HALAL SUPPLY CHAIN MANAGEMENT FRAMEWORK FOCUSED ON FOOD INDUSTRY (A SYSTEMATIC LITERATURE REVIEW)

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Submitted to International Program Department of Industrial Engineering in Partial Fulfillment of the Requirement for the Degree of Sarjana Teknik Industri at Universitas Islam Indonesia

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ABSTRACT

An absence of unified regulation to maintain the halal status in all processes throughout the supply chain can cause a big risk for all parties in halal food industry. Therefore, a halal supply chain management (SCM) standard becomes a necessity for every stage in the halal food industry. In order to make the standard, researches are needed to make it more reliable and precise. Unfortunately, there are only a few researches about standards in halal SCM on food industry, but it is known that there are some researches about halal processes on food industry supply chain around the world, thus, this study can try constructing framework of global standards through some processes on halal food industry supply chain. Finding the good framework of global standards in halal food SCM can be helped by systematic literature review (SLR). SLR is a methodologically rigorous review of research results. In conducting systematic literature review there are five phases that have to be followed, which are: question formulation, study locating, study selection and evaluation, data analysis and synthesis and also, result reporting and usage. The research identifies and analyzes the standards in halal SCM based on its macro processes; Supplier Relationship Management (SRM), Internal Supply Chain Management (ISCM), Customer Relationship Management (CRM), and Halal Assurance (HA). Based on the findings, it is found that every macro processes have to be synergized in order to maintain halal integrity in food industry because they are continuous processes. Every process has to ensure that the foods are safe, clean, hygiene, wholesome, and halal-compliant. This research results in a framework for maintaining halal status, safety, cleanliness, health of food product in halal food SCM based on that macro processes.

Keyword: Systematic Literature Review, Halal Supply Chain Management, Food Industry, and Framework.

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CHAPTER I

INTRODUCTION

1.1. Background

Halal industry which includes foods, cosmetics, and pharmaceutical industry is growing rapidly worldwide. Halal food products are the most recognized components of the Halal industry. Nowadays, they have nearly about 16% market of the current world food trade (Zulfakar et al., 2014). It cannot only be viewed as religious requirements for the Muslim communities but the non-Muslims do have positive attitude on Halal concept and have the intention to purchase Halal food (Mathew et al., 2014). Those demands become really great opportunity for Halal food producers to widen their market.

In industry, all stages from supplier to customer involved, directly or indirectly, in fulfilling a customer request are called supply chain (Chopra and Meindl, 2013). Supply chain has five big stages which are supplier, manufacturer, distributor, retailer, and customer. This supply chain is only used to fulfill the consumer demand and provide profit to all parties in supply chain. Then, related to growing demands of halal food, maintaining halal status in whole process of supply chain becomes necessity, a halal supply chain management (SCM) needs to be implemented. Halal SCM has to ensure halal integrity remains intact throughout the whole process of the supply chain based on Islamic law, besides of making profit and customer satisfaction (Bahrudin et al., 2011). Unfortunately, there is an issue about

halal status of food, consumers currently are anxious about whether the food products are truly produced according to Islamic law principles in this current complex worldwide trade (Zulfakar et al., 2014).

Their anxiety appears when most of these Halal food products are produced by non-Muslims countries rather than produced by Muslim countries. For example, it is a true and interesting fact that New Zealand and Australia are amongst the top halal meat exporters to Moslem countries (Jafari and Sandıkcı, 2015). Therefore, the halal status that came from these non-Muslims countries is questionable (Zulfakar et al., 2014). This issue becomes threat for halal food producers in their customer stage. There is possibility that their products would not be sold well and affect the company's sustainability.

Food producers and marketers have been indirectly forced to use halal certification as a way to make consumers have a strong preference to deal with the companies (Yunos et al., 2014). Halal certification becomes really important in halal food supply chain management. Halal certification is process of certifying products or services according to Islamic law (Noordin et al. 2014). Halal certification reflects that the food is permissible to be consumed and indicates the respective food producers or marketers have undergone strict inspection in whole process before the certification is issued (Khalek, 2014).

Unfortunately, some Muslim and non-Muslim countries have various Halal authorities or agencies and this resulted in multiple Halal standards that would cause questionable Halal certifications. Variations in the definitions of Halal and the unavailability of single, worldwide Halal standard have made the process of

understanding of the Halal food supply chain more complicated (Zulfakar et al., 2014). The global standard in halal food industry then becomes urgency in worldwide. It is necessary to construct the standards to maintain the halal status of food industry in whole supply chain process and get consumers' trust.

There are only two previous researches about halal standards in whole supply chain process. First research is conducted by Bahrudin et al. (2011) about technological framework of halal supply chain management and second research is done by Zulfakar et al. (2014) about conceptual framework of halal supply chain management. Although there are only a few researches about standards in halal supply chain in food industry, it is known that there are some researches about processes on food industry supply chain around the world, thus, this study can try constructing framework of global standards through some processes on food industry supply chain. Finding the good framework of global standards in halal food supply chain management can be helped by systematic literature review (SLR). Kitchenham et al. (2009) stated that SLR is a methodologically rigorous review of research results. Hence, this research will aim at systematically collecting and critically analyzing the existing contributions on global standards in halal supply chain.

1.2. Problem Formulation

This research will systematically collect and critically analyze the existing contributions on global standards in whole process of halal food industry supply chain. Related to the purpose, main research question addressed in this review are:

1. How to conduct systematic literature review in order to find global standards in whole process of halal food industry supply chain?

2. What is the further research recommendation to explore better solution in global standards on halal food industry supply chain?

1.3. Research Objectives

Based on problem formulation above, this research is created to fulfill several objectives as mentioned below:

1. Know how to conduct systematic literature review in order to find global standards in whole process of halal food industry supply chain.

2. Find further research recommendation to explore better solution in global standards on halal food industry supply chain.

1.4. Research Limitation

Problem limitation is a limitation of problems to make a border in the research in order to keep the research inside the scope. Based on the background there are some scope to make the research focus, the scope as follows:

1. The research only focuses on halal supply chain standards in food industry.

2. The research is conducted in systematic literature review, its findings and discussions are derived from papers and articles.

3. The researcher finds literatures on sciencedirect.com (Elsevier) and ieeexplore.ieee.org (IEEE).

4. Papers finding conducted from 2011 – 2015.

1.5. Research Benefit

It is expected that by conducting this research, some benefits can be earned:

1. Research methodology can be used to conduct systematic literature review.
2. Further research recommendation can be used for better future research.

1.6. Systematical of Thesis Writing

Furthermore, this thesis writing will be continued as follows:

CHAPTER II LITERATURE REVIEW

This chapter will explain the literature studies. The literature review conducted in systematic literature review, from the literature previous research and paper will be used for the study.

CHAPTER III RESEARCH METHODOLOGY

This chapter will be steps for conducting the research are applied as a references in order to keep focusing on the primarily goals, which are going to be archived. It will explain and summarize the phases of the systematic literature review undertaken, the method and tools used to support every stage as well as the section of the article where these are addressed.

CHAPTER IV ANALYSIS AND SYNTHESIS

This chapter will explain the analysis and synthesis in phase of systematic literature review. Will be explaining how the selection method for synthesis and analysis, and how the extraction data of paper.

CHAPTER V FINDING AND DISCUSSION

This chapter will discuss from the finding paper and literature, and also explaining how the sustainable in manufacture industry.

CHAPTER VI CONCLUSION

The final section will describe the overall conclusions from the results of study and the suggestion for the future research.

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CHAPTER II

LITERATURE REVIEW

This chapter will explain the literature studies. The literature review is conducted in systematic literature (SLR) review based on previous researches. SLR consists of the following five phases: (1) question formulation, (2) locating studies, (3) study selection and evaluations, (4) analysis and synthesis, and (5) reporting and using the results. The first and fifth phases are respectively reported within Chapter 1 and Chapter 5 of this thesis, while phase two and three will be specifically explained in this chapter and fourth phase is addressed in this chapter and chapter 4.

2.1. Previous Research

Related to findings in this study, there are only two researches that explain halal standards in supply chain process in form of framework.

First research is done by Bahrudin et al. (2011) who have proposed a technological framework for Halal SCM which is divided into some stages. Those stages of halal supply chain will be explained in detail on table below.

Table 2.1. Detail Explanation of Halal SCM (Bahrudin et al., 2011)

Stage	Islamic Law
Raw Material	Livestock being feed with good, clean, permitted and legal nutritious food. Slaughter according to Islamic guidelines.

Stage	Islamic Law
Inbound Logistics	Monitoring the flow of inbound vehicle (truck/container). If needed, doing *samak* to certain truck or container
Warehouse	Monitoring halal product from mixed with non-halal product. (ex: segregate by zoning)
Production	Repackaging by production house, using halal equipment and worker practice the concept of hygiene permitted by Islamic law
Storage	Monitoring the halal product from mixed up with non halal product.
Outbound Logistics	Monitoring the flow of inbound vehicle (truck/container). If needed, doing *samak* to certain truck or container Need to do segregation in the container if the is non-halal and halal product.
Retail and Shop	Maintained the freshness, cleanliness and product safety to be sold.
Customer Service	Look up for any complaint from customer. To enhance/ improve service quality.

Second research is conducted by Zulfakar et al. (2014) who have made a conceptual framework of Halal SCM in order to assure consumer about halal integrity in the supply chain. They mention some factors that can enhance the halal integrity in halal SCM, which are halal certification, halal standards, halal traceability, halal dedicated assets, trust, commitment and role of government. Those

factors can increase the confidence and trust of consumers that the food products comply the Islamic Law directly and indirectly. In addition, this research also states that all parties in Halal SCM, such as suppliers, producers, consumers, and governments have to work together in building halal integrity.

The findings above are only preliminary studies in constructing halal supply chain framework in food industry, thus there is possibility to develop those frameworks to better framework in order to make better understanding on halal supply chain's global standard based on current situation and studies.

