Factors Influencing Customers Willingness to Pay for Halal Logistics

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Abstract

The demand towards an effective and acceptable halal logistics services is timely to meet the requirement of international trade of halal products. The objective of the study is to explore the underlying determinants that are likely to influence the customer willingness to pay (WTP) for halal logistics. The study uses logit model to determine the extent of factors' influence on the respondents' willingness to pay. Findings of the study reveal that respondents are willing to pay for halal logistics, due to the demand and cost towards halal logistics services. Result of this study facilitates the establishment of an efficient and realistic halal logistics policy requirement in Malaysia.

Keywords: halal; logistic; willingness to pay; lifestyle.

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1.0 Introduction

Logistics is one of the key elements in the production process, integrating various service providers to total supply chain solutions that integrate producers, manufacturers, retailers and customers. The dynamic business environment has dramatically changed the structure of logistics industry due to different requirements among the trading nations. One of the lucrative areas in the industry is the halal logistics. The demand towards an effective and acceptable halal logistics services is timely to meet the requirement of international trade of halal products across the world. This study investigates the Malaysian logistics industry in response to the halal logistics services for two reasons. First, it is timely to look into the customers' behavior in response to Malaysia logistics industry which is rapidly growing at the average rate of 12% per year. Second, it is vital to examine the socio-economic factor that contributes the increasing awareness for reasons of halal logistics among Muslim, in consideration to the government efforts to establish Malaysia as a hub for global halal industry. Thus, Halal traceability and tracking system is essential in strengthening the Halal food supply chain for food industry worldwide. As a part of tracing the movements of halal food products, halal logistics include physical activities of storing and transporting which provide a set of data for communication between successive links (up and down) along the food supply chain.

Halal is defined according to various standards that are available in Malaysia and internationally. Standard definition of halal as provided by the Department of Standards Malaysia in MS 1500:2009 (item 2.3) (MS 1500, 2009) states as 'things or actions permitted by Shariah law without punishment imposed on the doer". MS 2400:2010 (Part 1 – item 2.19) defines halal or halalan as 'things or actions which are permitted or lawful in Islam which conveys basic meaning and defines the standard of acceptability in accordance to Shariah requirements'. Toyyib or toyyiban is defined as 'complements and perfects the essence (spirit) of the basic standard or minimum threshold (halal), i.e. on hygiene, safety, sanitation, cleanliness, nutrition, risk exposure, environmental, social and other related aspects in accordance to situational or application needs; wholesomeness'. Halalan-toyyiban is defined as 'the assurance and guarantee that both aspects of halalan and toyyiban are integrated into holistic and balanced requirements that fulfill the condition, situation or application needs' (MS 2400, 2010). ICCI-IHI Alliance Halal Standard 0200:2010 (item 3.2) defines halal as 'things or actions that are permissible or lawful under Shariah (IHIAS, 2010). All three definitions have a common qualifying characteristic that halal are things or actions that fulfill Shariah (Islamic law) requirements. In response to these requirements, Halal logistics services are vital to ensure continuity in actions, in order to secure the standard or threshold (halal) along the supply chain.

Many studies examine halal logistics from the policymakers and the service providers' perspectives (R. Kamaruddin et al., 2012). These studies conform on the needs of an integrated halal logistics management. However, very little studies look into the implication of customers' behavior on the halal logistics services. For these reasons, the objective of the study is to explore the underlying determinants that are likely to influence the customer willingness to pay for halal logistics services. The following sections explain the importance of halal logistics, the research framework, findings and discussion on cost implication from

the customers` perspective.

2.0 Literature Review

2.1 Halal Logistic

Halal Development Corporation (2010), an institution under Ministry of International Trade defines halal logistics as "The basic principal of halal logistics is to ensure segregation of halal cargo form non-halal cargo. This is to avoid cross contamination and ensure that the logistics system is aligned to the expectations of Muslim consumers, and so halal integrity is thus protected along the whole supply chain." The halal food chain is therefore adapting to newly emerging consumer interests like food safety, animal welfare and convenience in cooking and eating (Bonne and Verberke, 2006). Tracing is aimed at finding the history of a product, for example, to allocate the source of contamination (Meuwessen et al., 2003).

