

Augmenting Halal Food Integrity through Supply Chain Integration

(Menambah Baik Integriti Makanan Melalui Integrasi Rantaian Bekalan)

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ABSTRACT

The purpose of this paper is to highlight the importance of the supply chain integration in augmenting food integrity from the perspective of the focal companies. A series of case studies in four halal food supply chain (fast food, kopitiam, casual dining, and fresh processed food) in Malaysia were conducted in understanding the companies' best practices in safeguarding halal food integrity. The findings from the case studies were then suited and discussed in the paradigm of arc of integration theory. The results provide strong empirical evidence on how a stronger supply chain integration could enhance halal food integrity. Theoretically, this paper advances supply chain integration paradigm discussion into food industry. It offers a novel understanding of supply chain integration relevancy in food industry and in particular the supply chain integration strategy in safeguarding halal food integrity. In addition, the paper offers propositions on how halal integrity could be better achieved through a range of integration strategies. In practice, the paper offers a way forward to the managers in selecting the most relevant type of supply chain integration practices.

Kata kunci: Supply chain integration; halal; food integrity

ABSTRAK

Tujuan artikel ini adalah untuk mengetengahkan kepentingan integrasi rantaian bekalan dalam mengukuhkan integriti makanan dari perspektif syarikat pengeluar. Satu siri kajian kes di empat halal rantaian bekalan makanan (makanan segera, kopitiam, makan kasual, dan makanan diproses segar) di Malaysia telah dijalankan dalam memahami amalan terbaik syarikat-syarikat 'dalam menjaga integriti makanan halal. Hasil penemuan daripada kajian kes disesuaikan dan dibincangkan dalam paradigma teori "arc of integration." Dapatan kajian telah memberikan bukti empirikal yang kukuh tentang bagaimana integrasi rantaian bekalan yang lebih kukuh boleh meningkatkan integriti makanan halal. Secara teorinya, artikel ini menambah perbincangan berkenaan integrasi rantaian bekalan dalam industri makanan. Ianya juga memberikan pemahaman yang baharu berkaitan integrasi rantaian bekalan yang relevan dalam industri makanan dan khususnya strategi integrasi rantaian bekalan dalam menjaga integriti makanan halal. Di samping itu, artikel ini mencadangkan beberapa usul tentang bagaimana integriti halal boleh dicapai dengan lebih baik melalui pelbagai strategi integrasi. Secara praktikal, artikel ini boleh membantu pengurus dalam memilih jenis amalan integrasi rantaian bekalan yang paling relevan.

Keywords: Integrasi rantaian bekalan; halal; integriti makanan

INTRODUCTION

The July 2013 UK horse meat scandals triggered a series of debates on food integrity in the global supply chain. The integrity scandal is not new as there are a few of known preceding cases that impacted food industry in many means. For example, 2009 US Salmonella outbreak in peanut butter and European dioxin contamination in pork products, 2008 China Melamine milk scandal, and 2014 Cadbury Chocolate scandal impacted the industries with a product recalls (Maruchek, Greis, Mena & Cai 2011; Roth, Tsay, Pullman & Gray 2008; Tse & Tan 2011). A consistency in the scandals that occurs over the globes and time indicates that the issues of food integrity are intense and suggesting that the current food control mechanism is insufficient in

addressing food issues, especially food integrity (Ali, Tan, Pawar & Makhbul 2014; Roth et al. 2008).

In macro perspective, myriads of laws, legislation, and standards enforcement in the food industry are introduced to the food industry as to ensure the quality of the food products. However, the scandals revealed that there are existing gap which is essential to be discovered. The shortfall of the standards is argued (see Powell et al. 2013). Furthermore, it is criticized by Roth (2008) that the audits are non-sustainable in the long run in ensuring the survival of the food industries. Moreover, the food industries façade has change significantly over the time due to the impact of globalization and modernization of many aspects in the business such as corporatization, and logistics. The changes has made the food supply chain

become more complex especially for the production of the food product with credence quality attributes product is more prone and vulnerable in the modern supply chain (Bonne & Verbeke 2008a). Subsequently, extra guidelines and standards have been laid out specifically for this chain of food production.

Meanwhile, in micro perspective, the trade-off between order winner and order qualifiers has increased the dilemma of the companies in the supply chain (Lyles, Flynn & Frohlich 2008). On top of that, complexity was found as a barrier to the adoption of Halal transportation (Ngah, Zainuddin & Thurasamy 2014) and Halal warehousing (Ngah, Zainuddin & Thurasamy 2015) among Malaysian Halal manufacturers. Similarly, companies are more interrelated than ever before, today's competitive advantage is not solely attributed to competencies of a single company (Jin 2004). In this essence, trust has been predominantly important for the food industry which completing the test is difficult or even impossible.