2.2. Halal Parameter

According to Said et al. (2014), halal is an Arabic word which means permissible or lawful. Specifically, halal is things or action which are permitted or lawful in Islam which conveys basic meaning and defines the standard of acceptability in accordance to Shariah requirement, based on MS 2400:2010 (Part 1: item 4.29). Thus, in order to make good framework in halal supply chain management (SCM) focused on food industry, some standards or parameters are needed. Best standards or parameters in Islam can be obtained from Holy Quran and Sunnah. While the Qur'an provides a detailed and, for some, infallible source of information about the origins of Islam, the Sunnah provides an account based on the application of the principles established in the Qur'an through the lived experience of the prophet Mohammed, as recorded in the Hadiths (Lever & Miele, 2012). Therefore, researcher attaches some halal parameters in halal SCM focused on food industry which are explained as follows:

1. Foods have to be halal and wholesome.

"O mankind, eat from whatever is on earth [that is] lawful and good and do not follow the footsteps of Satan. Indeed, he is to you a clear enemy." (Quran 2:168).

Halal food encompasses meats, seafood, frozen foods, pasta and noodles, canned food, biscuits and cookies, fruits, chocolate and candy, snack food, seasoning and spices, sauce/ spread/vinegar, packaged cooking sauces, cereals and beverages. Halal food and drinks can be described as anything that man can eat or drink and there is no legal evidence prohibiting it, and its constituents are free from any unlawful or impure elements. Riaz and Chaudry (2004) state that haram foods include carrion or dead animals; flowing or congealed blood; swine; animals slaughtered without pronouncing the name of God on them; animals killed in a manner that prevents their blood from being fully drained from their bodies; animals slaughtered while pronouncing a name other than God; intoxicants of all types including alcohol and drugs; carnivorous animals with fangs, such as lions, dogs, wolves, or tigers; birds with sharp claws (birds of prey), such as falcons, eagles, owls, or vultures; and animals such as frogs or snakes.

It also shall be good and pure and its consumption brings no harm. Halal food and drinks must not contain in their ingredients any forbidden and dirty substance. Since one of the main objectives of the Islamic law is the protection of human beings, any food or drink which may cause harm to the human body and health is forbidden even if there is no prohibiting legal evidence. Animals' meat must be from animal slaughtered in the Islamic manner and must not be dedicated to anyone but Allah and must be obtained

through lawful manner. Any food and drink then are considered haram (forbidden) if it is acquired through illegal means (theft, robbery, etc.) (Said et al., 2014). Thus, halal parameters in food industry have to consider not only halal substances but also its goodness and way to get it

.

2. Do the business with mutual consent.

Hashim (2012) said that business man should be bound for clear business transaction. The buying and selling activities should be on mutual consent and not under coercion. Islam strictly prohibits such dealings in which both the parties are not clear. Even Quran tell every Muslim particularly business man, if he is on dealing with other person so he must write down that agreement and must be cleared to both the parties as said in verse below.

"O you who have believed, do not consume one another's wealth unjustly but only [in lawful] business by mutual consent. And do not kill yourselves [or one another]. Indeed, Allah is to you ever Merciful." (Quran 4:29)

The holy prophet was also reported to have said "a sale is a sale only if it is made through mutual consent" (Ibn Majah, No. 2176).

3. There should be honesty in measure or weight to prevent loss to others.

Besides mutual consent, Islam also taught that we should be honest and prevent loss to business partners or consumers (Razi, 2008). There should be

righteous measures and weight in dealing transaction, as mentioned in verses below.

"And O my people, give full measure and weight in justice and do not deprive the people of their due and do not commit abuse on the earth, spreading corruption" (Quran 11:85).

"Give full measure and do not be of those who cause loss." (Quran 26:181).

4. There should be no embezzlement (*ghlool*) in business.

Ghlool in Islam means embezzlement. It is taking the money from public treasury. The Islamic penalty is lifetime in prison and returning the money to its origin place. It is prohibited in Islam, as explained in verse below.

"It is not for any prophet to embezzle. Whose embezzleth will bring what he embezzled with him on the Day of Resurrection. Then every soul will be paid in full what it hath earned; and they will not be wronged." (Quran, 3:161)

5. There should be justice in treating people on business.

Besides, the honesty on measure and weight, there should be justice in treating other people. Ashtankar (2015) said that Islam teaches the lesson of justice without personal interests and likeness. It should be free of prejudice. There is no restriction of beliefs in Islam and everyone should practice his/her belief freely, as mentioned in verse below.

"O you who have believed, be persistently standing firm for Allah , witnesses in justice, and do not let the hatred of a people prevent you from being just. Be just; that is nearer to righteousness. And fear Allah ; indeed, Allah is Acquainted with what you do." (Quran, 5:8).

6. There should be no *gharar* (transactions involving uncertainty).

Gharar means selling goods which appear sound but contain same hidden fault, or concerning which something is unclear. Islam strictly has forbidden gharar as mentioned in hadith below.

"It was narrated that Ibn Abbas said: The Messenger of Allah forbade *gharar* transaction" (Ibn Majah, 2195). The explanation of this hadith is that all forms of transactions in which the quantity of the commodity being sold and bought cannot be estimated, are the transactions which involve uncertainty and cheating. For example: the sale of an unborn baby animal which is still in the female's womb. The transaction that is considered as uncertainty and cheating also includes the things which impossible to handover to the buyer, like the sale of a lost animal.

It is forbidden for us to do transaction which could lead to a quarrel or litigation due to some uncertainties, such as unspecific quantity or quality to be exchanged or delivered. This includes the sort of transaction in which there is no guarantee that the seller can deliver the goods for which he receives payment (Al Qadarawy, 1984). There should be no fake things or cheating in transaction, as mentioned in hadith below.

"It was narrated that Uqbah bin Amir said: I heard that Messenger of Allah say: The Muslim is the brother of another Muslim, and it is not permissible for a Muslim to sell his brother goods in which there is defect without pointing out to him" (Ibn Majah, 2246)

7. All parties should fulfill the obligations in business.

Hashim (2012) said that Islam strictly emphasizes on fulfilling all promises or obligations in business in order to gain the trust, mentioned in verses below.

"Then We fulfilled for them the promise, and We saved them and whom We willed and destroyed the transgressors." (Quran, 21:9)

"And they will say, "Praise to Allah , who has fulfilled for us His promise and made us inherit the earth [so] we may settle in Paradise wherever we will. And excellent is the reward of [righteous] workers." (Quran, 39:74)

Obligations of firms in halal SCM is to ensure customer satisfaction, company's profit and halal status in whole process of SCM.

8. There should be no bribery (*rashwa*).

It is also not allowed to give kickbacks to the government and ministries to get advantage, or pass laws to legalize business proposition that will open doors to further looting of people‟s wealth (Razi, 2008). It is stated in Holy Quran, mentioned as follows.

"And do not consume one another's wealth unjustly or send it [in bribery] to the rulers in order that [they might aid] you [to] consume a portion of the wealth of the people in sin, while you know [it is unlawful]." (Quran, 2:188)

9. Riba is prohibited.

In Shariah, "Riba" is a term that is used when two parties exchange item of same kind, and in return one party received extra (or in excess) of what he gave (Razi, 2008). Riba is clearly forbidden or haram in Islam based on these verses below.

"O you who have believed, do not consume usury, doubled and multiplied, but fear Allah that you may be successful" (Quran 3:130)

"Those who consume interest cannot stand [on the Day of Resurrection] except as one stands who is being beaten by Satan into insanity. That is because they say, "Trade is [just] like interest." But Allah has permitted trade and has forbidden interest. So whoever has received an admonition from his Lord and desists may have what is past, and his affair rests with Allah . But whoever returns to [dealing in interest or usury] - those are the companions of the Fire; they will abide eternally therein." (Quran 2:275).

Razi (2008) said that it is really different between trade and riba. Trade is defined as "the act or process of buying, selling, or exchanging commodities, at either wholesale or retail". Meanwhile, riba or usury is defined as the lending or practice of lending money at an exorbitant interest, or interest as a charge for a loan, usually a percentage of the amount loaned. Table 2.2 below will explain the difference between trade and riba.

Table 2.2 Difference between Trade and Riba (Razi, 2008)

No	Trade	Riba
1	**Transfer of ownership** In trade, ownership of produce is transferred to Buyer.	**No Transfer of ownership** In Riba, ownership is not transferred at all, and the debtor returns the produce to the owner. In fact, in additional to returning his produce, the debtor ends up returning twice as much as he took as loan.
2	**Profit taking is only once** In trade, the Seller only makes his profit once, i.e. during the sale.	**Profit taking is recurring** In Riba, the lender continues to make profit until the money is return, and interest rate is tied to the length. In addition, further interest is taken on unpaid interest. Hence, the interest compounds (or as Quran states double and multiplied)
3	**Profit is earned** In trade; the Seller either produces his goods or acquires them. Either case, he spend his time, money, efforts and also to mention his skills to bring these goods to the market	**Interest is not earned** In Riba, the lender does not take any risk, neither put his time and effort or skills to create income from the money [as we explained previously]. He only takes his "guaranteed" profit without putting any effort. On other hand, if debtor is taking loan to fulfill his personal or family basic needs, then he is not even earning any money on this lend amount. This amount to total injustice and plundering families those are already in crises.

There are two types of Riba prohibited in Islam. They will be explained below.

a. Riba an-nasiya

   This is the Riba on credit transaction, when two items of same kinds are exchanged but one or both parties delays delivery or payment, then there will be a burdensome interest.

b. Riba al-Fadl

   It is selling or exchanging same kind of items with more/less. (e.g. 10 lbs gold exchanged for 12 lbs gold). The excess payment when items of same kinds are exchanged is called Riba al-Fadl (Razi, 2008).