2.2 Willingness to Pay

The definitions of WTP states that: "WTP is the maximum amount that individual states they are willing to pay for a good or services" (DFID, 1997). Users may not be "happy" paying a certain cost of halal services, but they are willing to pay this amount rather than go without such services. According to Wedgwood and Sansom (2003), there are three ways to estimate WTP as follows, the first two approaches are called revealed preferences and the third approach called stated preferences.

- Observe the prices that people pay for goods in various markets (i.e. water vending, buying from neighbors, paying local taxes).
- Observe individual expenditures of money, time, labour, etc, to obtain goods – or to avoid their loss.
- Ask people directly what they are willing to pay for goods or services in the future The issue of willingness to pay for halal logistic services is for the policy maker and planners is to ensure the implementation of such service is accepted by the public. This can involve predicting what users will be able and willing to pay for halal logistic per km and certification.

2.3 Demand

The dynamic business environment has dramatically changed the structure of logistics industry due to different requirements among the trading nations. Consumer and industrial customers are demanding more with different products and services. The demand of halal logistics will have some spin-offs of its own, such as the need for more specific standards to determine the parameters for halal compliance within the logistic sector. The term 'demand' has different meanings to different customer (Webster, 1999). The explanation of demand can be categorized differently by stakeholders. The logistic players' explanation on demand is;

"The rise of Demand –or Demand driven- and Supply Chain Management (DSCM) can be explained by the understanding that only combinations of companies are able to meet customer requirements in a more efficient and better way than individual companies can

realize. Collaboration between suppliers, manufacturers and retailers can improve the number of satisfied customers by reducing lead-times, improving service levels and decreasing costs."

In addition, "Effective demand" refers to "demand goods and services which backed up with the resources to pay for it". If people merely "want" something it may not be backed up by a willingness to pay for that service (Pearce, 1981; White, 1997).

2.4 Cost

As for halal logistic services, the willingness to pay will incorporate some cost to achieve the halal compliance parameter. Basically the costs components cover infrastructure, operation and administrative component of logistic. The CASS (Cargo Accounts Settlement System) measures of logistic costs include three broad cost components comprising the business logistic system. There are inventory-carrying costs, transportation and logistics administration costs.

i. Inventory Service Costs: Inventory service costs consist of taxes and insurance paid of holding inventory. The costs are proportional to inventory levels of the firm. When firms deal with inventory, they have to incur storage space costs. There are four types of facilities:

- Plant warehouse
- Public warehouse
- Rented(lease) warehouse
- Company-owned (private) warehouse

ii. Transportation costs include costs for both primary and secondary transportation. Primary transportation includes costs for inbound freight of finished goods movement to plants or distribution centres for resale. Secondary transportation costs include payments to carriers, operation costs and freight allowed.

ii. Logistic administration costs include indirect management and support staff, which includes central distribution staff, planning and analysis staff, and the traffic department.

3.0 Methodology

A sample of 221 Muslim respondents was collected via structured questionnaires to gather information regarding their awareness and willingness to pay for halal logistics. The questionnaire included items measuring the components of the proposed Logit model. The respondents were selected randomly from Klang Valley, Selangor and Marang, Terengganu. Two locations were chosen due to its location that reflects the lifestyle of the urban and suburban Muslim population.

The questionnaire was divided into five sections. First, Section A consists of three parts. The first part identifies the background of respondents such as area of resident, status, age and family members, the second part examines the consumption behaviour of respondents and the third part examines the willingness to pay for halal logistic. Second, Section B uses a five point Likert scale to measure the importance of halal logistics. Third, Section C checks

on demand and cost of halal logistics while Section D verifies the level of awareness on halal certification, monitoring and enforcement bodies. Lastly, Section E identifies respondents` awareness of JAKIM logo from six halal logos given, taking into account the respondents` opinion on approaches to help government on the implementation of halal logistics.