In order to responds to the increasing demand and stiff competition in today markets on the food integrity, it becomes important for companies to explore ways to improve their productivity in terms of maintaining safety, implementing flexible and standardized technology, and adopting proven management (Mahalik & Nambiar 2010). Following these arguments, the paper is embracing the supply chain integration (SCI) strategies which has been introduced and tested by Frohlich and Westbrook (2001) in enhancing food integrity due to the insufficiency of current food control mechanism. SCI argue that the most successful companies are the company that carefully links their internal process externally, that eventually will affect the food integrity (Ali et al. 2014; Donk, Akkerman & Vaart 2008). Moreover, it is very little known the SCI strategies has been applied and tested in the food industries.

The paper aims to investigate how, and to what extent, integration strategies exert influence on the food supply chains, with special focuses on halal food integrity. This study focuses on the halal food supply chain in the Malaysian context. Halal food products are credence quality attributed products which is more associated with the food integrity elements, in which the characteristic of the product cannot be evaluated or ascertained by the individual customer, even after consumption of the same (Bonne, Vermeir, Bergeaud-Blackler & Verbeke 2007). In determining halal food integrity, the following conditions shall be conformed to during halal food production (Ali, Tan, Makhbul & Pawar 2011; Amat 2006):

1. The food or the ingredients shall not contain any parts or products of animals that are non-halal to Muslims by Islamic law, or products of animals which are not slaughtered in accordance with the Islamic law
2. The food does not contain any ingredients that are *Najis* (ritually unclean) as per Islamic law; the food is safe and not harmful, and clean
3. The food is not prepared, processed or manufactured using equipment that is contaminated with things that are *Najis* as per Islamic law

4. The food or its ingredients do not contain any human parts or its derivatives that are not permitted by Islamic law
5. During preparation, processing, packaging, storage or transportation, the food is physically separated from any other food that does not meet the definitions stated in the items above, or any other things decreed as *Najis* by Islamic law.

In addition, halal food producers are required to apply the *thoyibban* (wholesome) concept, encompassing quality, nutrition, hygiene, and ethically delivered the product to the consumer (Othman, Sungkar & Wan Hussin 2009). Furthermore, in literature and in practice, Halal Critical Control Points (HCCP) are highlighted and used as additional measures and guidelines for halal food production respectively

As the paper is explorative nature with the aim of building theory (Eisenhardt 1989), seven case studies from four halal food supply chains (fast-food, casual dining, kopitiam, and food processed meat product) were examined in the studied. Then, the applications of arcs of integration theory were used to shape the discussion in the relating the halal food integrity. The four integration strategies i.e. outward facing, supplier-facing, consumer-facing and periphery facing, are discussed on their antecedent's governance mechanisms, and potential implications for halal integrity assurance along the supply chain.

LITERATURE REVIEW

This section review related work addressing how the literature supports the SCI influences in the context of food supply chain. This review is particularly focused upon two areas; food integrity mechanism and its interface with the SCI.

INTERFACE OF SUPPLY CHAIN INTEGRATION AND FOOD INTEGRITY

Previous studies link the importance of SCI to competitive advantage (e.g. Huo et al. 2014; Lee & Billington 1992); supply chain performance (e.g. Kim 2009; Narasimhan & Kim 2002; Wong, Boon-itt & Wong 2011); operational performance (e.g. Frohlich & Westbrook 2001; Schoenherr & Swink 2012); low transaction costs (e.g. Zhao et al. 2008); and trust (Yeung, Selen, Zhang & Huo 2009). The existing literature concerning SCI primarily examines the manufacturing, electronic and automotive industries (e.g. Das, Narasimhan & Talluri 2006; Devaraj, Krajewski & Wei 2007; Flynn et al. 2010; Koufteros, Vonderembse & Jayaram 2005). Yet, very little is known of the impact of SCI on food industries (Donk et al. 2008). The original claim concerning the link between SCI strategies and performance was that the most successful company is the company that carefully links internal processes with external suppliers and customers in a unique supply chain (Carter, Monczka, Ragatz & Jennings 2009; Frohlich & Westbrook 2001; Ragatz, Handfield & Petersen 2002).