10. Treatment to Workers must be reasonable.

Islam has taught employer to give a good and reasonable treatment to workers. There are some hadiths that explain about that.

As narrated by Ma'qil: I heard the Prophet saying, "Any man whom Allah has given the authority of ruling some people and he does not look after them in an honest manner, will never feel even the smell of Paradise." (Bukhari, 264)

“You should pay the laborer his wages before his sweat dries” (Ibn Majah, 2443). This hadith is quite clear and self explanatory; workers have to be paid on time. If a person is hired to do a job, he should be paid immediately. However, if there is a contractual agreement that wages are to be paid weekly or monthly, then this is what must be done.

Islam also teach us to give your brother as you eat, drink as you drink, clothes as you wear and think as what you think for yourself and family. This is the responsibility of the employer that he should provide all the basic things that

are fair wages, good working condition, and treat him ethically (Ashtankar, 2015).

11. There should be mutual respect and kindness in business dealing.

Hashim (2012) said that respect others in business dealing is the dominant principle of Islam. Businesses that base on selfishly earning and producing and not caring the society are considered illegal. Islam also emphasis on mutual respect in dealings. Several places in the holy Quran it is mentioned that Allah loves kindness and deal with people with kindness, mentioned as follows.

"Never will you attain the good [reward] until you spend [in the way of Allah] from that which you love. And whatever you spend - indeed, Allah is Knowing of it." (Quran, 3:92)

"O you who have believed, whoever of you should revert from his religion - Allah will bring forth [in place of them] a people He will love and who will love Him [who are] humble toward the believers, powerful against the disbelievers; they strive in the cause of Allah and do not fear the blame of a critic. That is the favor of Allah ; He bestows it upon whom He wills. And Allah is all-Encompassing and Knowing." (Quran, 5:54)

Thus, kindness and mutual respect in business dealing is the leading principal of Islam. It is also strictly prohibited from hard words and harsh language in Islamic business dealing, as said in verse below.

"And be moderate in your pace and lower your voice; indeed, the most disagreeable of sounds is the voice of donkeys." (Quran 31:19)

2.3. Systematic Literature Review

Systematic literature review (SLR) is a method that adapts a precise, transparent and explicit approach that includes a series of phases to ensure that an appropriate rigor and transparency is brought to the literature review process (Tranfield *et al.*, 2003; Kitchenham and Charters, 2007). According to Garza-Reyes (2015), there are five phases of SLR which will be explained briefly in this sub-chapter. First phase is question formulation which will formulate research question(s) that will guide the research. Second phase is locating studies and third phase is study selection and evaluation, which will locate, select, and evaluate relevant literatures. Fourth phase is analysis and synthesis which will synthesize and analyze selected articles, then final phase which is reporting and using the result to report the findings. The following sections will explain the process of locating the studies, study selection and evaluation, and also analysis and synthesis.

2.3.1. Locating Studies

Relevant literatures in this research are found by using electronic databases which are Elsevier (sciencedirect.com) and IEEE (ieeexplore.ieee.org). Researches about halal supply chain management in food industry are searched in 5-period-papers which are from 2011 to 2015. Thus, the period for this research was established during 2011-2015 period. This research only focuses on papers that observe halal standards in whole process of supply chain in food industry from five years ago.

2.3.2. Study Selection and Evaluation

In this research, researcher only uses article that published in academic journals and proceedings of international conferences because they are considered as the most useful and reliable for literature reviews (Saunders et al., 2012). Hence, search results in this research only contain those sources. Then, in terms of the search strings, they were specified based on the main topics of the phenomena under investigation (Garza-Reyes, 2015). There is a framework that can be followed in order to determine the inclusion/exclusion criteria of the search strings, it is called C-I-M-O (context-intervention-mechanism-outcome) (Briner and Denyer, 2012; Rousseau, 2012). Search strings included in this research are (standards in halal certification), (halal supply chain management), (halal food industry), (halal process), (halal ingredients), (halal supply chain management in food industry), and (halal certification). In order to avoid inappropriate papers, 'manual checks' for all the articles that fell within the search strings criteria were performed based on the abstracts of the papers. This resulted in removing those papers that clearly did not address the topic of halal global standards in processes of SCM on food industry or that were outside of the scope, because of, for example, the date or article type. According to criteria described in this section, a final sample of 53 articles with reference to halal global standards in processes of SCM in food industry was identified.

2.3.3. Analysis and Synthesis

Papers obtained then will be transcribed and analyzed to get important findings in constructing the framework of halal supply chain management in food industry by using specific analysis/synthesis method. Garza-Reyes (2015) stated that various methods can be included to perform systematic literature review, thematic

analysis/synthesis, qualitative comparative analysis, qualitative meta-summary, meta-ethnography, qualitative meta-analysis, grounded theory and content analysis can be considered for the synthesis of qualitative research. Method which will be used in this phase is thematic analysis and synthesis. This method will group the papers based on specific themes. It is easier and more effective to analyze and synthesize the papers.

Based on findings in papers, this research will be divided into some macro processes in halal supply chain management in food industry as an addition of conventional supply chain macro process by Chopra and Meindl (2013). Figure 2.1 will show those processes.

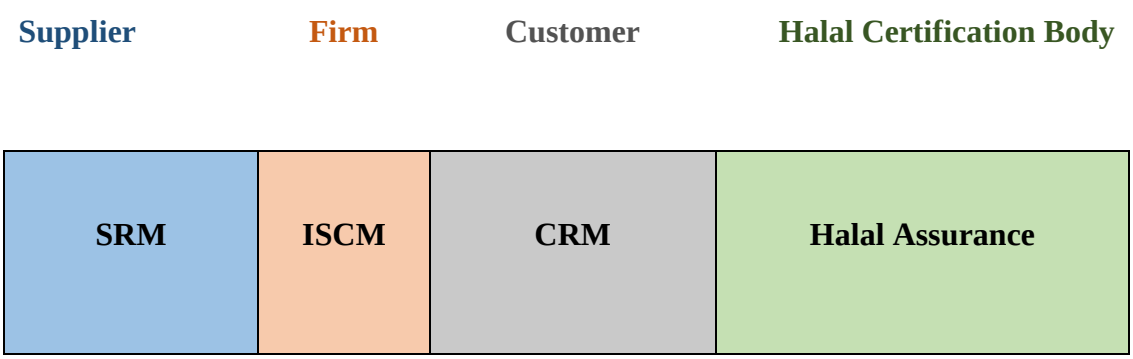


Figure 2.1 Macro Process in Halal SCM

As explained by Bahrudin et al. (2011) the main goal of halal SCM is not only to ensure that costumers satisfaction , but also to ensure that the Halal status of the food product remains intact throughout the whole process of it. Hence, there should be an addition for conventional SCM. All processes in conventional SCM can be classified into the following three macro processes (Chopra and Meindl, 2013):

1. Customer Relationship Management (CRM): all processes that focus on the interface between the firm and its customers.
2. Internal supply chain management (ISCM): all processes that are involved internally to the firm. In this process, there are also some divisions based on Cooper et al. (1997) about manufacturers in supply chain management. They are purchasing, logistics, marketing and sales, production, research and development, and finance.
3. Supplier Relationship Management (SRM): All processes that focus on the interface between the firm and its suppliers.

This study will add a macro process which is special for halal supply chain management in food industry. It is Halal Assurance.

4. Halal Assurance (HA): All processes that focus on ensuring halal status between the firm and halal certification body. It will explain what company has to consider in being certified and trusted halal food producer.

2.3.4. Descriptive Analysis and Findings

There are 53 papers suitable with the selection criteria. The papers are referred to halal global standards in the processes of SCM in food industry as well as related topics of standards in halal certification, halal supply chain management, halal food industry, halal process, halal ingredients, halal supply chain management in food industry, and halal certification.

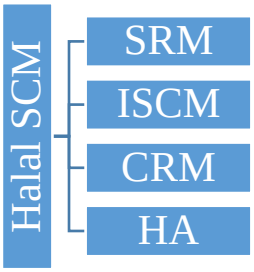


Figure 2.2 Macro Process in Halal SCM

Figure 2.2 shows halal SCM based on its macro process that will be implemented in this research. They are Supplier Relationship Management (SRM), Internal Supply Chain Management (ISCM), Customer Relationship Management (CRM), and Halal Assurance (HA).

In this study, the researches that discuss about SRM have been conducted by 3 researchers, such as Tarmizi et al. (2014), Yunos et al. (2014), and Jamal and Sharifuddin (2015). Then, there are 31 researches about ISCM which have been done by Abdelsamie et al. (2013), Ali et al. (2012), Ali et al. (2015), Demirhan et al. (2012), Farouk (2013), Farouk et al. (2014), Gibson et al. (2015), Kassim et al. (2014), Ismoyowati (2015), Hashim and Hamzah (2014), Khalid et al. (2015), Kohilavani et al. (2013), Lassoued et al. (2014), Nakyinsige et al. (2012), Ngah et al. (2014), Norhana et al. (2012), Rahman and Ab Manan (2014), Rahman et al. (2014), Shabani et al. (2015), Sulaiman et al. (2014), Tieman and Ghazali (2014), Ulca et al. (2013), Adam and Nasukha (2013), Kamaruddin et al. (2012), Karia et al. (2015), Kassim et al. (2012), Maharom et al. (2011), Mansor et al. (2013), Mutalib et al. (2013), Omar and Jaafar (2011), Toha et al. (2012) and also, Yahaya et al. (2012). Researcher also finds 10 researches that explain about CRM which are conducted by Alqudsi (2014), Ambali and Bakar (2014), Halim et al. (2014), Kamaruddin et al. (2012), Khalek (2014), Mathew et al. (2014), Said et al. (2014), Tama and Voon (2014), Verbeke et al. (2013), and Yunus et al. (2014). Last, researcher discovers 9

researchs about HA which have been done by Al-Busaidi and Jukes (2015), Noordin et al. (2014), Ratanamaneichat and Rakkarn (2013), Shariff and Lah (2014), Van der spiegel et al. (2012), Mohd Albakir and Mohd-Mokhtar (2011), Fauzi et al. (2014) and Kadir et al. (2015).

