Determinant Factors Towards the Adoption of Halal Logistics Services among Malaysian Halal Small Medium Enterprises (SMES)

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Abstract: Factors that influence the intention of Malaysian Small Medium Enterprises (SME) to adopt Halal Logistics Services (HLS) study provides a model that identifies the influence of adoption factors on service innovation adoption intention among SMEs was formulated through literature reviews and preliminary study. 13 factors: Four internal and seven external factors were derived from literature review which than reduced to seven after pilot study and reliability test conducted resulted seven research hypotheses. Online survey made available to 1642 enterprise owners of halal SMEs but only 176 valid responses. Correlation coefficient used to test the hypotheses. Four of seven hypotheses were supported namely H_1. Familiarity with innovation, H_3 position in social network, H_4 benefit and H_7 political condition. SEM was used to evaluate the fitness of the influence model of adoption factors on the HLS adoption intention among SMEs. The model passed the three-fitness category with value p = 0.083, GFI, CFI, TLI, NFI above than 0.9, AGFI = 0.814, RMSEA = 0.132 and χ^2/df = 3.927. Value of coefficient of determination R^2 is 0.74 indicates the contribution of exogenous constructs, internal and external factors in predicting endogenous constructs adoption intention is 74%. This implies that both factors have strong predictive power on the adoption intention of HLS among SMEs. Moreover, evidence showed that being in the same social group HLS players and has familiarity on HLS will significantly influence SMEs to adopt HLS. Understanding HLS benefits and with good support from the government significantly promotes the adoption of HLS among SMEs.

Key words: Halal logistics, service innovation, adoption, SMEs and diffusion of innovation theory, network

INTRODUCTION

This study explored the factors that influence the adoption of halal logistics services among Small Medium Enterprise (SMEs). The researcher will attempt to identify factors that contribute to SMEs' decision on employing halal logistics services. According to Sungkar, Halal integrity means that the halal product are being sourced, produced, stored and distributed in the manner coherent with the Islamic values where these are in line with the modern and universal values such as high quality and safety, hygienically produced with respect for animal welfare and fairly traded. This posit that, in order for the integrity of halal food is maintained, SMEs not only need to ensure that the production or manufactured of the food is accordance to halal standard but the handling of the halal product throughout the halal food supply chain is also complied to halal standard and guideline. The outcome of this study is to identify the internal and

external factors that influence the decision on adopting Halal Logistics Service (HLS) among SMEs. Among these factors, this study also ascertain the critical factor that influence the most on the decision of SMEs on adopting HLS and finally this study proposed a model based on the factors that can promote the adoption of HLS among SMEs.

Halal industry: Government's intention in making Malaysia as a global Halal hub has created a new playing field in which the participation of muslims' SMEs is very much desired. The Halal hub will create opportunities for the muslims SMEs to penetrate the Halal market such as the Middle East, the OIC countries and the rest of the world. A study done by Abdul et al. (2009) shows that out of 136 SMEs, only 64.9% of these SMEs have obtained Halal certification and 44.3% of these entrepreneurs are Muslims. However, there are another 35.1% of SME who still do not obtained halal

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certification. This is quite a big number since Malaysia is a Muslim country and being the first country to introduce Halal status and Halal logo in 1971 and halal standard MS1500 was first introduced in 2004. From this study, we can also see that non-Muslim entrepreneurs are more than the Muslim entrepreneurs. The concept of halal is well accepted and adopted by the non-muslim businesses since they can see the huge potential of business opportunity. Nevertheless, the non-Muslims are facing a huge challenge in adopting the halal standard. This indicates that halal control is needed to ensure that the integrity of halal product is safeguarded. This is because non-Muslim entrepreneurs will not take halal as responsibility but more as business needs or to gain trust from Muslim customers. Therefore, for a control is needed to guarantee the wholesomeness of halal product.

