haram during warehousing and transportation (Tieman, 2011). Muslim customers have been sensitized of this imminent threat to halal foods and products. In spite of the wide halal marketing and the significance of halal logistic activities in providing the protection for the halalness of food products, the existing evidence reveals that halal logistics do not pervade all halal food companies. Talib et al. (2013) argues that the lack of consumers’ demand could be regarded as the main obstacle in way of adopting and acting halal logistics. Nevertheless, there are not enough studies on consumers’ point of view. The main purpose of this study is to spot the drivers of customers’ willingness to pay for halal foods.

**Halal Business Demand: Malaysian Context**

Malaysia is a leader in the halal food benchmarking. The United Nations cited Malaysia as the world’s best example in terms of the benchmarking halal food in accordance with the Codex Alimentarius Commission, which adopted the Codex general guidelines for the use of the term halal in Geneva in 1997. Malaysia has standardized the halal process throughout the country; thus, the Malaysian standard has become the basis for global halal food industries (SME Annual Report 2006,
According to Saifol (2011), however, this citation must be a motivation for Malaysia to stay competitive because this industry is full of challenges. One challenge is product differentiation, which requires businesses to be flexible to meet customers’ needs and to maintain sustainability (Barone and DeCarlo, 2003).

The success of the halal food business in Malaysia would have been impossible without the governmental efforts, support, and aid, as noted in the Second Industrial Master Plan, 1996–2005; the National Agriculture Policy, 1998–2010; the Ninth Malaysia Plan (9MP), 2006–2010; and the Third Industrial Master Plan (IMP3), 2006–2020. The Malaysian halal food industry has been sustained by the measures taken by the government. Among these measures is the Halal Master Plan, which addresses the issues of certification, sectored development, halal integrity, implementation, timeframes, and responsibilities. The Master Plan envisages three phases of the roll-out from 2008 to 2020 (Figure 1). In a similar vein, the IMP3 of 2006 estimated the annual global market worth for both food and non-food halal products at USD 2.1 trillion. Given such potential, Malaysia's food manufacturers have become motivated to incorporate joint ventures with established food manufacturers, specifically those from New Zealand and Australia, to serve the ASEAN, Middle Eastern, European, and US markets, which comprise large Muslim populations.

Malaysia is moving toward the status of being the global pivot point of the halal food market through a fivefold agenda that address five specific points, namely, the growth of Muslim population, the center market for halal food; income rising in the primary market for halal food; the increasing demand for safe and high quality food in primary markets; the increasing demand for greater halal food variety in primary markets; and the occurrences of foods labeled as halal but failing to meet halal requirements, which has incited the demand for the genuine halal products (Dagang Asia Net, 2011). The entry of a large number of players to the halal industry every year has highlighted the crucial role of incessant focused monitoring of the halal standard on the industry. In other words, the halal food industry should be able to guarantee and confidently ensure the halalness of foods sold.

3PL providers in the halal supply chain have remained inconsistent in terms of transportation service because of the high costs. For instance, warehouses and transportation vehicles intended for delicate products incur high costs, weakening the firms’ compliance with halal market activities. The aim of the halal supply chain may only be achieved if halal foods are delivered and stored in separate cartons and
allocated separate shelves in warehouses and retail shops. These activities will, however, call for extra quality checks and additional costs (Tieman, 2008).

**Consumer Demand for Halal Logistics Certification**

According to the Halal Development Corporation (HDC) (2010), an institution under the Ministry of International Trade, "the basic principle of halal logistics is to ensure segregation of halal cargo from non-halal cargo to avoid cross-contamination and ensure that the logistics system is aligned to the expectations of Muslim consumers, and halal integrity is thus protected along the whole supply chain.” Similarly, the Halal Logistics Certification is an exercise performed by a sanctioned Muslim controlled body to guarantee that the food preparation complies with Islamic laws (Syariah). The exercise also ensures that the delivery system, storage houses, and containers and freezers are all halal certified, which would prevent contamination of halal food from any non-halal elements. Carriers and warehouses must comply with halal guidelines. For example, a container has to be “Samak” (clean) if it has been previously used to deliver non-halal products.