Basic integration strategies include (i) inward-facing strategies; (ii) periphery-facing strategies; (iii) supplier-facing strategies; (iv) customer-facing strategies; and (v) outward-facing strategies (Frohlich & Westbrook 2001). The strategies are characterized by different areas of integration presented by a directional line towards the supplier and/or customer. The theory highlights that the wider the arc (degree) presented by the directional between supplier and customer, the stronger association with the performance improvement. There are a few highlights on the theory: firstly, the outward-facing is the best integration strategy in relation to performance, however the number of practising companies is relatively small; secondly the periphery-facing strategy is argued as the equilibrium in the perspective of the supply chain performance development, but most of the sample falls under this category; thirdly the supplier facing and customer facing strategy is implemented by focal company that integrates more with the supply chain players on either stream of the supply chain, i.e., supplier of customer; and fourthly the inward facing strategy represents no integration is being practiced by the focal company (Frohlich & Westbrook 2001). Since then, the SCI research paradigm has moved from the vertical integration and horizontal integration towards the effect of integration strategy on performance. Following this principle, later researches focus more on types of integration, echelons of performance and reinforcement of the arc of integration paradigm with other established theories (Flynn et al. 2010; Ketchen Jr. & Hult 2007; Rosenzweig, Roth & Dean 2003)

SCI application in the food industry depending the specific nature of the food production (Donk et al. 2008). Although the food industry is traditionally driven by standards and regulations in the domain of quality management, economics and trust, issues concerning whether SCI can provide fresh and effective approaches to influence the food industry especially on the food integrity are currently being debated (Ali et al. 2014; Donk et al. 2008). As highlighted by Elliott (2013), food integrity should capture the complete aspect in the food production like the way it has been sourced, procured, distributed, and being honest about those elements to the consumers. In short, all process and actors in the supply chain is equally responsible in determining food integrity. The interdependencies in the supply chain indicate of the importance of SCI implementation in the determining food integrity. However, there is little discussion has been carried out that investigating SCI strategy in the context of food integrity.

POTENTIAL OF SUPPLY CHAIN INTEGRATION IN MANAGING FOOD INTEGRITY

The landscape of today businesses requires companies to be more interrelated than ever before, and competitive advantages is not solely depending on the single company (Frohlich & Westbrook 2001; Jin 2004) do not exempted food industry. Influenced by Fisher's (1997) literature on

demand and supply highlights, Frohlich and Westbrook (2001) has coins in his work on the manufacturing industry, that for the company to be successful, linking the internal processes externally is important after tailoring supply chain management to the specific type of demand. Integrating business processes is a best practice in supply chain management that involves coordinating decisions across multiple facilities and tiers (Meixell & Gargeya 2005). An integrated, well-coordinated global supply chain is difficult to duplicate and so plays an important role in competitive strategy.

In the intervening time, the most common reported literature in the area of food supply chain is the product safety and security (Sheu, Yen & Chae 2006) through the lenses of tools application (i.e. traceability, visibility, radio-frequency identification) (Alfaro & Rábade 2009; Storøy, Thakur & Olsen 2013; Trienekens, Wognum, Beulens & van der Vorst 2012), or standards and regulations relating to food industry (Ali & Suleiman 2016; Lupien 2007; Powell et al. 2013; Savov & Kouzmanov 2009; Swinnen & Vandemoortele 2009). These researches focusing on aiding the certification and standard that were regarded as the panacea of the industries as the substitute to the trust elements in the industry. Once the standards or certifications were obtained, the certificates or logo by itself act as mean of trust that create an expectation that parties will make a good-faith effort to behave in accordance with any commitments, be honest in negotiations and not take advantage of the other even when an opportunity to do so is available' (Lyles et al. 2008; Roth et al. 2008). However, the attributes that do not have immediate and concrete perceivable impact like process integrity concept i.e. horsemeat scandals in UK –is relatively new and not comprehend by all (Roth et al. 2008). The specific example shows that ensuring the food integrity is a daunting task, when some of the actors across the supply chain are trying to cut corners to fatten their margins as the impact is not immediate and lethal. Exacerbating that, the irresponsible actions are taken by the certified company after they have obtained the certifications. Enlightened by this argument, a focal company (FC) may possess greater interest in the implementation of SCI strategy as they are accountable for the product integrity and have high contacts with the end both end of the supply chain. FCs should strive to implement integration strategies for the whole food supply chain in ensuring they have a total control of the food integrity. Current research in supply chain management has not captured this contemporary challenge, yet, and so far, only empirical evidence exists on the integration strategies towards performance in the context of manufacturing industries (Flynn et al. 2010; Frohlich & Westbrook 2001; Rosenzweig et al. 2003).