Descriptive statistics were used to identify respondents` background and consumption behaviour. A question purposely designed to know whether respondents are able to recognize the JAKIM logo. Logit procedures were used to determine the extent to which selected consumer variables (demand, cost and awareness) influenced the respondent's willingness to pay for halal logistics. In this model, each dichotomous predictor or explanatory variable has a value of 0 and 1, in order to discover the effect of the categorical explanatory variables on the willingness to pay of halal logistic and halal certification. The logit model for the representative customer willingness to pay ' i ' can be expressed as follows:

$$W_i = \log\left(\frac{p_i}{1-p_i}\right) = \alpha + \sum_{i=1}^{i} bx_i + \varepsilon_i \quad \ldots\ldots(1)$$

Where, W_i is a dependent variable, "Willingness to pay for halal logistic" coded as one and otherwise coded as zero. The variables xi_i represents the different background and attitude variables of the respondent. Specifically the logit model can be stated as follows:

$$\log\left(\frac{p_i}{1-p_i}\right) = \beta_0 + \beta_1 x_{age} + \beta_2 x_{status} + \beta_3 x_{family\,members} + B_4 x_{demand} + \beta_5 x_{cost} + \beta_6 x_{importance} + \beta_7 x_{awareness} + \varepsilon_i \quad \ldots\ldots(2)$$

Where the log equation is called log-odd ratio, the log odd ratio is the logarithm of the odds that a particular choice will be made by the representative consumers. P is the probability of proxy variable W = 1 and (1 - P) is the probability of Y= 0, ε_t is the error term. The signs of parameter and their statistical significance indicate the direction of the response associated with the presence or level of a particular variable. The changes in the probabilities associated to the intermediate categories (1 to j − 1) cannot be signed a priori. Thus, category-specific marginal effects are often reported (Gujarati, 1988).

4.0 Findings and Analysis

4.1 Descriptive Analysis

From the total of 221 respondents, 120 from urban and 101 from suburban, with the following status; 68 father, 85 mothers, 57 children and 11 others. The average age was 36.93 years and the majority with a family member's 4-6 people. In terms of JAKIM halal logo, 98.6% of the respondents recognized the right logo which indicates a high level of recognition. The respondent's consumption behaviour shows 67.9 % shops at hypermarkets while 12.7 % prefer to get their groceries from wet markets. Respondents preferred imported food is frozen

food, 54.3%, beverages, 48.4 % and chocolate 47.1%. Table 1 summarizes the profile of respondents.

4.2 Logistic Regression Analysis

According to the model in equation (3) , the log of the odds of willingness to pay was negatively related to "status of mother" and "importance of halal logistic" ($p < .05$) and positively related to "demand halal logistic" and "cost incurred for halal logistic" ($p < .05$);. In other words, the findings suggest "effective" demand is a strong indicator for willingness to pay for halal logistic and cost incurred by the logistic providers is accepted by the customers. The logit model has an overall predictability power of predication of 81.9%. Table 2 depicts the result of the logit model.

Predicted logit { WTP } = 0.882 + (- 1.252) * mother + (.984) * demand + (1408)* cost + (-1.292)* importance. .....(3)

The inferential goodness-of-fit test is the Hosmer- Lemeshow (H-L) test that yielded a χ^2 (8) of 1.955 and was insignificant ($p > 0,05$), showed that the model was fit to the data well. In other words, the null hypothesis of a good model fit to the data tenable.

Table 1. Profile of Respondents (N=221)

Characteristics	Number	Percentage
Residential area		
Urban	120	54.3
Suburban	101	45.7
Status		
Father	68	30.8
Mother	85	38.5
Children	57	25.8
Others	11	5.0
Age	57	25.8
Below 25		
26-40	67	30.3
41-60	89	40.27
Above 60	8	3.6
Family members		
1-3	43	19.5
4-6	128	48.9
7-10	46	20.8

JAKIM Halal Logo		218	98.6
Yes			
No	3		1.4
Consumption Place		150	67.9
Hypermarket			
Wet market	28		12.7
Other	43		19.5
Imported Food Bought			
Beef	68		30.8
Poultry	15		6.8
Frozen food		120	54.3
Chocolate		104	47.1
Beverages		107	48.4
Yogurt		49	22.2
Cheese	45		20.4
Snack	60		27.1

Table 2: Results of Logit Model

Variables	Coefficient	Standard Error	Probability
Constant	0.882	2.724	0.746
Age	- 0.006	0.023	0.814
Status - father	- 0.839	0.718	2.42
Status - mother	-1.252	0.754	0.097*
Status - children	- 0.322	1.218	0.792
Place bought	-0.171	0.119	0.150
Family members	0.070	0.098	0.471
Demand	0.984	0.471	0.037**
Cost	1.408	0.346	0.000***
Awareness	-0.544	0.484	0.261
Important	-1.292	0.559	0.021**
Log-likelihood	182.168		
Cox & Snell R	0.149		
Predicted respondents	Willing to pay	97.2	
	Not willing to pay	18.6	
Percent correct prediction (N=221)		81.9	