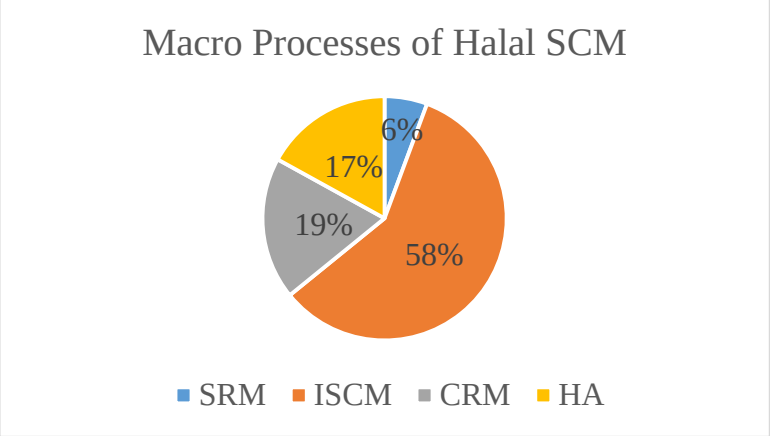


Figure 2.3 Distribution of Macro Processes in Halal SCM

Figure 2.3 shows distribution of papers complied with macro processes of halal SCM. In this study, there are 6% or 3 papers about SRM of 53 papers, 60% or 31 papers about ISCM of 53 papers, 19% or 10 papers about CRM of 53 papers, and 15% or 9 papers about HA of 53 papers.

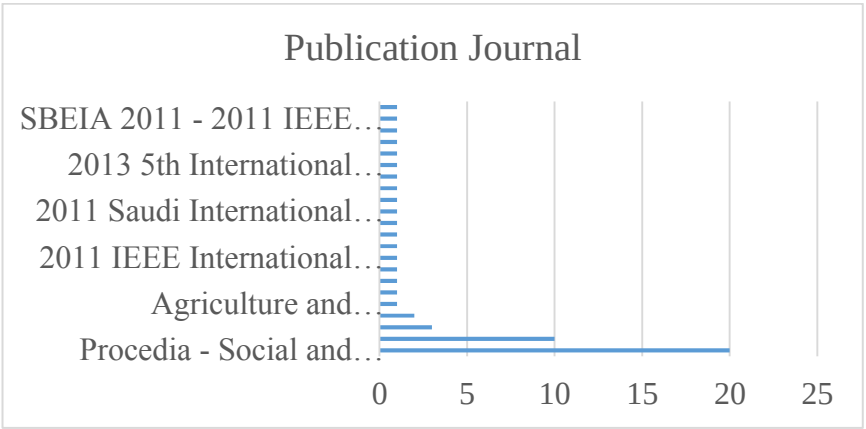


Figure 2.4 Publication Journal Distribution

Figure 2.4 shows the publisher of papers that applied. In terms of number of publication paper, Procedia - Social and Behavioral Sciences is the most commonly

found with 20 papers of journal followed by Meat Science with 10 papers, then followed by Food Chemistry and Food Control with 3 and 2 papers respectively. Other 18 journals have 1 paper respectively.

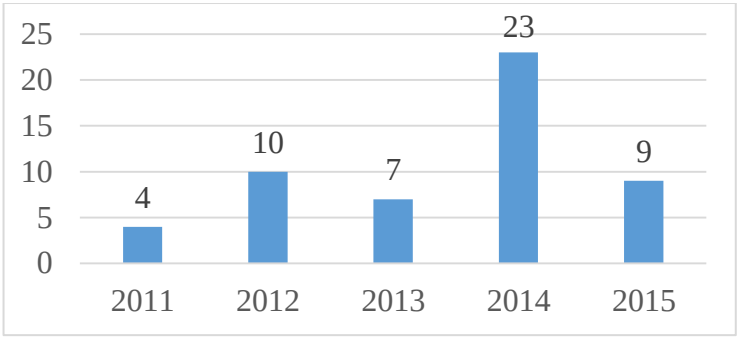


Figure 2.5 Publication Year Distribution

Figure 2.5 shows the publication year, it illustrates the publication year from the papers applied in this research, it employed papers that taken from 2011 until 2015. From the 2011, 4 papers were employed for the research, 10 papers from 2012, 7 papers from 2013, 23 papers from 2014, and 9 papers from 2015.

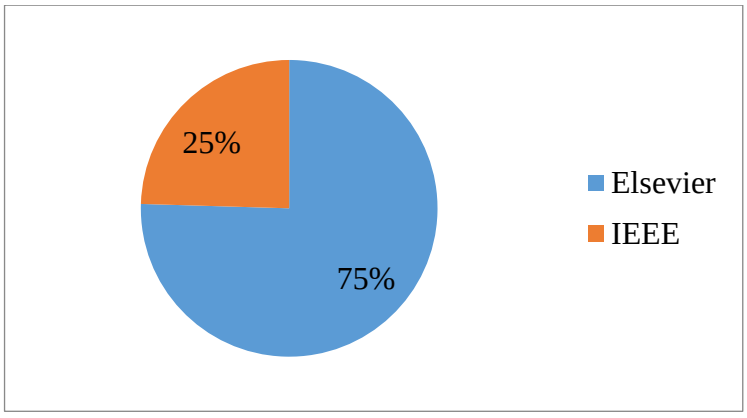


Figure 2.6 Electronic Publication Database

Figure 2.6 shows the electronic databases used for this thesis which are Elsevier and IEEE. There are 53 papers used in this thesis, 40 papers (75%) are from Elsevier (sciencedirect.com) and 13 papers (25%) are from IEEE (ieeexplore.ieee.org).

Table 2.3. Halal SCM Paper Included in Systematic Literature Review

No	Author	Title	Year
1	Abdelsamie, Maher A.A; Rahman, Russly Abdul; Mustafa, Shuhaimi	Pyramid Shape Power as a New Halal-compliant Food Preservation and Packaging Technique	2014
2	Al-Busaidi, Moza A; Jukes, David J.	Assessment of the food control systems in the Sultanate of Oman	2015
3	Ali, M E; Hashim, U; Che Man, Y B; Dhahi, Th S; Kashif, M; Uddin, Md Kamal; Abd Hamid, S B	Analysis of pork adulteration in commercial meatballs targeting porcine-specific mitochondrial cytochrome b gene by TaqMan probe real-time polymerase chain reaction.	2012
4	Ali, Md. Eaqub; Razzak, Md. Abdur; Hamid, Sharifah Bee Abd; Rahman, Md. Mahfujur; Amin, Md. Al; Rashid, Nur Raifana Abd; Asing	Multiplex PCR assay for the detection of five meat species forbidden in Islamic foods	2015
5	Alqudsi, Syed Ghazaly	Awareness and Demand for 100% Halal Supply Chain Meat Products	2014
6	Ambali, Abdul Raufu; Bakar, Ahmad Naqiyuddin	People's Awareness on Halal Foods and Products: Potential Issues for Policy-makers	2014
7	Demirhan, Yasemin; Ulca, Pelin; Senyuva, Hamide Z.	Detection of porcine DNA in gelatine and gelatine-containing processed food products—Halal/Kosher authentication	2012

No	Author	Title	Year
8	Farouk, Mustafa M.	Advances in the industrial production of halal and kosher red meat	2013
9	Farouk, M.M.; Al-Mazeedi, H.M.; Sabow, A.B.; Bekhit, A.E.D.; Adeyemi, K.D.; Sazili, A.Q.	Halal and kosher slaughter methods and meat quality: A review	2014
10	Gibson, Troy J.; Dadios, Nikolaos; Gregory, Neville G.	Effect of neck cut position on time to collapse in halal slaughtered cattle without stunning	2015
11	Halim, Mustafa ‘Afifi Bin Ab.; Mohd, Kamilah Wati Binti; Salleh, Mohd Mahyeddin Mohd; Yalawae, Asming; Omar, Tuan Syed Mohd Najib Syed; Ahmad, Asmidah; Ahmad, Azlin Alisa Binti; Kashim, Mohd Izhar Ariff Bin Mohd	Consumer Protection of Halal Products in Malaysia: A Literature Highlight	2014
12	Kassim, Norrahimah; Hashim, Puziah; Hashim, Dzulkifly Mat; Jol, Hamdan	New Approach of Samak Clay Usage for Halal Industry Requirement	2014
13	Ismoyowati, Dyah	Halal Food Marketing: A Case Study on Consumer Behavior of Chicken-based Processed Food Consumption in Central Part of Java, Indonesia	2015
14	Jamal, Ahmad and Sharifuddin, Juwaidah	Perceived value and perceived usefulness of halal labeling: The role of religion and culture	2015
15	Kamaruddin, Rohana; Iberahim, Hadijah; Shabudin, Alwi	Willingness to Pay for Halal Logistics: The Lifestyle Choice	2012
16	Hashim, Nurhazirah and Hamzah, Muhammad Iskandar	7P's: A Literature Review of Islamic Marketing and	2014