In literature, the common form of governance mechanisms for SCI is transactional (e.g., Das et al. 2006; Devaraj et al. 2007). Transactional cost economics argues of company's performance is linked to the extent of company and suppliers relationship (Vanpoucke, Vereecke & Boyer 2014). Furthermore, company should

choose those governance mechanisms that lead to minimum transaction costs (Williamson 1985). SCI is modelled as discrete transactions, aiming at improving overall performance by linking internal processes to external actors in the supply chain. Consequently, the management of integration, based on the transactional cost economics can be reformulated as the question which governance mechanism provides the lowest transaction cost to the focal company when it want to implement the most suitable integration strategy in safeguarding food integrity. In addition, transactional governance mechanisms seek to exert control on the partner company, for example, through contracts or audits. Even though contracts with suppliers are evidenced, the FC is yet to install SCI aim to manage halal food integrity. Moreover, the FC extensively integrate with suppliers requires deeper compromise and coordination between both in ensuring the aim, i.e., food integrity is met. Increased coordination, repeated exchanges of valuable information, shared goal establishment and resolution and the availability and use of formal communication and coordination breed familiarity and trust results increased level of commitment and eventually food integrity (Das et al. 2006). This however requires that the actors along the supply chain understand and is willing to integrate in line with the FC requirements. Notwithstanding the SCI studies has rigorously captured the types of integration and the effect in performance on both production and non-productions elements, exact studies on the cultural perspectives (i.e. special dietary; halal, kosher, vegetarians, and vegans) is still lacking (Schoenherr & Swink 2012).

RESEARCH METHODOLOGY

As argued in the previous section, SCI strategy effects on food integrity and cultural perspectives are understudied. Following this argument, the research aims to fill this gaps by exploring the SCI strategy from halal food context. The research is exploratory in nature and required qualitative methods to identify the relevant dimensions and develop propositions about their interactions (Eisenhardt 1989). Moreover, many researchers have argued that the case

study is useful for theory development in dealing with complex research fields, e.g. supply chain management (Dubois & Araujo 2007) and for better understanding of the phenomenon's complexity and nature (Stuart, McCutcheon, Handfield, McLachlin & Samson 2002).

SAMPLING

Theoretical sampling is done through identifying the FC, which are characterized by: a) halal certified company (voluntary basis certification); and b) private limited status. The emphasis is given to the FC listed by JAKIM (Government of Malaysia's halal certification body) as being halal certified and using chicken and beef in their supply chain. The comparability issues are tackled through the selection mix of FC that produce only halal products, with headquarters in Malaysia (i.e. applying similar regulations and standards), are brand owner of the products, with a specific company status, and global scope of their supply chain. A selection of similarly ranked companies was contacted. Through the process, seven companies from different consumers' preference agreed to participate. All companies are leading brands in different settings of consumer preference. The selection of the FC's respondents is done through the listed contact person obtained from the JAKIM database. As a general criterion, the companies must be significantly active with their certification. The focus of the highest risk is preventing bias by not naming the companies participating in the study. In total the paper analysed seven supply chains, falling within the often suggested sample size of four to ten cases (Eisenhardt 1989).

DATA COLLECTION AND ANALYSIS

For every sampled case, in-depth interviews with the key informant from the FCs were conducted. The interview questions were adopted from existing literature but with a halal perspective (Frohlich & Westbrook 2001; Ketchen Jr. & Hult 2007; Ragatz et al. 2002; Schoenherr & Swink 2012; Wong et al. 2011). The interviews were done in the English language preceded by an email notification.

TABLE 1. Case overview

Company	Category	No of halal product	No of outlet	Informant	Years in position
A	Fast Food	181	457	Senior General Manager	7
B	Fast Food	141	188	Purchasing Manager	15
C	Casual Dining	190	117	Halal Executive	4
D	Casual Dining	245	42	Operation Manager	10
E	Kopitiam	531	151	Senior Halal Executive	5
F	Fresh Processed Meat Product	76	0	Islamic Related Officer	2
G	Fresh Processed Meat Product	27	0	Halal Co-ordinator	5

Table 1 provides an overview of the cases. Each interview ranged from 45 minutes to 2 hours. All interviews were audio taped and accompanied with comprehensive note taking and transcribed afterwards. The triangulation of the insights was accomplished through several alternative data sources, i.e. corporate website and annual reports

DATA ANALYSIS

The data was analysed in two stages. To start with, a within-case analysis was done to examine the halal integrity in a single context; meanwhile the across case analysis was done in order for replication of testing the construct of interest in the other setting. Consistency of description for each case was generated through within-case analysis by capturing all relevant information on the FC management relating to halal food integrity. One concern during the within-case analysis was controlling the effects of the researchers' a priori beliefs as to why integration would affect the halal integrity, and which dimension of halal integrity might fit with the integration strategy. To mitigate researchers' biases, a few steps were taken during the data analysis phase. Firstly, the field notes were written up before being consolidated and coded. Then, multiple researchers reviewed the field notes and any inconsistencies between the individuals were clarified through follow-up contact with the company's informant. Secondly, the paper mitigated confirmation bias by limiting the categorization of the individual case on previously identified constructs. Categorization of halal food integrity dimensions were developed in two ways. First, a number of categories were formed based on the case studies (i.e. raw materials integrity, production integrity, service integrity, and information integrity). Then, pattern matching process suggested by Eisenhardt (1989) was used for refining the concepts with the empirical evidence (i.e. traceability, safety, security, visibility, flexibility, delivery, labelling, internal systems, training).