**** Statistically significant at the 0.01-level, ** at the 0.05 level, and * at the 0.10 level.*

6.0 Conclusion

WTP survey that has been carefully conducted provides valuable information for the planning

of halal logistics services. Such a process enable the stakeholders to adequately consider effective technical options based on the consumer ability to pay as long term source of funding for logistics investment. Apparently, the willingness to pay for halal logistics by Muslim is expected when it comes to preserve the halal compliance parameter throughout the supply chain. Demand and cost associated with the importance of halal logistics will probably make the decision for consumer willingness to pay for halal logistics. The determinants of demand have a positive impact that associated with WTP. Demand will change the lifestyle of Muslim population in Malaysia. The study concludes that in general, consumer trend of consumption not only towards halal product but also halal logistics. Lastly, understanding consumer WTP can lead manufacturers to implement the concept of Halal in its value chain transcends into the entirety of the whole system of animal/plant feed, raw materials extract, harvesting/slaughtering, processing, packaging, labeling, transporting, finance and logistics of food.

However, the study suggests caution when generalizing outside of the context of the present analysis. First, this study was exploratory in nature and specifically focused on how consumer-level factors can influence the halal logistics services. Second, because the dataset used in this study focuses only on two selected geographical areas that reflect the lifestyle of urban and suburban Muslim population, a probabilistic rather than a convenience sample in diverse area may be needed for more conclusive results. Future research may refine the findings by identifying a more appropriate method of measuring the long term effects of consumer behavior on halal logistics services development. Subsequently, further evidence on the generalizability and robustness to the use of the overall scale could be established.

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References

Bonne, K. and Verbeke, W. (2009). Muslim Consumer's Attitude towards Meat Consumption in Belgium: Insights from a Mean-end Chain Approach. *Anthropology of Food* 5: 1-24.

Department for International Development (DFID). (1998*). Draft Guidance Notes for DFID Economists on Demand Assessment in the Water and Sanitation Sector,* London Evaluation Department, EV Report 596, Loughborough University, UK.

Department of Standards Malaysia. (2005). *MS 1900: 2005*. Quality Management System Requirements from Islamic Perspective, SIRIM QAS International.

Department of Standards Malaysia. (2009a). *MS 2300: 2009*. Valued Based Management System Requirements from Islamic Perspective, SIRIM QAS International.

Department of Standards Malaysia. (2009b). *MS 1500:2009*. Halal Food – Production, Preparation, Handling and Storage – General Guidelines (Second Revision). SIRIM QAS International.

Department of Standards Malaysia. (2010a). *MS 2400-1:2010*. Halalan-Toyyiban Assurance Pipeline – Part 1: Management System Requirements for Transportation of Goods and/or Cargo Chain Services. SIRIM QAS International.

Department of Standards Malaysia. (2010b). *MS 2400-2:2010*. Halalan-Toyyiban Assurance Pipeline – Part 2: Management System Requirements for Warehousing and Related Activities. SIRIM QAS International.

Gujarati, D.N. (1998). *Basic Econometrics* (2nd ed). Singapore: McGraw-Hill Book Company.

Halal Industry Development Corporation (HDC). (2011). *The New Source of Economic Growth*. Paper presented at Halal Summit Forum 2011, Kuala Lumpur.

International Halal Integrity Alliance. (2010). Halal Standard, Logistic *IHIAS 0100:2010* First Edition.

Pearce, D. (1981). The MacMillan Dictionary of Modern Economics. MacMillan Press, London.

R. Kamaruddin, A. Shabudin, H. Iberahim, (2012), Halal Compliance Critical Control Point (HCCCP) Analysis of Processed Food. *Proceedings of 2012 IEEE Business, Engineering & Industrial Applications Colloquim*, 5-7 April 2012, Kuala Lumpur.

Webster, B. (1999). *Effective Demand for Rural Water Supply in South Africa*. Water, Engineering Development Center (WEDC), UK

Wedgewood, A. and Sansom, K. (2003). *Willingness-to-pay Surveys – A Streamlined Approach: Guidance*. Water, Engineering Development Center (WEDC), UK.

White, J. (1997). *Evaluation Synthesis of Rural Water and Sanitation Projects*. Evaluation Department. Loughborough University.