

Service Innovation: Halal Logistics Intention Adoption Model

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Abstracts — The concept of Halalan Toyibban in halal product value chain has increasingly accepted among Muslim community. Halal logistics is the key factor for this concept to be materialized. Therefore, it is crucial for halal logistics to be adopted by halal product producer to uphold the integrity of their product throughout the whole supply chain process. It's vey alarming that still huge number of Malaysian Halal small medium enterprises (SMEs) still not adopting halal logistics. Therefore, this shows the important of this study to be conducted to identify factors that influence the intention of SMEs to adopt halal logistics services (HLS). Three objectives were established. Firstly, investigate the current state of halal logistics adoption among SMEs. Hypotheses derived were based on seven factors acquired: familiarity with innovation, status characteristics and position in social network, benefits, geographical setting, societal culture and political condition. The second objective is to determine the significant factors that influence SMEs intention to adopt HLS. Lastly, final objective is to proposal of an adoption intention model able to significantly predict the adoption intention of HLS among Malaysian SMEs. With extensive data collection, this study has succeeded in stipulating evidence to show: (1) being in the same social group HLS players and being familiar on HLS will significantly influence SMEs to adopt HLS, (2) being positioned in the same group of HLS actors will result in higher accessibility to information on HLS and (3) understanding of HLS benefits versus cost and with good support from the government are the necessary enablers of adoption of HLS among Malaysian SMEs. This research has also contributed to future service innovation adoption researches by

providing an instrument to measure intention adoption service innovation model.

Keywords — *Halal Logistics, Service Innovation, Adoption, SMEs, and Diffusion of Innovation Theory*

1. Introduction

The aim of this research is to explore the relationship between adoption of innovation and the factors that influence the decision to adopt that innovation. In this research the focus of innovation is on the halal logistics services and the adopters are referred to Small Medium Enterprise (SMEs). Wejnert [1] argued that adoption of an innovation is associated with three factors: (1) the characteristic of innovation, (2) characteristics of adopters and (3) characteristics of the environment. These factors identified had contributed to SMEs' decision on employing halal logistics services. Sungkar et. al [2] emphasised that Halal integrity signifies that halal product are being sourced, produced, stored and distributed in the manner accordance to the Shariah law, as well in line with the modern and universal requirements such as high quality and safety, hygienically produced with respect for animal welfare and fairly traded. These posit that, in order to upheld the integrity of halal product, not only the production or manufacturing process must be concurrence to halal standard but also the handling of the finish product must be complied with halal standard and guideline. As the outcome, this study also ascertain the critical factor that influence the decision of SMEs on adopting HLS and finally proposed a model based on the

factors that can promote the adoption of HLS among SMEs.

1.1 *Global Halal Market Place.*

World population of Muslim is estimated to rise to about 2.2 billion in 2030 and the demand for halal product is projected to increase progressively [3]. Consequently, more and more producers or manufactures no matter Muslim or non-Muslim company owners are embarking into the halal industry [4]. Halal industry has become lucrative industry. Marketers have significantly position the Halal industry particularly Halal food industry in major geographical clusters with global Muslim population. In highly fragmented market with the total Muslim population of approximately 2000 million in 2013, halal industry has turn into a gold mine for all walks of business. The global halal industry has become a US \$2.3 trillion industry with global halal food accounts for about US \$700 billion [5]. This is not including other consumable halal product such as pharmaceuticals, cosmetics, beverages and skincare just mentioned a few. Due to that reason Malaysia had took the step further by gearing up to be the world Halal Hub. Malaysia government had initiate quite comprehensive initiatives to pursue this goal. Initiatives cover all areas starts from the formation Halal Agencies to enforcement halal standards that involved all parties from Halal Authorities, Halal Industries, Halal Service Providers till Halal Consumers

1.2 *Halal Logistics as part of Halalan Toyibban*

Halal should not only be viewed in the perspective of how the product is produced but also in the perspective of how it is being handled throughout the process of reaching the consumers. This 'farm to fork' concept ensures no cross-contamination between halal product and non-halal substance, which will result the halal product turn to be non-halal (haram) will occur. Standard 1500: 2004 - Halal Food: Production, Preparation, Handling and Storage – General Guidelines (1st Revision) incorporates the Good Manufacturing Practices, Food Manufacturing and hygiene sanitary requirement shows that halal is not viewed from perspective of consumable goods only, in fact there are 7 categories of halal areas; and one of them is halal logistics. Halal logistics role is to ensure the integrity of halal product is sustained throughout all

logistics process from the point of production to the point of consumption.