No	Author	Title	Year
		Contemporary Marketing Mix	
17	Khalek, Aiedah Abdul	Young consumers ' attitude towards halal food outlets and JAKIM ' s halal certification in Malaysia	2014
18	Khalid, Rizvan; Knowles, Toby G; Wotton, Steve B	A comparison of blood loss during the Halal slaughter of lambs following Traditional Religious Slaughter without stunning, Electric Head-Only Stunning and Post-Cut Electric Head-Only Stunning.	2015
19	Kohilavani, Wahidu Zzamana; Febriantoa, Noor Ariefandie; Zakariya, Nor Syafarah; Abdullah, Wan Nadiah Wan; Yanga, Tajul Aris.	Embedding Islamic dietary requirements into HACCP approach	2013
20	Lassoued, Imen; Jridi, Mourad; Nasri, Rim; Dammak, Aicha; Hajji, Mohamed; Nasri, Moncef; Barkia, Ahmed	Food Hydrocolloids Characteristics and functional properties of gelatin from thornback ray skin obtained by pepsin-aided process in comparison with commercial halal bovine gelatin	2014
21	Mathew, Vloreen Nity; Abdullah, Ardiana Mazwa Raudah binti Amir; Ismail, Siti Nurazizah binti Mohamad	Acceptance on Halal Food among Non-Muslim Consumers	2014
22	Nakyinsige, Khadijah; Man, Yaakob Bin Che; Sazili, Awis Qurni	Halal authenticity issues in meat and meat products	2012
23	Ngah, Abdul Hafaz; Zainuddin,	Adoption of Halal Supply Chain	2014

No	Author	Title	Year
	Yuserri; Thurasamy, Ramayah	among Malaysian Halal Manufacturers: An Exploratory Study	
24	Noordin, Nurulhuda; Noor, Nor Laila Md; Samicho, Zainal	Strategic Approach to Halal Certification System: An Ecosystem Perspective	2014
25	Norhana, M N Wan; Dykes, G A; Padilah, B; Hazizi, A A Ahmad; Masazurah, A R	Determination of quarantine period in African catfish (Clarias gariepinus) fed with pig (Sus sp) offal to assure compliance with halal standards	2012
26	Rahman, Zainor Nasrah Abdul and Ab Manan, Siti Khadijah	Tawarruq as a Useful Instrument to Finance Retail the Halal Way	2014
27	Rahman, Md. Mahfujur; Ali, Md. Eaqub; Abd Hamid, Sharifah Bee; Mustafa, Shuhaimi; Hashim, Uda; Hanapi, Ummi Kalthum	Polymerase chain reaction assay targeting cytochrome b gene for the detection of dog meat adulteration in meatball formulation	2014
28	Ratanamaneichat, Chiratus and Rakkarn, Sakchai	Quality Assurance Development of Halal Food Products for Export to Indonesia	2013
29	Said, Mahiah; Hassan, Faridah; Musa, Rosidah; Rahman, N.A.	Assessing Consumers' Perception, Knowledge and Religiosity on Malaysia's Halal Food Products	2014
30	Shabani, Hessam; Mehdizadeh, Mehrangiz; Mousavi, Seyed Mohammad; Dezfouli, Ehsan Ansari; Solgi, Tara; Khodaverdi, Mahdi; Rabiei, Maryam; Rastegar, Hossein; Alebouyeh, Mahmoud	Halal authenticity of gelatin using species-specific PCR	2015
31	Shariff, Sariwati Mohd and Lah,	Halal Certification on Chocolate	2014

No	Author	Title	Year
	Nurul Akma Abd	Products: A Case Study	
32	Van der Spiegel, M; Van der Fels-Klerx, H.J.; Sterrenburg, P.; van Ruth, S.M.; Scholtens-Toma, I.M.J.; Kok, E.J.	Halal assurance in food supply chains: Verification of halal certificates using audits and laboratory analysis	2012
33	Sulaiman, Alawi; Othman, Nasuddin; Baharuddin, Azhari Samsu; Mokhtar, Mohd Noriznan; Tabatabaei, Meisam	Enhancing the Halal Food Industry by Utilizing Food Wastes to Produce Value-added Bioproducts	2014
34	Tama, Harrisson Amat and Voon, Boo Ho	Components of Customer Emotional Experience with Halal Food Establishments	2014
35	Tarmizi, Hazwani Ahmad; Kamarulzaman, Nitty Hirawaty; Latiff, Ismail Abd; Rahman, Azmawani Abd	Factors Influencing Readiness towards Halal Logistics among Food-based Logistics Players in Malaysia	2014
36	Tieman, Marco and Ghazali, Maznah Che	Halal Control Activities and Assurance Activities in Halal Food Logistics	2014
37	Ulca, Pelin; Balta, Handan; Çağın, Ilknur; Senyuva, Hamide Z	Meat species identification and halal authentication using pcr analysis of raw and cooked traditional turkish foods	2013
38	Verbeke, Wim; Rutsaert, Pieter; Bonne, Karijn; Vermeir, Iris	Credence quality coordination and consumers ' willingness-to-pay for certi fi ed halal labelled meat	2013
39	Yunos, Rahimah Mohamed; Mahmood, Che Faridah Che; Mansor, Nor Hafizah Abd	Understanding Mechanisms to Promote Halal Industry-The Stakeholders' Views	2014
40	Yunus, Nor Sara Nadia Muhamad; Rashid, Wan Edura Wan; Ariffin, Norafifa Mohd;	Muslim's Purchase Intention towards Non-Muslim's Halal Packaged Food Manufacturer	2014

No	Author	Title	Year
	Rashid, Norhidayah Mohd		
41	Adam, Abdallah Belal and Nasukha, Nadia Hayati Md	Analysis of dielectric constants of slaughtered and non-slaughtered chicken	2011
42	Mohd Albakir, Sharifah Nurul Wahida Sayed and Mohd-Mokhtar, Rosmiwati	A conceptual design of genuine Halal logo detector	2011
43	Fauzi, Ahmad Sofwan; Hidayah, Nur Aeni; Kumaladewi, Nia	E-Service System Design in Registrating Certification and Presentating Halal Product Information on the Indonesian Olema Council (Case Study : Indonesian Olema Council (MUI) Bogor Regency)	2014
44	Kadir, Evizal Abdul; Shamsuddin, Siti Mariyam; Rahim, Abdul Sharul Kamal; Rosa, Sri Listia	Application of NFC Technology for Premise Halal Certification	2015
45	Kamaruddin, Rohana; Iberahim, Hadijah; Shabudin, Alwi	Halal compliance critical control point (HCCCP) analysis of processed food	2012
46	Karia, Noorliza; Asaari, Muhamamad Hasmi Abu Hassan; Mohamad, Norizah; Kamaruddin, Shahrul	Assessing Halal logistics competence: An Islamic-based and resource-based view	2015
47	Kassim, Murizah; Yahaya, Cik Ku Haroswati Che Ku; Zaharuddin, Muhammad Hafiz Mazlan; Bakar, Zamri Abu	A prototype of Halal product recognition system	2012
48	Maharom, S M M; Hussin, N; Idrus, S M; Safar, A; Zulkifli, N	Photonics alcohol detector system for Syari'Ah compliance food and beverages	2011
49	Mansor, Mohd Amin; Baki, Shah	An approach of halal poultry meat	2013

No	Author	Title	Year
	Rizam Mohd Shah; Tahir, Nooritawati Md; Rahman, Ruhani Abdul	comparison based on mean-shift segmentation	
50	Mutalib, Nurul Asyikeen Ab; Jaswir, Irwandi; Akmeliawati, Rini	IIUM-fabricated portable electronic nose for halal authentication in beverages	2013
51	Omar, Emi Normalina and Jaafar, Harlina Suzana	Halal supply chain in the food industry - A conceptual model	2011
52	Toha, Siti F.; Tajuldin, Abdul.; Rahim, Khairul Z	Smart handheld budget and halal tracker	2012
53	Yahaya, C.K.H.C.K.; Hassan, H; Bin Md Kahmi, M I	Investigation on perceptual and robustness of LSB digital watermarking scheme on Halal logo authentication	2012

2.3.5. Macro Process of Halal Supply Chain Management Analysis

From total number of 53 papers that complied with selection criteria, they are divided into some macro processes of halal SCM which are SRM, ISCM, CRM, and HA. Following section will explain each macro process of halal SCM.

2.3.5.1.Supplier Relationship Management (SRM)

SRM is all processes that focus on the interface between the firm and its suppliers (Chopra and Meindl, 2013). It is essential part of halal SCM in order to ensure halal integrity from farm-to-table in food industry. Unfortunately, there are still a few of papers found that discusses about SRM. In this research, there are only 3 papers of 53 papers that explain about it. They provide some recommendations in order to enhance the halal integrity from supplier until firm or producer of halal food.

Yunos et al. (2014) and also, Jamal and Sharifuddin (2015) deliver some recommendations in SRM based on reasons of purchasing in customer. They both agree that suppliers and manufacturers need to coordinate and participate in using halal labeling in their products and increasing halal awareness of consumers. They suggest suppliers and manufacturers to do some marketing strategies, such as making promotional messages that encourage such consumers to think about the quality, emotional, monetary and social value of a halal logo. They also said that both parties should have a role to educate consumers on halal principles in order to enhance their understanding on Halal production from the selection of materials until the products are ready to be consumed by doing advertisement, courses or trainings.

Tarmizi et al. (2014) give suggestions in SRM based on factors that influence readiness towards halal logistics. Halal logistics is really important in Halal food industry. Halal logistics facilitates the international and global trade of Halal products and services across the world. It will integrate all parties especially suppliers and firms themselves. They said that logistics players need to consider five factors before embark into halal logistics sector. They are vision to change, halal assurance system, environment, employee acceptance and managements support.

Thus, both suppliers and firms need to synergize in order to provide halal-complied food products for customers. They also have a duty to use genuine halal logo which is get from proper halal-compliant process and to increase halal awareness of consumers via marketing or education. The duty also has to be supported by all resources and system.