Contemporary consumers care beyond the manufacturing process of halal products; they consider all the activities implemented along the supply chain (Jaafar et al., 2011) because actual customers not only tend to consume halal products, but are also willing to avail of halal services such as halal logistics. Although current halal standards regulate food production, preparation, handling, and storage to some degree, there will be no assurance that the products are halal at the point of consumption if manufacturers do not apply the halal supply chain to all the supply chain activities. Several studies have been conducted regarding halal products, but studies on the needs and importance of the halal logistics certification from the consumers’ point of view are lacking.

**Model Conceptualization and Hypothesis Development**

Mohamed et al. (2010) identified environmental factors comprising social, economic, political, and technological factors that affect the decisions of the industry with regard to the halal business. Nevertheless, the most commonly used framework is the separation of environmental factors into the “macro” and “micro” environments. The former refers to economic, technological, governmental, social, demographic, and natural environment dimensions. By contrast, the micro environment includes the industry or competitive environments, suppliers, consumers, and competitors (Lowson, 2003). Factors are the motivators or incentives that impel businesses to implement concepts, approaches, or even strategies to satisfy the objectives of the organization (Hoffman, 2001). The current study focuses on the individual level; thus, the factors related to the individual, environment, capability, and image are deemed appropriate. Thus, examining the effect of these factors on the end consumers’ demand for the halal logistics certification is fairly important. Figure 2 shows the
proposed framework for the identification of drivers and outcome of willingness to pay for the halal logistics.

Halal Logistics Certification

Willingness to pay refers to the economic term, reservation price, or the maximum amount a customer is willing to pay for a range of goods; stated differently, willingness to pay is the price at which a consumer is indifferent to buying and not buying the product (Jedidi and Zhang, 2002). The halal logistic services need to incorporate costs to achieve the halal compliance parameter. Nevertheless, issues, such as consumers’ refusal to pay more for halal logistics, can be a threat to the success of the halal logistics and can affect consumers’ demand for these services (Kamaruddin et al., 2012). Thus, the following hypothesis is developed:

H1: Consumer’s demand for halal logistics certification influences positively the willingness to pay for the halal logistics.

Individual Characteristics

The acceptance of the halal products and services among Muslims and non-Muslims is caused by the perception that halal symbolizes healthier lifestyle and clean preparation (Ambali and Bakar, 2013; Aziz and Chok, 2013). The positive response from consumers has caused logistics providers to invest in halal-dedicated assets, such as halal warehousing, halal seaport, halal transportation and carrier, halal-only equipment, halal audit teams, halal tracking, and steam/samak services (Jaafar et al., 2011; Kamaruddin et al., 2012; Talib et al., 2012). Othman et al. (2009) discovered a noncompliance issue among certified logistics providers. The inclination of end consumers toward the halal logistics certification can be an indication of the lack of commitment toward adhering to the standard requirements of halal compliant logistics services (Kamaruddin et al., 2012; Tieman et al., 2013). Thus, the following hypothesis is developed:

H2: Consumer’s willingness to pay for the halal logistics is positively influenced by the perceptions of the usefulness of the halal logistics certification.