1.3 *Present State of Halal Logistics Adoption.*

The needs of halal logistics has been expanded by Husny, et al., [7] previous study which concluded that there are clear need of halal logistics control from the perspectives of halal authorities or agencies (JAKIM, HDC and IHIA) and consumer (PPIM). This also shows that the awareness on the importance of maintaining the integrity of halal food throughout the halal supply chain has gradually increased among the halal product consumers. Even though this situation has been understood by most food producers or food manufacturers particularly SMEs; only a few of them had decided to adopt halal logistics services. This statement was supported by phone interview sessions and email correspondence with five halal logistics operators listed by HDC namely MISC Integrated Logistics Sdn. Bhd, Kontena Nasional Berhad, Century Logistics Holdings Berhad, Penang Port Sdn. Bhd., Freight Management Holdings Berhad. They have confirmed there is little or no demand from SMESs. Among the impeding factors mentioned in the interviews are; higher cost rates, no policy of enforcement of using HLS, lacking on government support and SMEs knowledge and low awareness on halal logistics among SMEs. An empirical study has been carried out to verify the factors derived from the Halal LSPs perspective and literature reviews with actual response from SMEs. Based on the verification process, the researcher has proposed a model that will outline the critical factors that should be given priority by the government in order to increase the participation and adoption HLS among SMEs. Therefore, the government able to act appropriately in planning the necessities to promote SMEs to employ halal logistics services and ensure the integrity of our halal product is maintained and controlled.

2. **Literature Review**

Logistics is a common service business, well understood and used as an enabler of the whole process product supply chain from procuring the raw material until delivering it to the end consumers. Where else *halal logistics* can be viewed as a service innovation because as according to Business Dictionary, the process of

translating an idea or invention into a good or service that creates value or for which customers will pay is called innovation. Business Government Australia also explains that business innovation could mean implementing new ideas, creating dynamic products or improving your existing services. Innovation can be a catalyst for the growth and success of your business, and help you adapt and grow in the marketplace. This clearly shows that halal logistics is an innovation of service

2.1 Halal Logistics: Stage of Innovation Adoption

Innovation as defined by Rogers [9] is an innovation as "an idea, practice, or object that is perceived as new by an individual or other unit of adoption". According to Rogers, the third stage of adoption process is decision to adopt the innovation after knowledge and persuasion. In terms of halal logistics, studies done by Zakaria [10] and Abdul, et al. [11], shows that Malaysian SMEs are aware and have of the importance of halal and the need to maintain the integrity of Halal product throughout the supply chain. Studies such as Omar & Jusoh [12] and Dali, Nooh, Nawai & Mohammad [13] show that Malaysian SMEs have the knowledge on what is halal logistics.

Moreover, in Malaysian government has done significant number of initiatives such as campaigns, expos, conference, and seminars to encourage the use of halal logistics. Incentives are also given by the government aims to promote and persuade SMEs to adopt halal logistics in their halal product chain process. World Halal Research (WHR) conference, Malaysian International Halal Showcase (MIHAS) and SME Mentoring Program conducted by HDC are the incentives to name a few. Malaysian government has provided the relevant infrastructure such as halal parks that provide logistics infrastructure needed for halal industries. Therefore, with the knowledge and the persuasion given by the government on halal product handling or halal logistics, SMEs should already be in the stage of deciding on adopting the halal logistics services; which matched the third stage of Roger's Five Stages of the Adoption Process.