The between-case analysis consisted of looking for data patterns regarding FC experiences with halal integrity across the FC. Excel tables were used to facilitate the comparison of several possible dimensions (Miles & Huberman 1999). Data reduction was accomplished primarily through categorization. Next, the equivalent of a tree node system was used as a way of hierarchical indexing–categorizing nodes. The result was then grouped into three integration strategies (Frohlich & Westbrook 2001) in addressing the halal integrity. Subsequently, one member of the research team not involved in initial data collection was asked to verify the analysis to avoid researcher bias.

RESULTS

In this section, this paper describes the halal food supply chain practice across the companies. This description was generated from the interviewees' explanation on the

specific stages of the supply chain. Respondents were asked to provide perceptual information on current FC's halal food practice in safeguarding food integrity. Both broad agreement and controversial opinions specifically on the FC's relationship in the supply chain were recorded. In general, the coding of the field data confirmed FCs has different approach in managing relationships with other players in the supply chain that has been summarized in Table 2 at the end of this section.

FOCAL COMPANY'S RELATIONSHIP WITH LOWER TIER OF SUPPLY CHAIN

It is important to stress that the halal standards and regulations is aimed to safeguarding the halal integrity. However, the standards and regulations shortfalls highlighted in other food supply chain may impact the halal food in the similar manner. In the light of this, majority cases predominantly pointed out halal checks are included in the FC' suppliers audit as part and parcel in determining the halal food integrity (i.e. the case of D, F, and G). Notwithstanding the successful story of the halal food standards, these companies simply take extra precaution on the halal certified raw materials. In short, the effort suggested that current control mechanisms are not fully embraced by the FCs as the panacea to industry.

“(..) we have SOP [standard operating procedure] which being used for the activities in the committee especially procurement processes (...) every single time procurement being done, an audit is should being done prior to that (...) The audit is programmed and planned annually with the concentrating on halal related issue” (case of F, Islamic Related Officer)

In more specific, the result also highlighted that FCs' link with the suppliers is not based on transactional relationship. Cases C, D, E and F show that the relationships in the supply chain are driven by a resource based rather. One of the major concerns among the managers in these companys that impede the transactional based relationships is the possibilities of abuse of their competitive advantages by the supplier. This argument is exemplified in the following statements from the case of E.

“(..) we have our own core product (...) and we process it internally. (...) we has normal relationship with the supplier and do not share or integrate any process or else because believe that the environment is yet to matured in that sense (protecting the competitive advantage)” (case of E, Senior Halal Executive)

“(..) the calibre suppliers (for us to integrate) are not readily available locally that we can have a win-win situation (...)” (case of C, Halal Executive)

The readiness of the food industry i.e. limited numbers of credible suppliers in the halal food supply chain, factors the FC's uncertainties to move for integrating their valuable assets externally. Addition to that, the availability of Halal supply chain supplier was found to be a barrier to the adoption of Halal services (Ngah et al. 2015). Furthermore, the nature of food production is not complex and easily imitated by the competitors. Therefore,

managers in food industry are more focus on strategies with clear and measureable operational output (e.g. TQM) than ensuring food integrity that does not provides an immediate and perceivable impact (Ali & Tan 2013; Roth et al. 2008). The result provides insights on why managers tend to be laggard in implementing the integration strategy due to the associated risks and highly transactional at the beginning of the implementation.

This research finds that the SCI impact on performance is known by interviewee. However, smaller companies (i.e., Case D, F, and G) clearly emphasised that integration shared aim (i.e. halal integrity) may drag the FC secrecy elements unintentionally.

“(...) food product can be easily imitated by competitors (...) selecting partners can be very challenging especially when the partners is similar size to our company (...)” (case of G, Halal Co-ordinator)

This suggested that the depth understanding on the integration strategy and practical model of SCI is yet available for FC’ in the food industry. For example, the companies do not know how to limit the integration practices with their supplier within the shared goals parameter.