The wide acceptance among Muslim consumers is an indication that consumer confidence is strong toward the JAKIM halal logo (Othman et al., 2009). The halal market will not experience a slowdown because of its dominance in the growing
Muslim population, especially in Malaysia (Adams, 2011). Customers are now concerned not only with the manufacturing process, but also with all activities along the supply chain of the halal food products (Jaafar et al., 2011). Nevertheless, the effect of consumers’ concern with halal on their willingness to pay for the halal logistics is unknown and has to be identified to effectively promote the halal logistics certification. Thus, the following hypothesis is developed:

**H3:** Consumer’s willingness to pay for halal logistics is positively influenced by the consumer’s concern over halal.

*Environment Characteristics*

As consumers live in the media-saturated environment, they are bombarded with the information of various types and nature. The effect of mass media coverage on the marketing climate of the products is enormous (Wilkinson and Thelwall, 2012). The significance of media coverage in a world where information has become a key factor for the success or failure in the present business community has taken nobody by surprise. Companies have to make a public statement to promote their value-added services that may build up their image and may improve consumer perceptions on the halal status. Standards Malaysia should publicly announce their findings on audits conducted on certified logistics providers. As a result of media exposure of the good deeds of companies as exemplified by the halal logistics certificate, consumers will see the importance of the certificate. Thus, the following hypothesis is developed:

**H4:** Consumer’s willingness to pay for halal logistics is positively influenced by the media coverage of halal logistics certification.

*Logistics Providers Characteristics*

In the information age, the abundant news that we receive could not be ascertained immediately and accurately. Companies sometimes become a target of unfavorable stories circulating over the internet or press. The lack of experience of some reporters and the pressure on media to report updates both for information and entertainment often lead to mistakes and negligence, which could jeopardize the image and reputation of companies among investors, consumers, and employees (Othman et al., 2009). Mohamed et al. (2013) stated that the loss of confidence in halal logos can adversely affect consumers’ confidence in the overall supply chain. The unfavorable stories about a halal 3PL provider can contribute to loss of confidence in the food products that carry the halal logo in terms of their halalness. Thus, the following hypotheses are developed:

**H5:** Consumer’s willingness to pay for halal logistics is positively influenced by the capability of the service providers.
H6: Consumer’s willingness to pay for halal logistics is positively influenced by the image of the service providers.

Research Methodology

Data collection and the sample

The sampling frame of this study consisted of all Malaysian Muslims living in Johor, Penang, Kuala Lumpur, and Sabah. According to Sidin et al. (2004), the selected places are sufficiently representative of the entire Malaysia. A hard copy of the questionnaire was administered to the respondents for data collection. Kaden (2007) stated that a robust sample for most marketing research studies is approximately 300. As a consequence, 400 questionnaires were distributed for the main study; a total of 318 responses were returned. Out of the 318 responses, 15 were discarded because the questionnaires were not completed, leaving a total of 313 valid responses or a 78.3% usable response rate.

The power in 313 samples was measured using G*Power version 3.1.9.2 (Faul et al., 2009). The power of 1.0 was obtained with an effect strength value of 0.15 at statistical significance level (α level) of 0.05. This yield exceeded 0.80 indicating that the power of the current sample is satisfactory (Chin, 2001). These results indicate that the proposed sample size has the requisite power to reject the null hypotheses (Faul et al., 2009).

Measure of the constructs

This study employed a survey instrument consisting of six sections, namely, respondents’ personal information, individual characteristics (perception of the usefulness of the halal logistics and concern on halal), environment characteristics (media influence), the logistics providers’ characteristics (service capability and image), willingness to pay, and the extent of the demand for the halal logistics certification. To ensure content validity, the survey items were derived from those used in previous studies. Items were mostly adapted from Talib et al. (2011), Jaafar et al. (2011), Kamaruddin et al. (2012), and Talib et al. (2010). Each item in this scale was measured using a five-point Likert scale.

Analysis

To test the research model, the current study used the partial least squares (PLS) technique of structural equation modeling using SmartPLS version 3.0. This technique was selected owing to the exploratory nature of the study (Hair et al., 2011). Based on the recommendation of Hair et al. (2013), the current study applied
the two-step approach for data analysis. The first step analyzed the model for measurement and the second evaluated the relationships among the structures of the underlying constructs. Prior to identifying these relationships within the model, the present research employed this method to determine the reliability and validity of the measures.