With that in mind, researcher investigated an integration diffusion of innovation model

conducted by [1]. Wejnert had used Rogers's theory in diffusion of innovation as the main reference for integrating model. Wejnert's study was very comprehensive where the findings were categorized into three (3) categories of characteristics that may influence the adopters to adopt an innovation. Characteristics mentioned are (1) characteristics of the innovation, (2) characteristics of adopters and (3) characteristics of the environment. Figure 1.0 illustrates the integrating model of diffusion of innovation done by Wejnert (2002).

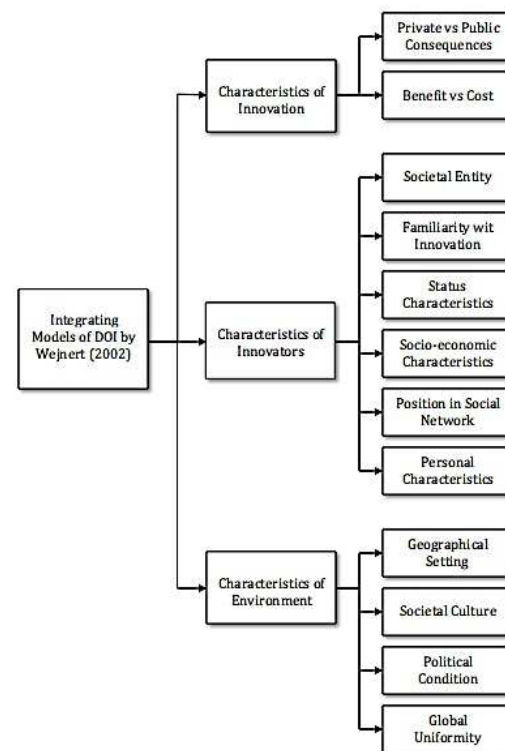


Figure 1.0: Integrating Model of Diffusion of Innovation: A Conceptual Framework (Adopted from Wejnert (2002))

2.2 Formation of Research Model

Based on the literature review discussed in the previous section, a research model has been developed and hypotheses were constructed. Wejnert's Integrating Models of Diffusion of Innovation [1] is the basis for the proposed research model shown in Figure 1.1. This research model

shows that factors were categorized into two: Internal factors (adopter characteristics) and external factors (innovation and environment characteristics). This figure shows the graphical representation of the independent and dependent variables of the proposed research model. This model is a reconceptualization of the integrating model of diffusion of innovation done by Wejnert.

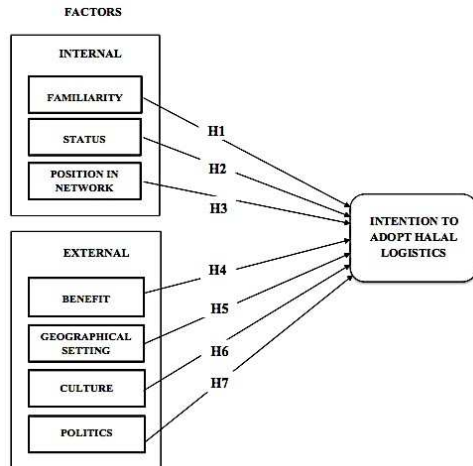


Figure 1.1: Factors Influencing the Intention to Adopt Halal Logistics Services

Consequently, hypotheses had also been formulated as follows:

- H1.** SMEs familiarity with innovation positively influence the intention to adopt HLS
- H2.** SMEs status characteristics positively influence the intention to adopt HLS
- H3.** SMEs position in social network positively influence the intention to adopt HLS
- H4.** SMEs perceived benefit of innovation positively influence the intention to adopt HLS
- H5.** SMEs geographical setting positively influence the intention to adopt HLS
- H6.** Societal culture positively influence the intention to adopt HLS
- H7.** Political condition positively influence the intention to adopt HLS

3. Research Methodology

There are seven independent constructs; which formed 45 items in the questionnaire survey. Three items are the dependent constructs that will indicate

the level of HLS adoption by Malaysia SMEs as shown in Appendix 1. The research design developed for this study was divided into five stages where this stages were design to achieve the four objectives of this research as shown in Figure 1.2.