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 complete supply chain cycle is called "from farm to fork". This concept should ensure that there would not be any cross-contamination between halal product and non-halal substance which will result the halal product turn to be non-halal (haram). 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. The concept of halal shall not be viewed in the perspective of consumable goods only in fact there are 7 categories of halal area besides than food and beverages and one of them is halal logistics. Halal logistics role is to ensure the integrity of halal product can be sustained throughout all logistics process and therefore win customer's trust.

Current adoption of halal logistics: The needs of halal logistics has been expanded by researcher in her, Husny 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 has been supported by phone interview sessions and email correspondence between researcher and five halal logistics operators listed by HDC.

Interviews and email correspondents done showed that all 5 halal logistics operators confirmed there is little or no demand from SMEs on their halal logistics services. Among the factors identified so far is higher cost rate, no policy of enforcement of using HLS, lacking on government support and SMEs knowledge and awareness on halal logistics is still low. However, these identified factors are from the perspective of halal logistics service provider (Halal LSPs). A study need to be carried out to identify the factors from the Halal LSPs perspective and literature reviews and; to verify these factors with actual response from SMEs. Based on the verification process, the researcher hope to propose 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 necessaries to promote SMEs to employ halal logistics services and ensure the integrity of our halal product is maintained and controlled.

MATERIALS AND METHODS

Halal logistics an innovation: Logistics is a common service business, well understood and used by all. It is the services that 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. 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 call innovation. Business government Australia 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.

Innovation as defined by Rogers (1995) 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 (2008) and Abdul *et al.* (2009), shows that 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 Jusoh (2011) and Dali *et al.* (2009) show that SMEs have the knowledge on what is halal logistics.
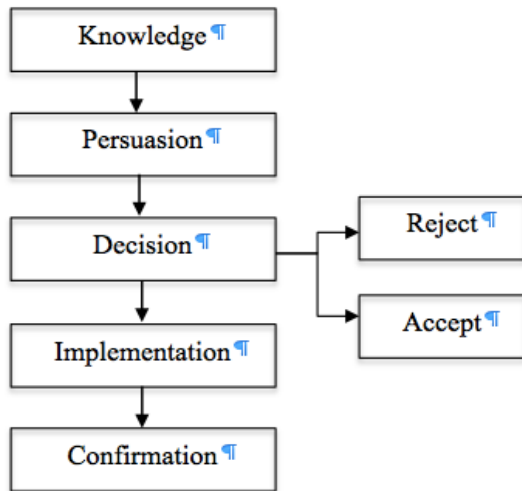
Fig. 1: Five stages of the adoption process diagram (Rogers, 1995)

Stages of innovation adoption: Government has done significant number of campaigns, expos, conference and seminars. Incentives are also given by the government aims to promote and persuade SMEs and consumer about the halal product supply chain. World Halal Research (WHR) conference, Malaysian International Halal Showcase (MIHAS) and SME Mentoring Program conducted by HDC is the events 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 as shown in Fig. 1.

With that in mind, researcher investigated an integration diffusion of innovation model conducted by (Wejnert, 2002). Wejnert had used Rogers's theory in diffusion of innovation as her main reference for this integrating model. She studied other researcher's work that used DOI theory in various areas. Her outcome of her work is very comprehensive where she had categorized her findings into categories of characteristics. According to her, these categories of characteristics may influence the actors to adopt the innovation. Characteristics mentioned are characteristics of the innovation, characteristics of adopters and characteristics of the environment. Figure 2 illustrates the integrating model of diffusion of innovation done by Wejnert (2002).

Table 1: Combination of data constructs

New constructs	Constructs combine
Internal factors	
Familiarity with innovation	Familiarity with innovation
	Socio-economics characteristics
Personal characteristics	Status characteristics
	Personal characteristics
External factors	
Culture	Societal culture global uniformity

Formation of research model: Based on the literature review that has been discussed in the previous section that includes the concept of Halal, SMEs and Innovation Adoption, a research model will be develop and hypotheses will be constructed. Wejnert's integrating models of diffusion of innovation (Wejnert, 2002) is the basis for this research model. In order to come out with the model that is suitable to the variables that are studied (SMEs Intention to Adopt Halal Logistics), a pilot survey has been conducted to verify and finalize the research model that also lead to the development of the research hypotheses.