Results

Sample

Discriminant analysis indicated that 54.3% were female and 45.7% were male. A total of 132 respondents (42.2%) were less than 30 years old, followed by 115 respondents (36.7%) who were in the 31-45 age and 66 respondents (21.1%) who were above 46 years in terms of age. With regard to ethnicity, 75.4% were Malay, 19.2% were Indian, and 5.4% were Chinese.

Measurement Model Results

The reliability and validity of the reflective constructs were assessed. Composite reliability (CR) was assessed in connection with internal reliability, which is similar to Cronbach’s alpha. Table 2 shows that the CR of all the constructs was above 0.7, which satisfies the rule of thumb in Hair et al. (2013). Hair et al. (2010) suggested accepting items with loadings of at least 0.6. Given that the loadings associated with each scale were all greater than 0.6, individual item reliability was reasonably judged. Convergent validity was measured using average variance extracted (AVE). The AVE of all the constructs was above 0.5, which signifies a satisfactory degree of convergent validity (Fornell and Larcker, 1981).

Two approaches were used to assess the discriminant validity of constructs. First, the cross loadings of indicators were examined. No indicator loads were higher than an opposing construct (Hair et al., 2012). Second, according to the Fornell and Larcker’s (1981) criterion, the square root of the AVE for each construct should exceed the intercorrelations of the construct with the other model constructs (Table 3). Both analyses confirmed the discriminant validity of all constructs. Table 3 also shows that Malaysian consumers had high concern on halal (mean = 4.49). In addition, they were more willing to pay for the halal logistics (mean = 3.80) and their demand for halal logistics was high (mean = 4.16).
**Structural Model Results**

After obtaining satisfactory results for the measurement model, the structural model was subsequently evaluated. The predictive accuracy of the model was evaluated in terms of the portion of the variance explained. The results of such evaluation suggest that the model is capable of explaining 18.7% of the variance in consumers’ willingness to pay and 3.3% of that in extent of the demand. Aside from estimating the magnitude of $R^2$, predictive relevance developed by Stone (1974) and Geisser (1975) was included as additional model fit assessments. Stone–Geisser $Q^2$ (crossvalidated redundancy) was computed to examine predictive relevance using a blindfolding procedure in PLS. Following the guidelines of Chin (2010), $Q^2$ value was greater than zero; it implies that the model has the predictive relevance. The present study obtained 0.073 for average cross-validated redundancy (for both endogenous variables), which was greater than zero. Thus, the model exhibited acceptable fit and high predictive relevance.

Furthermore, nonparametric bootstrapping was applied (Wetzels et al., 2009) with 2,000 replications to test the structural model. Table 4 presents the structural model that resulted from the PLS analysis. With the exception of two paths (H5 and H6), all the paths were significant. Therefore, H1, H2, H3, and H4 were supported, whereas H5 and H6 were not supported.

**Discussion**

Logistics play a key role in protecting the halalness of any product through proper transportation, storage, and handling within the supply chain until the product reaches its final destination. Despite the vast halal market and the importance of halal logistics practices in preserving the halalness of a food product, third-party halal logistics service providers faced an insufficient demand for halal logistics. Understanding the determinants of the consumers’ willingness to pay more and consequently higher demand for halal logistics is thus essential. Our findings suggest that the consumers’ perception on halal logistics, concern on halal, and media coverage have positive and significant effects on willingness to pay for the halal logistics. Moreover, willingness...
to pay has a positive effect on the consumers’ extent of demand for the halal logistics certification.

The results confirm the importance of the consumers’ willingness to pay for the halal logistics in the extension of their demand for halal logistics certification. This observation means that the willingness of consumers to pay more for halal logistics will secure the future demand for halal logistics. Notably, the lack of significant benefits that the halal practices bring to a company will hinder the 3PL logistics service providers from implementing the halal logistics. Therefore, increasing consumers’ willingness to pay for the halal logistics is important to the extension of this industry.