2.3.5.2.Internal Supply Chain Management (ISCM)

ISCM is all processes that are internal to the firm (Chopra and Meindl, 2013). This macro process is the most commonly found in this study with 31 papers. Because there is a big number of researches about it, researcher decides to explain it more detail by dividing it into some division based on Cooper et al. (1997) about manufacturers in supply chain management. They are purchasing, logistics, marketing and sales, production, research and development, and finance.

a. Purchasing

Chartered Institute of Purchasing and Supply (2013) stated that purchasing includes all procurement activities including leasing and hiring, and may where appropriate include other activities accompanying the life cycle of goods (or service contracts) and the end-of-life disposal of goods which have been procured (whether or not they remain in our ownership). Unfortunately, researcher does not find paper which specifically discuss about purchasing in this study.

b. Logistics

Logistics can be defined as the management of the flow of goods, information and other resources, energy and people between the point of origin and the point of consumption in order to meet the requirements of consumers. Logistics involves the integration of information, transportation, inventory, warehousing, material handling, packaging and security (Stukalina, 2014). In this research, there are 5 papers that discuss about halal logistics. They are conducted by Abdelsamie et al. (2014),

Tieman and Ghazali (2014), Kamaruddin et al. (2012), Ngah et al. (2014) and Karia et al. (2015). They give some suggested standards in logistics process.

Abdelsamie et al. (2014) conduct halal-compliant food preservation and packaging technique for water and milk by using pyramidal packages in order to give halal, safe and healthy food to consumers. It is a good development for halal industry, especially in beverage because the pyramidal package makes various inhibition levels of bacterial growth in milk and uniquely better water crystallization than rectangular package. The swellings of the control group were seen more obvious than the mice that were given water placed in the pyramid.

Tieman and Gazali (2014) propose a halal assurance system for logistics based on major success factors of halal supply chains which are: 1) Communication of "halal supply chain" code through cargo label, freight documents, and logistics and customs systems; 2) capitalizing on the halal product flows in non-Muslim countries that are not sold as halal certified products; 3) application of innovations to simplify segregation in a non-Muslim environment (through possible containerization at a lower level).

Kamaruddin et al. (2012) concludes the majority of logistics providers, the industry, and port authorities should ensure halal integrity by doing these methods which are segregation, temperature control, designated warehouse, and specialized truck. At the end, consistent and integrated standard halal compliance processes between the stakeholders needs to be developed in order to be 100% halal compliance throughout the tracking system.

Ngah et al. (2014) explore the real phenomenon of Halal supply chain services adoption for transportation and warehousing services from the perspective of service providers. In halal transportation, there should be no mixing of Halal and non-Halal goods on a pallet or load carrier, and tertiary packaging should be used to protect the Halal cargo along the supply chain. In warehousing, Halal and non Halal product can't be put together. Unfortunately, the reality says adoption rate for Halal supply chain also still relatively low among Halal manufacturers. Halal supply chain service providers mentioned that awareness, understanding, lack of competitive pressure and consumer pressure, lack of regulation and government support could be a reason why the majority of Halal manufacturers is not adopting Halal supply chain services. The interviews also showed that perceived benefits could be a driver for the adoption.

Karia et al. (2015) attempts to focus on Halal logistics competency for the proposition of innovation in delivering Halal products and/or services in order to strengthen and ensure the Halal integrity of Halal product/service is being protected from the source of materials to the point of end user. As the result, this paper identifies the five prominence determinants of Halal logistics competence in delivering Halal products and services. They are basic technology and equipment, advanced technology and equipment, knowledge resources, relational sources, and organizational sources.

Based on papers, logistics play a quite important role because it has to maintain the halal status from stage to stage in halal food supply chain management. It has to prevent haram contaminants, bacteria, and bad substances for health. Therefore, logistics have to be supported by whole resources, such as technology and

equipment, knowledge resources, relational sources, and organizational sources. Logistics also has to have an efficient future innovation to ease the work, such as pyramidal package.

c. Marketing and Sales

According to Kotler (1997), marketing is a social and managerial process by which individuals and groups obtain what they need and want through creating, offering and exchanging products of value with others. In the other hand, sales is about selling the product or service to customers. They have to work together to get profit. In this research, there are only 2 papers discuss about marketing and sales based on perspective of halal supply chain management.

The first research is conducted by Hashim and Hamzah (2014) that develops the understanding of 7P's based on both Islamic and contemporary perspectives of marketing. They divide marketing mix to pragmatism and product, pertinence and promotion, palliation and price, peer-support and people, pedagogy and physical environment, persistence and process, and patience and place.

The other research is done by Ismoyowati (2015) who described consumer's behavior on halal product, especially on the consumption of chicken-based food. She explained the consumer's perception, decision to consume halal food, and influencing factors in halal food consumption. She then gave some recommendations to promote the products. Accessible and easy-to-find outlets were more important for buyers rather than the comfortable and crowded ones. Food with taste fit the buyers preferences will enjoy words-of-mouth promotion among the buyers. The second

worthy way to promote were electronic media such as ads in television and radios. Price factor must be important, because other important way to attract buyers is price discount. Membership program is not yet an attractive choice for buyers. Souvenirs bundled with certain buying was only attractive to few buyers (less than 5% of them), and this mostly applied by global chain.

Thus, in the marketing and sale process, as halal food producer, firms should have integrity, honesty, quality and respect in order to get customers. They also have to use good strategies which are suitable with customers' demand based on the research.

d. Production

Fioretti (2008) stated that productions functions map the inputs of a firm or a productive system onto its outputs. There are 5 papers that discuss halal production issues. They are conducted by Farouk (2013), Farouk et al. (2014), Gibson et al. (2015), Khalid et al. (2015), and also, Omar and Jaafar (2011). Result of those researches will be explained below.

Farouk (2013), Farouk et al. (2014), Gibson et al. (2015), Khalid et al. (2015) discussed about slaughtering, especially in pre slaughtering. Farouk (2013) find that there is the compliance of electrical head-only stunning to halal requirements in that the procedure when properly applied does not kill the animal pre-slaughter nor affect other important halal requirements such as blood flow during exsanguinations and is not painful. Other issues associated with post-slaughter processing of pre-slaughtered stunned animals such as thoracic sticking and time of death following slaughter

would remain important for halal red meat production until they are resolved because it quickly reduces the blood pressure in the slaughtered animal in order to dispatch the animal as quickly as possible. Khalid et al. (2015) compared blood lost during the Halal slaughter of lamb by using traditional religious slaughter without stunning (TRS), electric head-only stunning (EHOS) and post-cut electric head-only stunning (PCEHOS). This study shows that there was no significant difference in blood lost at exsanguination between TRS, EHOS and PCEHOS for either Experimental or Commercial protocols. The rate of blood loss was quickest in EHOS and PCEHOS followed by TRS. It also found that slaughter change in carcass orientation from an upright position to vertical hanging aids blood lost at exsanguination. Farouk et al. (2014) reviewed nature, causes, importance and mitigations of these and other quality issues related to halal and kosher slaughtering and meat production using these methods. It showed that there is still a debate about pre stunning. It is hoped that spiritual aspect and animal welfare can be synchronized well in slaughtering.

Gibson et al. (2015) examined the effect of neck cut position on time to collapse, indices of brainstem function and false aneurysm formation in halal slaughtered cattle. Time to collapse was used as an indicator of the early stages of onset of unconsciousness. The study showed that the performance of the HNC (High Neck Cut) compared to the conventional LNC (Low Neck Cut) significantly reduced the time to loss of posture in halal slaughtered cattle. The adoption of a HNC could reduce the welfare compromise associated with the delayed time to loss of consciousness during slaughter without stunning.

Omar and Jaafar (2011) had quite different opinion. They discussed production of halal food supply chain as a whole system. They identified and

distinguished the factors which lead to an effective halal supply chain in the food industry. The study found that halal animal feed, proper slaughtering and proper segregation are the three pertinent areas that need to be focused on in the halal food supply chain.

Based on the researches above, it can be said that slaughtering is very important in production process of halal food supply chain. Unfortunately, there is still pro and contra about pre stunning. Unified and definite decision about requirements in slaughtering in worldwide is needed to make a proper framework of halal food supply chain management.

e. Research and Development

Research and Development determine a firm's ability to innovate and compete. It is really important in halal supply chain management which is quite new in worldwide. Continuous innovation and development is needed to make a halal-compliant, safe, healthy, and wholesome supply chain. There are 18 papers in this research which discuss ways to gain halal integrity in supply chain.

Generally, the papers talk about haram contaminants detection in foods by using PCR. There are 6 papers in this research which are explained as follows. Ali et al. (2012) proposed an optimized real-time PCR assay in order to analyze pork adulteration in commercial meatballs of pork, beef, chicken, mutton and goat. Ali et al. (2015) developed a multiplex Polymerase Chain Reaction (PCR) assay for detection of five haram meat species, namely, pig, dog, cat, monkey and rat species in raw and processed meats and commercial meat products such as meatballs.

Demirhan et al. (2014) tried to detect porcine DNA by using commercial test kits both for DNA extraction and for the real-time PCR analysis in gelatine and gelatine-containing processed food products, such as soft and fruity chew confectionery (gum drops), Turkish delight, jelly and marshmallows/cakes. Rahman et al. (2014) describe a short amplicon length conventional PCR assay targeting 100 bp region of cytb gene for the detection of canine tissues in ready to eat chicken and beef meatballs. Shabani et al. (2015) perform conventional PCR using species-specific primers for identifying the animal origin of gelatin powders and to investigate the halal authenticity of some gelatin-containing food products and capsule shells. Ulca et al. (2013) test the performance of commercial PCR kits for detection of animal species in raw and cooked meat products. It is quite different with Nakyinsige et al. (2012) who use many detection methods beside PCR. They provide an overview of the possible analytical methods for halal authentication of meat and meat products.

There are also Maharom et al. (2011) and Mutalib et al. (2013) who can detect haram contaminant in beverage. Maharom et al. (2011) developed an optical system which has infrared LED, lens, and PIN photodiode to detect the presence of ethanol in liquids. In other side, Mutalib et al. (2013) develop a method for rapid detection of ethanol (EtOH) content in various beverages such as such as alcoholic beverages, isotonic drinks, soft drinks and fruit juices by using portable electronic nose (E-Nose) prototype.