Deleted data constructs:
- Internal factors
- societal entity
- External factors
- Private vs public consequences

Malaysian International Halal Showcase (MIHAS) 2014 was chosen as the venue for pilot study as here local and international Halal companies in various sizes from micro until multinational are gathered in one place to showcase their products. Result from achieved from the reliability test for pilot study, showed that there are a few redundancies in constructs and there are also irrelevant constructs with the nature of the study data sample. Therefore, these constructs had been combine and eliminated as shown in Table 1 and 2.

Based on pilot study outcome, a research model that connects innovation, adoption and intention to adopt is proposed in Fig. 3. In this research model the factors that influence adoption is categorized into two: Internal factors (adopter characteristics) and external factors (innovation and environment characteristics). This Fig. 3 shows the graphical representation of the independent, moderating and dependent variables of the proposed research model. This model is a reconceptualization of integrating model of diffusion of innovation done by Wejnert (2002). Consequently, hypotheses had also been formulated as follows:

- H_1: SMEs familiarity with innovation positively influence the intention to adopt HLS

Table 2: Empirical result of hypotheses testing summary

Factors	H$_0$	Constructs	Results
Internal	H$_1$	Familiarity with innovation adoption intention	Supported
Internal	H$_2$	Status adoption intention	Not supported
Internal	H$_3$	Position in social network adoption intention	Supported
External	H$_4$	Benefit adoption intention	Supported
External	H$_5$	Geographical setting adoption intention	Not supported
External	H$_6$	Societal culture adoption intention	Not supported
External	H$_7$	Political condition adoption intention	Supported
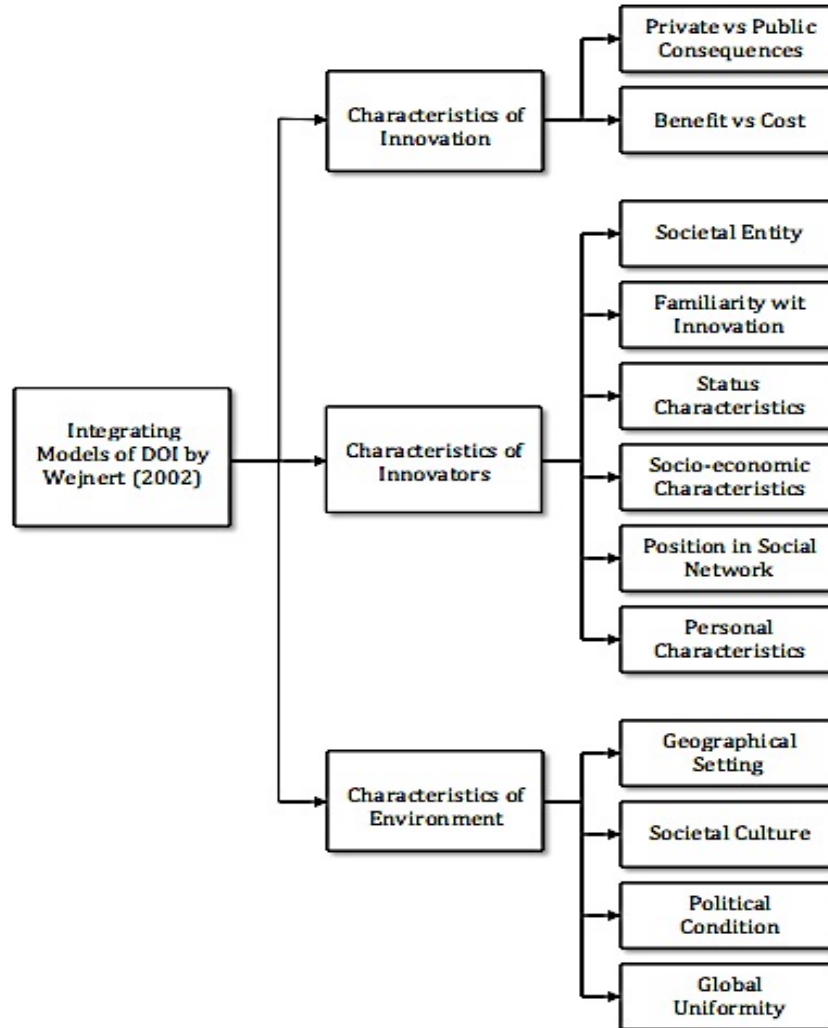
Fig. 2: Integrating model of diffusion of innovation: a conceptual framework (Wejnert, 2002)