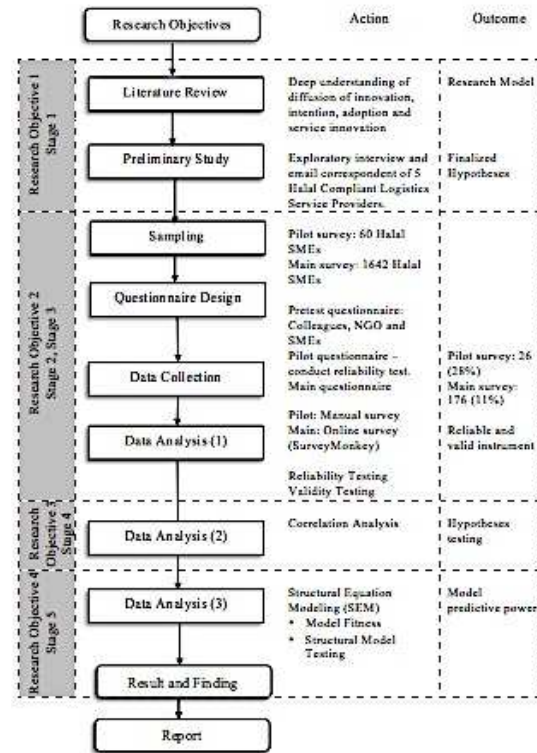


Figure 1.2: Research Design

Stage 1, exploratory interviews were conducted to clarify concepts in the proposed model and to articulate various ideas and research hypothesis before the instrument was developed. Then a pilot study was done to develop initial reliable measures of innovation adoption intention, which later will be used in the main survey in *Stage 2*. Research hypotheses and research model were proposed during this stage.

Stage 3, the main data collection was done using SurveyMonkey. Pre-notice, invitation of survey participation and reminders were distributed through email to 1,642 Malaysian Halal SMEs. 176 (18%) valid responses that made 10.7% of total Malaysian Halal SMEs population were received within 45 days. Researcher again performs the reliability test on the data and found all constructs achieve scale of above .7 with several loading above .8. Smaller sample size of 150 cases should

be sufficient to perform analysis if solution have several loading maker variable (above .80) [14]. Moreover to run SEM, for seven constructs or below with three or more items in a construct of 150 cases is sufficient [15]. Therefore the instrument used is reliable thus structural equation modelling can be performed.

Table 1.0: Correlation Matrix of the Hypothesis Testing

Correlation Coefficients								
	AI	FI	SN	ST	BF	GS	CL	PL
AI	1							
FI	.625**	1						
SN	.534**	.448	1					
ST	.710	.304	.361	1				
BF	.792**	.331	.386	.232	1			
GS	.716	.275	.249	.133	.226	1		
CL	.741	.074	.290	.052	.466	.274	1	
PL	.778**	.139	.014	.152	.266	.099	.043	1

** - Signif. LE.01

1. AI – Adoption Intention
2. FI – Familiarity with Innovation
3. SN – Position in Social Network
4. ST – Status Characteristics
5. BF – Perceived Benefit
6. GS – Geographical Setting
7. CL – Societal Culture
8. PL – Political Condition

Stage 4, correlation analysis demonstrated that all independent variables (internal and external factors) have strong relationship with dependent variables (Intention of Adoption) ranging from .534 to .792. Result as shown in Table 1.0. However, of the seven independent variables, two internal factors (Familiarity with Innovation, Social Network Position) and two external factors (Benefit and Political Condition) showed significant correlation with Adoption Intention of HLS. The rest of variables (Status, Geographical Setting and Societal Culture) showed insignificant contribution to Adoption Intention of HLS and has been excluded from model fitness test and the validity test.