There also researches about halal authenticity detection based on halal logo. The first research is done by Kassim et al. (2012) who presented a prototype of system to identify the Halal product by using Smartphone which called My Halal system. Next, Toha et al. (2012) developed a smart handheld budget and halal

tracker. The last research is conducted by Yahaya et al. (2012) who propose the use of least significant bit (LSB) technique to show the genuineness of Halal logo by using MATLAB software.

Researcher then also found papers about making a proper and halal raw material before production. First research is done by Lassoued et al. (2014) who extracted gelatin from the skin of thornback ray and studied its physicochemical properties as well as its functional properties in comparison with halal bovine gelatin (HBG). As the result, it is found that the skin of thornback ray could serve as raw material for the gelatin extraction, which could be used as alternative of mammalian gelatin in food applications. Then, there is Norhana et al. (2012) who found that the minimum quarantine period for catfish fed with fresh pig offal is 1.5 days before it can be consumed.

Those researches above explain about technology development in ensuring halal integrity in raw materials and products. Besides that, there are two researches to detect whether the halal production is right or not. First, Adam and Nasukha (2011) found a potential sensing property that able to distinguish between slaughtered and non-slaughtered chicken with 250 KHz frequency. The values of dielectric constant of slaughtered chicken appear to be lower than those of non-slaughtered chicken. Another research is done by Mansor et al. (2013) who proposed a technique to determine the differences between halal and non halal chicken meat based on its meat color based on LUV colour features along with mean shift segmentation.

Last, researcher found how to maintain halal status of equipment intact in whole process of halal SCM. First research was conducted by Kassim et al. (2014).

They reviewed the cleansing of *najis* in Islam by using *samak* clay in order to meet the standard halal requirements of quality and safety will further enhance consumer confidence. Second research is done by Sulaiman et al. (2014) who developed possibility to change halal food waste after production. They highlighted the concept of halal food waste biorefinery, bio-products and future issues and direction related to the halal organic food waste. Currently millions tons of organic food waste are being disposed-off into the environment which have high potential to be converted into various high-value bioproducts such as bioenergy, biofertilizer, biomaterials and animal feed .

Based on explanation above, it can be concluded that when food producers run the business, they have to consider halal integrity remain intact in whole process of supply chain management. Technology, research, innovation, and developments can ease food producers to do it. There are many researches that could help to overcome haram contaminants, abuse of halal logo, improper production, and waste of production.

f. Finance

Welch (2009) stated that finance concerns about a set of money flows (cash flows) which require an upfront cash outflow (an investment or expense or cost) and is followed by a series of later cash inflows (payoffs or revenues or returns). In this research, researcher only found a paper that discuss about finance in halal supply chain. It was conducted by Rahman and Ab Manan (2014). They discussed on tawarruq arrangement and application, also the arrangement to finance small entrepreneur using the concept. Tawarruq means purchasing a commodity on a

deferred price either in a form of Musawamah or Murabahah (mark up sale), later selling it to a third party with the objective of obtaining cash. Having Tawarruq as a means to finance retail, it is useful to the entrepreneurs by providing an alternative for these people to buy other goods which will become their stock in retailing. By offering these people the choice of asset to be sold, it can be claimed that this concept is a real Tawarruq concept where the customer may choose the asset and find the buyer by themselves. This instrument also will be useful for entrepreneurs whom deal with bulk purchasing.

Thus, we can see that tawarruq is a good choice to facilitate an individual to get cash from the reselling of commodity that he/she purchased from the seller. Unfortunately, there is most important thing that has to be considered in Tawarruq. It can be riba if there is a possibility of non-existence of physical commodities in Tawarruq structure as well as an existence of fraudulent trading contracts which may lead to fictitious transaction. In order to make a clear and proper framework of global standards in halal food SCM, we need something definite without pro and contra.

2.3.5.3.Customer Relationship Management (CRM)

CRM is all processes that focus on the interface between the firm and its customers (Chopra and Meindl, 2013). It is basic foundation in halal SCM because it is the reason why suppliers, manufacturers, distributors, retailers do their job which is to fulfill customer's demands about halal products, especially halal food. There are 10 papers found in this research that discuss what suppliers until retailers have to do in order to comply what consumer needs in halal food SCM. In general, those papers agree that consumers, even non-Muslim consumers, nowadays are highly aware to

halal issues and have a positive attitude towards halal food products. Therefore, they give some information about what consumers expect in order to build a proper halal food supply chain management.

Alqudsi (2014) and also Ambali and Bakar (2014) analyzed customer's needs in halal food supply chain based on people's awareness. They both agreed that consumers need halal-labeled-product, religious belief-complied-products, and public education about halal issues. Ambali and Bakar (2014) also added health reason to customer's needs. Both papers then gave some suggestions to halal food parties. Alqudsi (2014) recommended firms to check and balances on halal requirements, educated public education halal logistics, and gave transparency on halal process. Ambali & Bakar (2014) provided suggestions to policy makers about making global standard for halal logo or label, monitoring the processing stages after certification has been issued to a company, and making strict policy in order to prevent existence of fake certificate.

In the other side, there are 2 papers which relate halal food SCM to Non-Muslim. The first research was conducted by Mathew et al. (2014) who focus on opinions of Non-Muslim consumers toward halal food. This study shows that Non-Muslim consumers are willing to purchase halal food because they believe that halal foods are safe, hygiene, healthy, clean, and having good quality. Another research is done by Yunus et al. (2014) that focused on opinions of Muslim consumers toward halal food produced by Non-Muslim producers. This study shows a high awareness on Halal issue and product ingredients will significantly influence them to buy halal products from Non-Muslim producers.

Next, some researches that discuss customer's needs in halal food supply chain based on people's willingness to pay are revealed. At first, Kamaruddin et al. (2012) found that "effective" demand to comply halal parameter is a strong indicator for Willingness To Pay (WTP) for halal logistic and cost incurred which are inventory-carrying costs, transportation and logistics administration cost. Then, Verbeke et al. (2013) finds found that Belgian Muslim consumers highly consider on Islamic production method, Muslim ownership, importance of certified halal label and assurance about the halal status of meat are reasons for consumers to pay more for certified halal labeled meat at the Islamic butcher shop than at the supermarket. 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.

In order to add standards in CRM, researcher review a research, which was conducted by Tama and Voon (2014). They identified components of the customer emotional experience with Halal food establishments. The findings of this study have indicated that the spiritual dimension and customer acceptance have strong influence on to the customer's emotional experience. Then, researcher also review a research which is done by Khalek (2014) who described young Muslims' positive attitude towards halal food outlets and JAKIM's certification. The research shows that young Muslim consumers have positive attitude toward halal food outlets and respondents agreed halal food outlets should have a certified halal logo.

Researcher also found a research about factors that could influence consumers' perception towards Malaysia Halal food products which is done by Said

et al. (2014). They ensured that knowledge and religiosity have an influence on consumers' perception towards Malaysia Halal food products. The findings indicated that different nationalities have different perception towards Malaysia's Halal food products. It also showed that the consumers' perception and their level of knowledge and religiosity differs, although more than 94% of the respondents are Muslim. Halal knowledge, information and education by the government agencies were perceived as lacking.

Last, the review is conducted on researcher reviewed a research which is done by Halim et al. (2014) who described a preamble to the highlight of consumer protection in Malaysia and its application. This research suggested government to act firmly on abuse of halal logo or halal products in order to protect consumers from any form of cheating and misappropriation of halal products. It then suggested all parties involved to ensure that the perversion and misappropriations of halal products can be curtailed and while preserving the right of consumers to obtain products that are really clean and halal. Last, this study suggested an establishment of a governing body e.g. a Halal Commission with primary function to regulate and monitor all halal-related affairs and at the same time making full enforcement on matters related to halal products.

From those researches above, it can be concluded that what consumers need in halal food supply chain management are halal label based on proper halal certification, health, food safety, quality, halal requirement's compliance, education about halal issues, and government's firm policy about abuse of halal logo or halal products in order to make them buy the halal food products.

2.3.5.4.Halal Assurance (HA)

HA is what researcher develops based on the main goal of halal supply chain which is not only to ensure that costumers satisfied, but also to ensure that the Halal status of the food product remains intact throughout the whole process of the supply chain (Bahrudin et al., 2011). It then will explain all processes that focus on ensuring halal status between the firm and halal certification body. It also will describe what company has to consider in being certified and trusted halal food producer. In this study, researcher found 9 papers which discuss about HA in many aspects.

First research is conducted by Al-Busaidi and Jukes (2015). They provided a preliminary assessment of the food safety control in Oman in relation to the five core elements of a national food safety system: food control management, food legislation, food inspection and surveillance, official food control laboratories, food safety and quality information, education and communication. It is found that it is essential to have unified systems in place with better control over the food safety systems and with harmonization of food laws and policies and a unification of standards.

Second research is done by Noordin et al. (2014) who reported on the findings based on the issues of governance pertaining to the halal certification system using the Malaysian halal certification system as a case study. This research shows that the halal certification coordinator must play their role strictly as not to allow sub-standard practices of halal certification that does not comply with Islamic law and industry standards. Also, the good rapport amongst agencies related to the halal certification process such as the local council, fire and rescue agency, environmental

agency, occupational and safety agency will help smooth the halal certification process.

Third research is carried out by Ratanamaneichat and Rakkarn (2013). They talked about vital problems of Halal food manufacturers in accordance to the changes in requirements and regulations of importing/exporting food to Indonesia. This study concluded that exporters and foreign manufacturers always have to follow and the up-to-date regulations and information. It is clear that Halal issues recognized safety and quality assurance. It means that the product must be prepared up to the standards, which also include hygiene, safety and quality assurance ensured that the Halal products are also clean, safe and well taken care of with good presentation and served in a proper manner, and of quality for everybody. Therefore, Halal assurance system (HAS) that is set up by company is a basic prerequisite for application of getting Halal certificate.