Results reflect the significant effect of the consumers’ perception of the role of the halal logistics in preserving the halalness of products on their willingness to pay for halal logistics. As Muslim consumers become more knowledgeable about their religion, they will inevitably become more particular on the type of products and services that they consume or use (Shafie and Othman, 2006). Thus, consumers’ knowledge on the risk of mitigation in logistics can motivate them to pay for knowledgeable halal logistics. Therefore, policy makers and halal logistics service providers should educate potential consumers regarding the importance of knowledgeable halal logistics in maintaining the halalness of the product in the transportation, handling, and storage stages.

The significant relationship between knowledgeable consumers’ halal concern and their willingness to pay for halal logistics is parallel to that determined by the study conducted by Adams (2011). The research claimed that the halal service market would not experience a slowdown as long as Muslim populations are concerned about the halal issues. In addition, Alam and Sayuti (2011) found that halal concern directly affects consumers’ behavior by increasing efforts to achieve Islamic principles. Therefore, the government needs to enhance consumers’ halal concern by developing their knowledge about halal issues and principles.

The results of the analysis indicate that media coverage has a significant effect on the consumers’ willingness to pay for the halal logistics. This finding is consistent with that of Wilkinson and Thelwall (2012), who argue that the effect of media coverage on the marketing climate is vast. In the present market, information plays an important role in the success or failure of a business. Thus, Standards Malaysia needs to inform consumers regarding the Islamic principles on halal foods, the negative aspects of consuming non-halal foods, and the procedure of the halal logistics certification. Consequently, consumers will understand the importance of the halal logistics and its certificate, which may lead to higher halal concerns and willingness to pay for the halal logistics.

Finally, results show insignificant relationships between the service capability of the 3PL providers and 3PL providers’ image and the consumers’ intention to pay
for halal logistics. This result implies that consumers’ knowledge about the capability of 3PL providers and consumers’ image of 3PL service providers have no effect on their willingness to pay for the halal logistics. The possible reason is that halal logistics are still in the initial stage. Therefore, consumers’ knowledge on the capability of the 3PL providers and their image of the 3PL service providers do not play a significant role because they do not have sufficient knowledge about the importance of the halal logistics in preserving the halalness of products. Therefore, in this stage, companies should emphasize the importance and existence of the halal logistics in their marketing to enhance consumers’ willingness to pay for the halal logistics.

Implications of the Study

In terms of theoretical contribution, this study is the first to investigate the extent level and the drivers of consumers’ willingness to pay for halal logistics. This sector is particularly important because it is a rapidly growing industry with a significant influence on ensuring the integrity of halal food at the point of consumption (Tieman, 2011). Understanding the important role of consumers’ perception of halal logistics, concern on halal, and media coverage on consumers’ willingness to pay for halal logistics and the consequent, higher demand suggest the need to educate consumers about the importance of halal logistics through media.

From a practical point of view, this study provides the key drivers of consumers’ willingness to pay for halal logistics and their effect on the extent of the demand for halal logistics certification of 3PL providers. Halal logistics are only used if consumers are willing to pay for it. Thus, the significant effect of perception of halal logistics, concern over halal as well as that of media coverage suggest the importance of enhancing consumers’ perception and concern over halal logistics and the role that the media may play. In addition, the marketers of halal logistics service providers should educate the current/potential consumers about the importance of halal logistics service in preserving the halalness of products.

Limitations and Future Studies

Although the aim of this study has been successfully achieved, its limitations have to be considered before making an overview of the results. For instance, the research tested and checked the hypotheses through survey forms and offered a cross-section nature of the research. This method restricted the possibility of involving causality in the relationships among variables. Therefore, the results obtained from the questionnaires are not precise because the research failed to identify the dynamic changes in individual, environmental, and logistics service providers’ characteristics. For accurate results, a longitudinal research, which could be capable of assessing the
relationships during a long period, is needed. Moreover, only Malaysian consumers made up our sample. Nonetheless, people’s concerns regarding halal vary from country to country, especially among non-Muslim countries. Thus, future studies could apply the research model to other countries.