- H$_2$: SMEs status characteristics positively influence the intention to adopt HLS
- H$_3$: SMEs position in social network positively influence the intention to adopt HLS
- H$_4$: SMEs perceived benefit of innovation positively influence the intention to adopt HLS
- H$_5$: SMEs geographical setting positively influence the intention to adopt HLS

- H$_6$: Societal culture positively influence the intention to adopt HLS
- H$_7$: Political condition positively influence the intention to adopt HLS

There are seven independent constructs which formed 38 items in the questionnaire survey. Three items are newly developed as the dependent constructs that will

Table 3: Final constructs for the study

| Constructs	References	No. of items
Internal		
Familiarity with innovation	Meyer and Rowan (1977), Weimann and Brosius (1994), Valente (1995), Newell and Swan (1995), Feder and Umali (1993), Chaves (1996)	5
Status characteristics	Herbig and Palumbo (1994a), Oakey *et al.* (1992)	6
Position in social network	Michaelson (1993), Rosero and Casterline (1993), Valente (1995), Coleman *et al.* (1966) Newell and Swan (1995), Burt (1987), Hannan and Freeman (1987)	5
External		
Benefit	Fliegel and Kivlin (1966), Greve (1998), James (1993), Wejnert (2002)	6
Geographical setting	Wejnert (2002), Ormrod (1990), Saltiel *et al.* (1994), Strang and Tuma (1993)	5
Societal culture	Straub (1994), Herbig and Miller (1991), Rogers (1992), Rosero and Casterline (1994), Myrdal (1968), Herbig and Palumbo (1994a), Rothwell and Wisseman (1986), Ruttan (1988), Beteille (1977), Offe and Adler (1991)	5
Political condition	Wejnert (1996), Bakardjieva (1992), Fleury (1998), James (1993), Rasler (1996), MacLeod (1991), Zhou (1993)	5
Adoption intention	Newly developed for this study	3
Total items		40
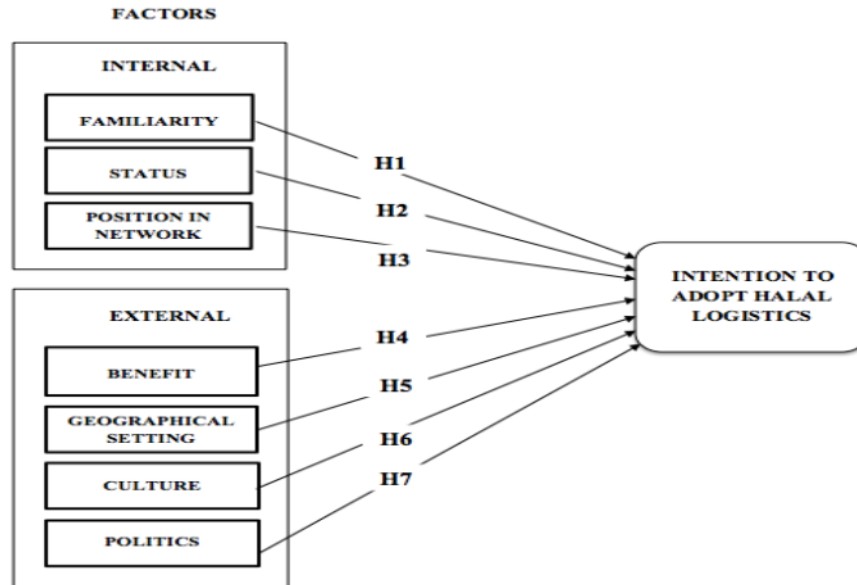
Fig. 3: Factors influencing the intention to adopt Halal logostics services