In contrast, the case of A and B, provide the empirical evidence on the SCI with actors in lower tier of the supply chain. The result shows that a transactional relationship is evidenced between the FC and the suppliers through coordination, repeated exchanges of valuable information and shared goal establishment. Furthermore, the cases corroborating high level of performance/proficiency (i.e. lower production cost, higher quality assurance) can be gained from the integration strategies in various ways including the halal food integrity.

“We appoint and control our own distributor. All information will come from head-quarters such as list of suppliers the distributor can sourced, the specific prices on the supply, types of products, and so on. We dictate the distributor as they are handling on our supply only (...) the distributor is different entity than us (...) if the supply to manufactures cannot confirm as halal we change our plans.” (case of B, Purchasing Manager)

“We able to have cheaper supply, available source in contingency, and leverage most of the best practices, especially for halal products which are quite difficult to source” (case of A, Senior General Manager)

FOCAL COMPANIES’ RELATIONSHIP WITH HIGHER TIER OF SUPPLY CHAIN

In all cases of food scandals, FC is accountable for their end products. Therefore, all activities within the supply chain fall under the responsibility of the FC. In food industry, ensuring product integrity is more challenging especially when the food require an additional added value process in restaurant, where is beyond the factory wall. Unlike any other food product (i.e. unprocessed fruits and vegetables, fast moving goods product) which reach the end consumer as is, the halal food FC responsibilities is more complex

when it involved the restaurants stage (i.e. case A, B, C, D, and E).

Enlighten of this the paper manages to identify FC transactional relationships with higher tier of supply chain through the process of franchising comprising coordination (e.g. common source of raw materials), shared information and goal. However, they highlighted franchising approach/agreement alone is insufficient in ensuring halal food integrity. In fact, the restaurant stage possesses greater integrity risk from the services (i.e. food preparation). In addressing this, FCs implies a higher transactional mechanism where an agreement is needed between the franchisor and franchisee on standard operating procedures, trainings, and penalties.

The FCs with a restaurant in their supply chain consensually agreed that the restaurants are vital stage in the supply chain that requires a higher attention in promoting food integrity. The consumers are referring the product (served in the restaurant) solely to the brand. In other word, the relationship between FC and consumers are crucial at the restaurants level. Seen in this light, FC must ensure that the consumers shall receive what has been promised as per the label and logo being displays especially integrity of the product for halal-dietary consumers.

“(...) relations with the consumer are extensive at restaurants, we concern that consumer shall gain (halal food product) what they have paid for (...) ... we display bigger halal logo dimension than usual to convey to consumer (...)” (case of D, Operation Manager)

In achieving halal food integrity, the results have shown that there are many ways has been adopted by the FC. The insights provide the evidence that even though all the companies in halal food supply chain has been certified as halal, the non-homogenous relationships in the supply chain suggesting that depending on the certification alone is not sufficient condition in determining halal integrity. Table 2 summarized the relationship of the FC with the supply chain and how they managed the halal food integrity. In relations to the company’s status, it clearly shown that a larger company tend to have more extensive relationships with the other actors in its supply chain. In contrast, company with lesser number of products and market share do not embrace the notions of integration with other actors in the supply chain. In addition, company in halal industry is more customer oriented.

DISCUSSION

In this section, this research complement the realization of the practices of safeguarding halal food integrity presented in the previous session with the SCI strategies introduced by Frohlich and Westbrook (2001). Scrutinizing the halal food integrity from the stance of arc of integration paradigm allows this research to explain overall influence of integration strategy on integrity that may be adopted by the managers. Specifically, this research provides a

TABLE 2. Summary of halal integrity management and supply chain relationships

Management of halal integrity of A and B	
	<p><u>Supplier</u>: FC dictates the source, price and products from the trusted selected supplier.</p> <p><u>Manufacturer/Distributor</u>: FC appoints different company as manufacturer and distributor. High coordination and quarterly performance monitoring is carried out.</p> <p><u>Restaurants/Retailer</u>: Outlets are developed through high coordination of franchise program.</p> <p><u>Consumer</u>: High consumer interface happened at the restaurants. Halal displays (i.e. logo and certificates) explain the product.</p>
Management of halal integrity of F and G	
	<p><u>Supplier</u>: FC carries out supplier audit as additional measures to the halal certification.</p> <p><u>Manufacturer/Distributor</u>: FC focus on control of the manufacturing and distributions as the final product is being produced at the stage.</p> <p><u>Restaurants/Retailer</u>: Shelf displays and storage as interface medium with consumers.</p> <p><u>Consumer</u>: Halal label on the packaging explains the product.</p>
Management of halal integrity of C, D, and E	
	<p><u>Supplier</u>: FC carries out supplier audit as additional measures to the halal certification.</p> <p><u>Manufacturer/Distributor</u>: FC focus on control the manufacturing and distributions as 'winning formula' is safeguarded at the stage.</p> <p><u>Restaurants/Retailer</u>: Outlets are developed through high coordination of franchise program.</p> <p><u>Consumer</u>: High consumer interface happened at the restaurants. Displays (i.e. logo and certificates) explain the product.</p>

Note: Thickness of line indicates degree of existing relationship in the supply chain

suggestion on how each SCI strategy engagement can augment in ensuring halal food integrity initiatives.