Acknowledgements
The authors acknowledge the financial support of University of Malaya under the grant number of RP016B-13SBS, which have made the presentation of this paper possible.

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Figure 1: Malaysia Master Plan
Source: MIDA (2013)

Individual Characteristics
- Perceptions of Usefulness of Halal Logistics
- Concern on Halal

Environment Characteristics
- Media Influence

Logistics Providers Characteristics
- Service Capability
- Image

Extent of demand of Halal Logistics Certification of 3PL for Halal Products: End Consumers Perspective

Willingness to pay

Figure 2: Theoretical Framework
<table>
<thead>
<tr>
<th>Construct Items</th>
<th>Factor Loadings</th>
<th>CR</th>
<th>AVE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Perception on Halal Logistics (PHL)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Halal logistics is important to preserve the halalness of products.</td>
<td>0.746</td>
<td>0.752</td>
<td>0.503</td>
</tr>
<tr>
<td>Halal logistics is important to prevent contamination during transportation.</td>
<td>0.684</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Halal logistics is important to prevent contamination during storage.</td>
<td>0.697</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Concern on Halal (CH)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is very important for me to consume food that is halal.</td>
<td>0.780</td>
<td>0.934</td>
<td>0.738</td>
</tr>
<tr>
<td>I am often concerned about halalness of product that I consume.</td>
<td>0.898</td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is very important for me that the ingredients of product be halal.</td>
<td>0.893</td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is very important for me that the product transport follows the Islamic principles.</td>
<td>0.865</td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is very important for me that the product store follows the Islamic principles.</td>
<td>0.855</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Media Coverage (MC)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The media present the Islamic principles on halal food.</td>
<td>0.644</td>
<td>0.824</td>
<td>0.541</td>
</tr>
<tr>
<td>The media present the negative aspects of consuming non-halal food.</td>
<td>0.693</td>
<td></td>
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<tr>
<td>The media provide information on halal logistics certification procedure.</td>
<td>0.770</td>
<td></td>
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</tr>
<tr>
<td>The media covers news of bad halal practice of logistics by certain 3PL.</td>
<td>0.822</td>
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</tr>
<tr>
<td><strong>Service Capability of 3PL (SC)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Halal 3PL does receiving of halal goods</td>
<td>0.810</td>
<td>0.947</td>
<td>0.663</td>
</tr>
<tr>
<td>Halal 3PL does putaway of halal goods</td>
<td>0.731</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Halal 3PL does storage of halal goods</td>
<td>0.828</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Halal 3PL does cross-docking of halal goods</td>
<td>0.809</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Halal 3PL does added value to halal goods</td>
<td>0.837</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Halal 3PL does order picking of halal goods</td>
<td>0.844</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Halal 3PL does shipping of halal goods</td>
<td>0.812</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Halal 3PL does cleaning of bulk tanker / container / transport vehicle before use</td>
<td>0.823</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Halal 3PL does loading / stuffing of tanker / container / transport vehicle</td>
<td>0.831</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>3PL Image (IMG)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Once the 3PL is found guilty of not abiding the halal logistics procedure, all their services will be badly affected.</td>
<td>0.759</td>
<td>0.837</td>
<td>0.721</td>
</tr>
<tr>
<td>It is easier for consumers to accept products handled by well-established and highly reputable halal 3PL.</td>
<td>0.931</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Willingness to Pay (WTP)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I do not bother to pay more to make sure the halal product is stored without any contaminations.</td>
<td>0.944</td>
<td>0.960</td>
<td>0.889</td>
</tr>
<tr>
<td>I do not bother to pay more to make sure the halal product is transported without any contaminations.</td>
<td>0.956</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I do not bother to pay more to make sure the product is 100% halal.</td>
<td>0.928</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Extent of Demand (ED)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I pay attention to the halal logistics certification</td>
<td>0.843</td>
<td>0.831</td>
<td>0.554</td>
</tr>
<tr>
<td>I concern of the halal logistics certification.</td>
<td>0.748</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Halal logistics certification makes difference to my product preference</td>
<td>0.680</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I demand for the halal logistics certification</td>
<td>0.695</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: CR= Composite Reliability; AVE= Average Variance Extracted
Table 2: Discriminant Validity Coefficients