indicate the level of HLS adoption by Malaysia SMEs as shown in Table 3. Exploratory interviews were conducted to clarify concepts in the proposed model and to articulate various ideas and research hypothesis before the instrument was developed. After a preliminary questionnaire is developed; a pilot study was conducted to develop initial reliable measures of innovation adoption intention which later will be used in the main survey. The next step is to test the hypotheses and evaluate the research model.

The evaluation will be performed using correlation and the structural equation modeling. Research design is shown in Fig. 4. In this study, the data analysis begins with pre-testing the instrument by distributing the questionnaires among friends and colleagues. All the comments and suggestions received had been taken into consideration and relevant amendment was done on the instrument. Next, the researcher did the pilot data collection at MIHAS 2014. Reliability test were performed and the results shows that only 3 factors achieve the ideal scale of >0.7 (status, societal culture and global uniformity). The researcher had investigated, took consideration of the potential causes, review the constructs and improved the instrument for main data collection.

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 0.7. According to Tabachnick and Fidell (2000) smaller sample size of 150
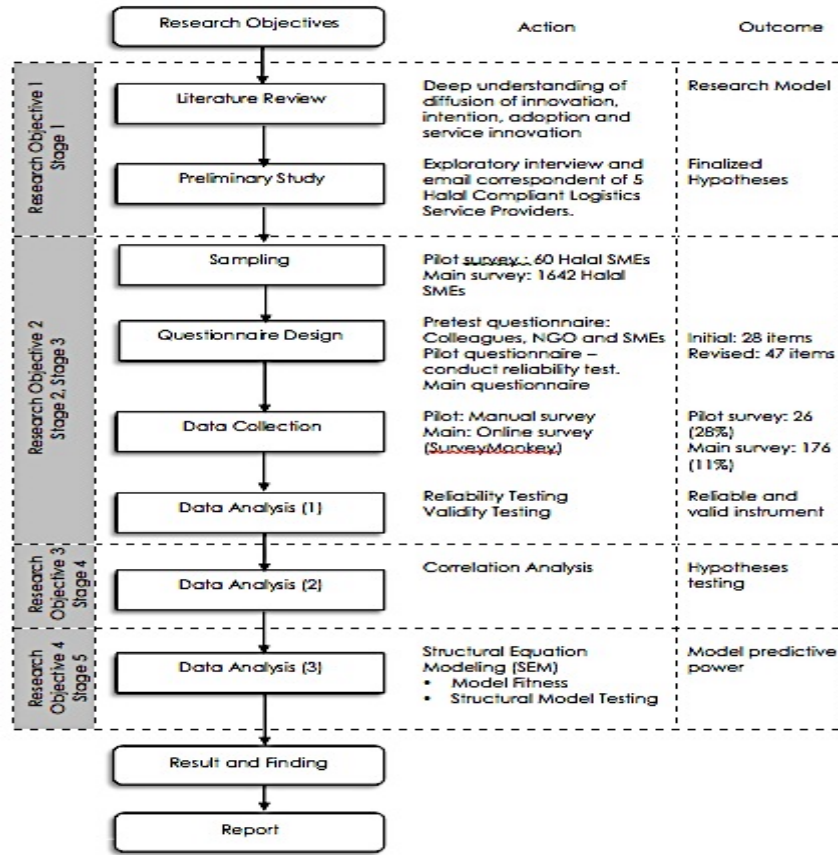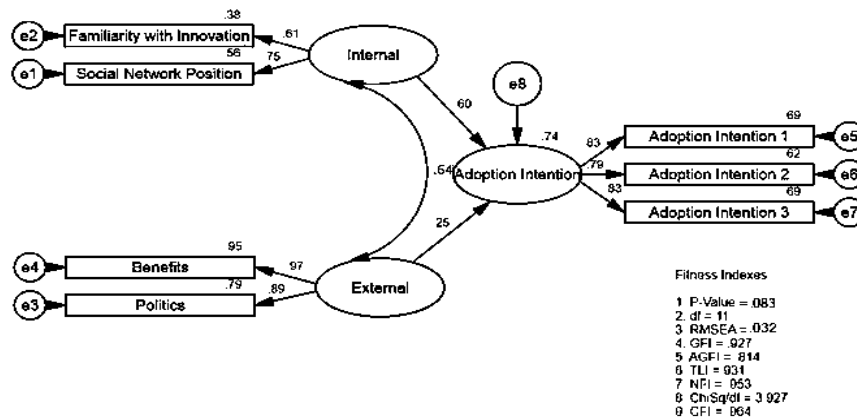
Fig. 4: Research design