OUTWARD-FACING STRATEGY

Eliciting from the inconclusive findings in the approach of the FC interviewed in managing halal food integrity, evidence from the case suggested that there are many rooms for improvement. The research found that the larger and more resourceful FC (i.e. A and B) have more developed practices, the more extensive relationship with their supplier and the consumer. These market leaders, exemplified claims made by Frohlich and Westbrook (2001) on the most successful company is the company that carefully links their internal activities with supplier and/or consumer. On the other note, the bullwhip effect of linking the internal resources externally through the SCI will benefits the FC from the transactional activities i.e. information, skills and knowledge. Thus significant integration strategy may result in inimitable competitive weapons, especially by integrity's cumulative incremental performance throughout the halal food supply chain.

Companies must learn to collaborate in order to compete (Hülsmann, Grapp & Li 2008; Yeung et al. 2009). Adapting from the highlights of integration strategy literature which suggests that more extensive SCI empirically impacting the performance in larger magnitude has lead us to first proposition:

- P₁ Focal companies' adoption of a more extensive SCI strategy influences the halal food integrity and offers uniqueness in their halal food supply chain.

TRADITIONAL STRATEGY

The results identified compelling reasons that impede the FCs from going to for more extensive integration structure and their comfort zone. The highlights of the immaturity of the business, safeguarding competitive advantages, limited numbers of credible partners and supply chain complexity appalled the initiatives were among items raised. As argued by Frohlich and Westbrook (2001) on the natural point of equilibrium in the supply chain development which evidenced in the manufacturing industries, the findings in the case studies in the halal industry evidenced

the same phenomenon. Thus, this research validates the periphery-facing strategy profile in the arc of integration strategy.

Outcomes from iteration of the discussions on the next possible direction for more extensive integration strategy with the FCs, they are discontent with their answers. A more extensive integration strategy (i.e. supplier and customer integration) in the immature industry like halal food is considered as the as the double-edged swords for the FCs especially when the benefits form ensuring the food integrity is neither immediate nor concretely perceivable. Similarly, the FCs are more comfortable integrating with assigned third-party or subcontractors, provided it is legally bounded. FCs implement and enforcing a specific control contrivance within the factory wall which is affiliated with the halal standards and regulation, as part of the certifications requirement in ensuring integrity. Due to the industry high dependencies on the halal certification, it by own creates unwanted parameter in ensuring the halal integrity which is perceived only worth doing internally, construing with the practices of other industries which has changed the competitive environment to the intra-supply chain archetype. Nevertheless, it weakens FCs' flexibility especially in the production and cost aspects. Seen in this light, halal industry impedes the flexibility classic advantages in order to protect its competitive advantages whilst industries enjoy the flexibility paradigm as one of the weapons for maintaining the sustainability. Seen in this light, this research positions the SCI's periphery-facing strategy as a good starting point for the FC to start simultaneously for more extensive integration. Likewise, the strategy is more related to the internal integration concept which highlighted by many scholars (see Rosenzweig et al. 2003; Zhao et al. 2011). Hence, for the less resourceful company, the research proposes the following:

- P₂ Periphery-facing strategy will highly influences the halal food production integrity.

EXTENDED SCI STRATEGY

The articulation of scholar conversation on the successfulness of internal integration is important as a prerequisite to the external integration (Xiande Zhao et al. 2011). The insights of the case study shown the external integration strategies (supplier-facing and consumer-facing strategies) are very minimal known of being implemented.

Flaccid around the halal certifications' reliability which is discussed on its vulnerability on previous sections is the easy way out for the FCs in claiming its integrity and quality status. Ironically, the standards (i.e. JAKIM halal) have highlighted and defined the food integrity elements loosely and should come as a part of the requirements. The relatively new concept like integrity is not fully comprehended by the practitioners, tempting this research in raising the supplier facing strategy as a move forward for the halal food industry. In the light of

the responsibilities of halal assurance are equally shared along the supply chain, the results shown us the FCs are unable to refute their concerns on the integrity of the raw materials supplied. The worries were caused and heightened due to the absence of the vital dimensions like visibility (i.e. supplier process risk and product safety) which overshadowed by the halal certifications which only obtained through periodical audits and the least compliance of the standard. Nevertheless, the supplier quality audit approach done by the FC is currently adopted and the multiple inspections mechanism has argued its effectiveness in earlier studies (Powell et al. 2013; Roth et al. 2008). Equally, the multiple audits increase redundancies, and do not embrace uniqueness when the disadvantages multiply.