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>PHL</th>
<th>CH</th>
<th>MC</th>
<th>SC</th>
<th>IMG</th>
<th>WTP</th>
<th>ED</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHL</td>
<td>3.798</td>
<td>0.771</td>
<td>0.709</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CH</td>
<td>4.492</td>
<td>0.635</td>
<td>0.056</td>
<td>0.859</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MC</td>
<td>3.504</td>
<td>0.619</td>
<td>0.019</td>
<td>0.336</td>
<td>0.736</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SC</td>
<td>3.850</td>
<td>0.682</td>
<td>0.029</td>
<td>0.464</td>
<td>0.372</td>
<td>0.814</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>IMG</td>
<td>3.854</td>
<td>0.631</td>
<td>0.027</td>
<td>0.507</td>
<td>0.438</td>
<td>0.501</td>
<td>0.849</td>
<td></td>
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</tr>
<tr>
<td>WTP</td>
<td>3.795</td>
<td>0.763</td>
<td>0.167</td>
<td>0.320</td>
<td>0.294</td>
<td>0.229</td>
<td>0.228</td>
<td>0.943</td>
<td></td>
</tr>
<tr>
<td>ED</td>
<td>4.162</td>
<td>0.649</td>
<td>0.052</td>
<td>0.432</td>
<td>0.212</td>
<td>0.287</td>
<td>0.291</td>
<td>0.181</td>
<td>0.744</td>
</tr>
</tbody>
</table>

Table 3: Path coefficients and hypothesis testing

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Relationship</th>
<th>Path Coefficient</th>
<th>t-value</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>WTP -&gt; ED</td>
<td>0.181</td>
<td>1.832*</td>
<td>Supported</td>
</tr>
<tr>
<td>H2</td>
<td>PHL -&gt; WTP</td>
<td>0.191</td>
<td>2.657**</td>
<td>Supported</td>
</tr>
<tr>
<td>H3</td>
<td>CH -&gt; WTP</td>
<td>0.176</td>
<td>1.928*</td>
<td>Supported</td>
</tr>
<tr>
<td>H4</td>
<td>MC -&gt; WTP</td>
<td>0.203</td>
<td>2.417**</td>
<td>Supported</td>
</tr>
<tr>
<td>H5</td>
<td>SC -&gt; WTP</td>
<td>0.054</td>
<td>0.656</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H6</td>
<td>IMG -&gt; WTP</td>
<td>0.071</td>
<td>0.613</td>
<td>Not Supported</td>
</tr>
</tbody>
</table>

*p<0.05, **p<0.01, ***p<0.001 (One tail)

Path coefficients and hypothesis testing:

- H1: WTP -> ED, Path Coefficient = 0.181, t-value = 1.832*, Decision: Supported
- H2: PHL -> WTP, Path Coefficient = 0.191, t-value = 2.657**, Decision: Supported
- H3: CH -> WTP, Path Coefficient = 0.176, t-value = 1.928*, Decision: Supported
- H4: MC -> WTP, Path Coefficient = 0.203, t-value = 2.417**, Decision: Supported
- H5: SC -> WTP, Path Coefficient = 0.054, t-value = 0.656, Decision: Not Supported
- H6: IMG -> WTP, Path Coefficient = 0.071, t-value = 0.613, Decision: Not Supported