Fig. 5: A structural model of internal factor, external factors and adoption intention

cases should be sufficient to perform analysis if solution have several loading maker variable (above 0.80). Moreover to run SEM, for seven constructs or below with three or more items in a construct of 150 cases is sufficient (Awang, 2014). Therefore, the instrument used is reliable thus structural equation modeling can be performed.

Analysis from correlation test demonstrated that all independent variables (internal and external factors) have strong relationship with dependent variables (intention of adoption) ranging from 0.534-0.792. Moreover, the correlations among the independent variables are low (0.074-0.466). 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.

Finally, another test to determine the adequacy of model fit and the validity of the structural model and it corresponding hypothesized relationships. The Structural Equation Modeling (SEM) analysis was performed using AMOS 18. 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. Consequently, researcher also test both model for the validity of the structural model and its corresponding hypothesized relationships. Result 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 internal and external factors have strong predictive power on the adoption intention which in this case the intention to adopt HLS among Malaysian SMEs.

RESULTS AND DISCUSSION

Empirical evidence on the relationships between internal and external adoption factors with the SME intention to adopt HLS was provided. The outcome was presented in two parts.

Hypotheses testing were conducted based on the relationship between the independent and dependent variables. Analysis of correlation coefficients was used to evaluate the hypotheses. Four of the seven hypotheses proposed (familiarity to innovation, position in social network, benefit and political conditions) were supported as shown in Table 3.

Conclusively, further analysis on the relationship between independent and dependent variables were conducted using SME technique. Measurement and structural model were developed which provide supportive results that provide further understanding into the relationship between organization's internal and external factors and their intention to adopt HLS (Fig. 5).

CONCLUSION

This research provides a foundation for future theoretical and empirical studies on intention adoption of halal logistics services. This study has delivered major

evidence for the contention that internal and external adoption factors have important implication to the adoption intention of HLS among Malaysian SMEs. Adopting halal logistics services provide huge advantage for SMEs especially in competing with other halal producer in global halal market.

The significant contribution of this study is to encourage the authorities to understand factors that will improve the probabilities of SMEs to adopt halal logistics services. With this knowledge in hand, better strategies can be laid out in order to ensure halal logistics services can be adopted. This on the other hand will promote the concept of total halal supply chain or Halal Toyyiban. Beside than this, 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 in adopting HLS. This also 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 than that, understanding of HLS benefits versus cost is the necessary enabler of promoting the adoption of HLS among Malaysian SMEs. Additionally, political condition is also played an important factor for SMEs to adopt HLS. Finally, this study has also 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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