Table 1.1: The Fitness Indices Assessment for the Structural Model Internal and External Factors and Adoption Intention of HLS

Name of Category	Name of Index	Acceptable Value	Result Values	Final Result
Absolute fit	P	p>0.05	0.083	Good fit
	GFI	> 0.90	0.927	Good fit
	RMSEA	0.03 – 0.08	0.032	Good fit
Incremental fit	AGFI	> 0.90	0.814	Acceptable
	CFI	> 0.90	0.964	Good fit
	TLI	> 0.90	0.931	Good fit
	NFI	> 0.90	0.953	Good fit
Parsimonious fit	Chisq/df	Chi square/df < 5.0	3.927	Good fit

Finally in *Stage 5*, structural equation modeling (SEM) analysis was performed to determine the adequacy of model fit and the validity of the structural model and it corresponding hypothesized

relationships. In model fitness test, internal factors (familiarity with innovation and social network position) and external factors (benefits and political conditions) were adequate where all fitness tests (absolute, incremental and parsimonious) achieved the desired level. Result as shown in Table 1.1.

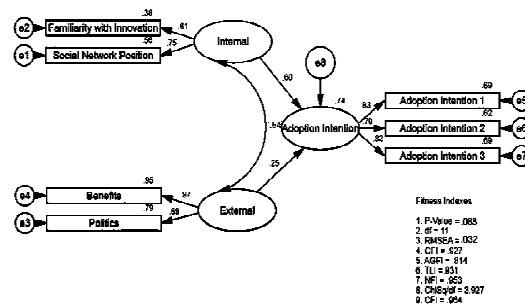


Figure 1.3: A Structural Model of Internal Factor, External Factors and Adoption Intention

Result shown in Figure 1.3 from structural model testing indicates significant and positive contribution of exogenous constructs; internal and external factors in estimating or predicting endogenous constructs (adoption intention) at 74%. This implies that both factors have strong predictive power on the adoption intention, which in this case the intention to adopt HLS among Malaysian SMEs.

4. Contribution and Conclusion

This research set the foundation for future studies on halal logistics services. It provides evidence that internal and external adoption factors have important implication to the adoption intention of HLS among Malaysian SMEs. Adopting halal logistics services also provide huge advantage for SMEs over other halal producer in global halal market. The significant contribution of this study is to encourage the authorities to understand factors and strategies that encourage SMEs to adopt halal logistics services. This on the other hand will promote the concept of total halal supply chain or Halal Toyyiban. Another significant contribution of this study is to encourage future research on multifarious dimensions and contribution of service innovation adoption factors constructs. Researcher in diverse organizational discipline can use the instrument and proposed model to study other service innovation in order to measure its adoption

factors may influence the intention to adopt the service innovation.

To summarize, this study has succeeded in stipulating evidence to support the hypotheses that internal and external adoption factors. Being in the same social group, HLS player will significantly influence the decision of SMEs owner to adopt HLS. This explains why familiarity toward HLS will also significantly influence SMEs to adopt HLS because being in the position among HLS actors will result higher accessibility towards information on HLS. Besides, the understanding of HLS benefits versus cost and the political condition is the necessary enabler of promoting the adoption of HLS among Malaysian SMEs. Finally, this study made a major contribution to future research in service innovation adoption by providing an instrument for measuring intention adoption service innovation framework.

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Appendix 1

Final Constructs for the study

Dimensions	Constructs	References	No of items
Internal	Societal Entity	[1], [16], [17], [18], [19], [20]	1
	Familiarity with innovation	[21], [22], [20], [23], [24], [25]	5
	Status Characteristics	[26], [27]	6
	Socio-Economics Characteristics	[28], [29], [30]	2
	Position in social network	[31], [32], [20], [33], [32], [30], [23], [34], [35]	5
	Personal characteristics	[22], [36]	2
External	Private vs Public Consequences	[24], [21], [37], [1]	1
	Cost vs Benefit	[38], [39], [17], [1]	6
	Geographical setting	[1], [40], [41], [42]	5
	Societal Culture	[43], [44], [45], [46], [47], [26], [48], [49], [50], [51]	5
	Political Condition	[52], [53], [54], [17], [55], [56], [57]	5
	Globalization and Uniformity	[21], [16], [58], [59], [60], [22]	2
Intention to Adopt	[61], [62], [63], [64], [65]	3	
Total of items			48