On the other hand, there are significant studies empirically evidenced on the Muslims' concern in food consumption (Bonne & Verbeke 2008b; Bonne et al. 2007). The studies carried out in the France and Belgium context has shown that the halal consumers are depending highly on the information provided by the food manufacturers. However, due to the limited available technologies in determining the halal food integrity in each stages of the supply chain of the food product; deteriorated by the demanding process it assurance, leaving no room for the consumers other than relying on the halal logo labelled. In this essence, this research argues that the over reliance to the halal logo is happening at consumer stages. Idyllically, the label and description of the product that exhibited locally on the product should mirror the truth of the product. Besides, it also should apply to any related advertisement on any medium such as such as mass media and paper advertisement, displays, coupons, vouchers and so on. Critically for the halal food serviced at restaurants or outlets, the end product is represented by display or picture, while the halal integrity is signified by the halal logo. Seen in this light, the labelling and information integration is extensive which supposedly increasing the understanding and minimize the ambiguities on the halal integrity which eventually resulting consumers' trust on the halal integrity. Additionally, it reduces the possibilities of lethal speculations in the uncontrolled big data sharing that may impact the company in very high magnitude.

In all, the cases verify the easiest next step of integration strategies are either going for supplier-facing or customer-facing, only when the key player of the supply chain is identified. However, the strategy suitability may differ with halal integrity per the stage dependencies along the supply chain. Moreover, the research investigated whether a specific type of integration strategies is adaptable by the FC in managing halal integrity. Thus, this study proposed:

- P₃ Supplier-facing strategy highly influences halal food material flow integrity in the supply chain
 P₄ Consumer-facing integration strategy highly influences halal food information flow integrity in the supply chain.

CONCLUSIONS

The purpose of this study is not to argue for a specific solution but rather to develop an explanation for an interesting phenomenon which seems to have implications for the theory and practice (Yin 2009). Still it is fair to how much light this explanation can shed on a given sets of problems in safeguarding halal food integrity.

Given that food integrity cannot be achieved by depending solely on the current mechanism, halal food industry high dependency on the certifications from the standards and regulations may probably affect its supply chain in large magnitude. By providing evidence of explaining the halal integrity initiatives in segments of halal food industry, suiting it to the relatively established SCI strategy potentially addresses a potential solution in managing complex food integrity.

Through synthesis of the observation on the relevant sources across the food supply chain context, observation on the halal food and priorities that emerged from it, and reliable deduction linking the companies' best practices and ensuring the food integrity, the research provide sufficient evidence for four propositions concerning the applicability of the SCI which is largely tested in the other industry. Similarly, conversation with the representative from diverse industries has confirmed that the SCI not only prevalent in influencing the performance, but also persistent in ensuring halal food integrity.

The empirical and theoretical grounding on propositions suggest implication for practitioners and the researchers. For the practitioners, first, multiple approaches in safeguarding halal food integrity are provided for the managers. The approaches provide some clear guidelines for the managers in determining more advance which step in safeguarding halal food integrity. In addition, the outward-facing strategy is the best strategy for the company to adopt in safeguarding halal integrity. Despite most of food company tends to be on traditional strategy, a Malaysian halal company need to be more innovative so as to enhance the firm performance as suggested by Ismail, Isa and Ali (2013). For example, an approach towards extended strategy may be the important step for the managers to venture into a more extensive integration strategy. Furthermore, the SCI can be an effective structure for managers to deploy in ensuring halal integrity which went missing in the industry for many conservative reasons. In the light of this, the SCI strategies propositions may be decisive points for more extensive integration strategies for the managers to exonerate from the over reliance on the halal certification congestion.

For food supply chain management researchers, the halal food cases open a new horizon – a touchstone for the uncertain argument on the food integrity and credence quality products like halal. Particularly promising is the halal integrity rigorousness may shed its light to relatively more lenient food supply chains. Finally, the proposition remains as an open research question. Addressing this highlight calls for dependent analysis of the effectiveness

of the applicability and usability in the assessment of the strategy effect on the other company performance measures i.e. profitability – and its practicality in explaining the supply chain integration influencing on the performance.

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