Next, there is Shariff and Lah (2014) discussed about halal certification for locally-made food products based on a case study. This study shows that entrepreneurs have the duty of care to comply with all relevant halal and hygienic laws and standards. Also, importers and agents who introduce new ingredients should be more accountable in seeking halal and hygiene certifications not only from the halal authorities but also from the health authorities. Therefore, it is recommended that halal certifiers such as JAKIM should extend its support services to alleviate the high costs incurred for food sampling and laboratory tests as it is costly for a small food enterprise and to ease the procedure for halal certification for local market.

Another research is done by Van der Spiegel et al. (2012). They verified halal control and assurance to guarantee reliable halal food for consumers and to create trust for buyers at the domestic market and in importing countries. This study shows that a variety of halal requirements and halal assurance activities are applied worldwide. There is no international consensus on the halal definition and its assurance, which makes certified halal food production ambiguous. Besides, different audit methods are used to inspect compliance to prescriptions of halal rules. Laboratory analysis is not often used to prove the absence of haram ingredients. They then make a framework for slaughtering and laboratory tests classification for detecting haram contaminants. Current audits and monitoring may be improved in the whole halal supply chain to control and assure all prescribed religious criteria.

There is also research that discusses about the applicability and embedment of Islamic dietary requirements along with Hazard Analysis Critical Control Point (HACCP) approach which is conducted by Kohilavani et al. (2013). This study is able to determine Haram/Halal by using HACCP principles and concepts as a tool. It gives an advantage to the manufacturers, monitoring bodies and confidence to the customers due to the conformance and sustainability through the food chain.

There are also 3 researches which develop some technologies to ensure halal integrity. First research is done by Mohd Albakir and Mohd-Mokhtar (2011) who presented a conceptual design of Halal logo detector that can be used to verify and distinguish the genuine Halal logo labelled on the products at the supermarket or hypermarket. Next, there is Fauzi et al. (2014) who developed rapid and proper e-service system that supports the process of admission of certification is needed which can be used by Halal certifier in order to facilitate the public in registrating their

products to be certified and to abridging people in accessing information regarding accurate halal product. Last, Kadir et al. (2015) proposed the application of Near Field Communication (NFC) technology to restaurants or premises Halal certification, with NFC chip attached into the Halal certificate shown at the premise then customer or authority easy to check authentication of Halal certificate hold by premise.

From papers above, we can conclude that there are some important things that firm and halal certification body should do to increase the halal integrity in whole process of halal food supply chain management. Firm has to ensure that their products comply with all relevant halal, safety, healthy and hygienic standards. Then halal certification bodies should have unified systems and standards with better control over the halal food systems and with harmonization of food laws and policies. They also can use technology to ensure the halal integrity of firm, thus it will make certification system more proper and precise.

CHAPTER III

RESEARCH METHODOLOGY

This chapter will explain the steps applied in conducting the research. Locating studies and also, study selection and evaluation which have been explained in Chapter II will be repeated briefly in this chapter.

3.1. Locating Studies

Relevant literatures in this research are found by using electronic database which is Elsevier (sciencedirect.com) and IEEE (ieeexplore.ieee.org). Researches about halal supply chain management are searched in 5-period-papers which are from 2011 to 2015. Thus, the period for this research was established to comprise 2011-2015 period. This research only focuses on papers that discuss about halal standards in whole process of SCM on food industry from five years ago.

3.2. Study Selection and Evaluation

In this research, researcher only uses article published in academic journals and proceedings of international conferences because they are most useful and reliable for literature reviews (Saunders et al., 2012). Hence, search results in this research only contain those sources. Then, in terms of the search strings, they were specified based on the main topics of the phenomena under investigation (Garza-Reyes, 2015). There is a framework that has to be followed in order to determine the inclusion/exclusion criteria of the search strings, it is called C-I-M-O (context-

intervention-mechanism-outcome) (Briner and Denyer, 2012; Rousseau, 2012). Search strings included in this research are (standards in halal certification), (halal supply chain management), (halal food industry), (halal process), (halal ingredients), (halal supply chain management in food industry), and (halal certification). In order to avoid inappropriate papers, 'manual checks' for all the articles that fell within the search strings criteria were performed based on the abstracts of the papers. This resulted in removing those papers that clearly did not address the topic of halal global standards in processes of SCM on food industry or that were outside of the scope, because of, for example, the date or article type. According to criteria described in this section, a final sample of 53 articles with reference to halal global standards in processes of SCM on food industry was identified.

3.3. Planning and Research Position

The topic that will be discussed is standards in halal SCM on food industry based on literature review. The literature review specifically will be conducted in SLR method. It is a method that adapts a precise, transparent and explicit approach that includes a series of phases to ensure that an appropriate rigor and transparency is brought to the literature review process (Tranfield*et al.*, 2003; Kitchenham and Charters, 2007). According to on Garza-Reyes (2015), there are five phases of SLR. First phase is question formulation which will formulate research question(s) that will guide the research. Second phase which is locating studies and third phase which is study selection and evaluation will locate, select, and evaluate relevant literatures. Fourth phase is analysis and synthesis which will synthesize and analyze selected articles, then final phase which is reporting and using the result will report the findings. In this study, researcher will conduct SLR by using journal form Elsevier

and IEEE within year 2011-2015 that focus only to halal supply chain in food industry.

Then, in order to define research position specifically, researcher will use k-chart. It is a tool for research planning and monitoring which is developed by Khazani et al. (2006). It will show clear organization and designation of issues under study, the methodologies adopted, the detail results expected and the timelines for each of the results, as well as the monitoring features. Therefore, it will explain from the general issue until chosen topic that is halal SCM in food industry, and the method used to analyze and synthesis the paper which is systematic literature review.

The figure 3.1 below shows the k-chart of the research. It begins by showing the general issue of research which is halal SCM, and sub issues are macro processes of supply chain. Next sub is design parameters which are purchasing, logistics, marketing and sales, production, research and development, finance. SLR then is chosen to be the method to do the research. Last, the k-chart will show the steps of SLR.

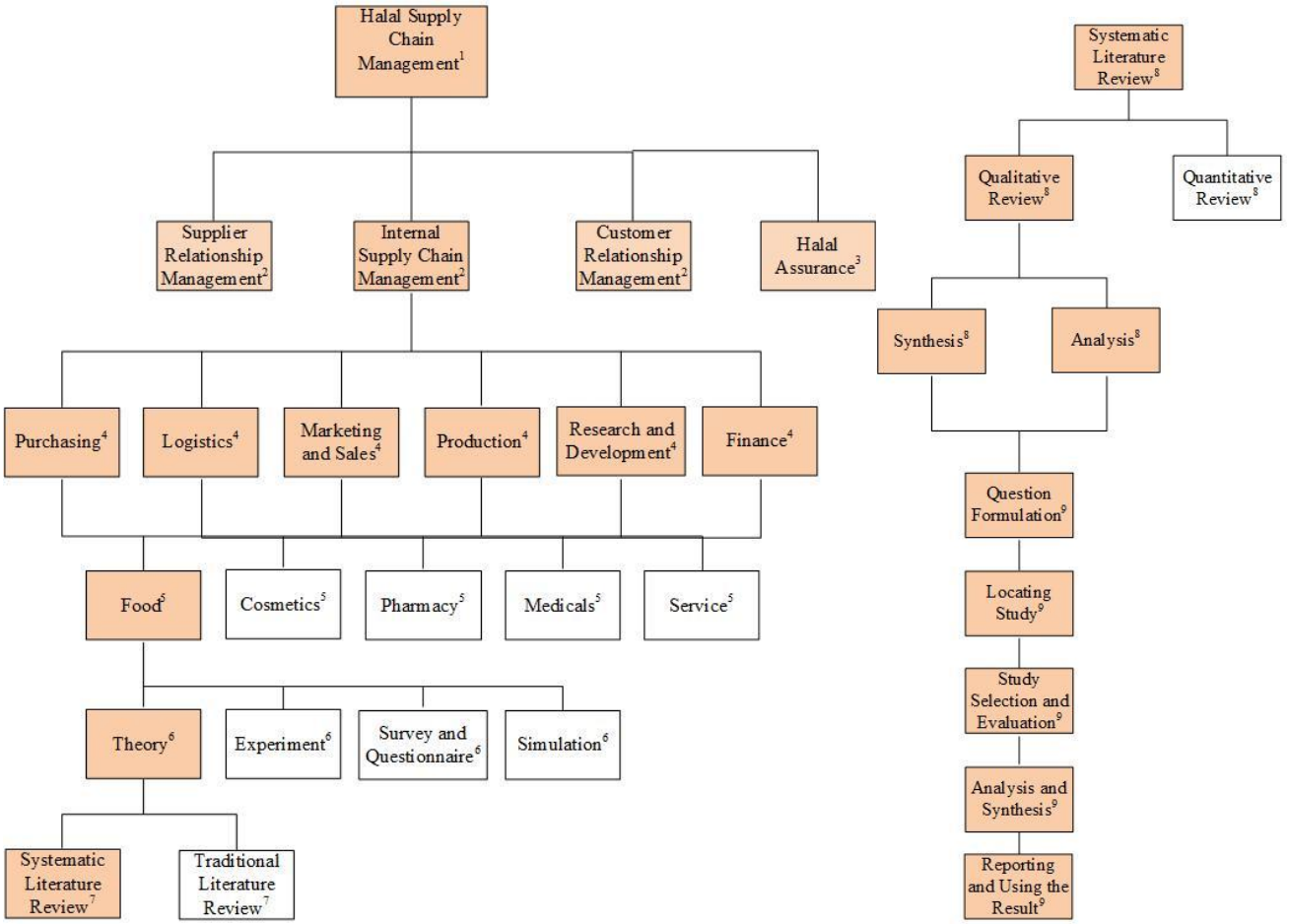


Figure 3.1 K-Chart

Sources Description: 1. Zulfakar et al. (2014); 2. Chopra & Meindl (2013); 3. Van der Spiegel et al. (2012); 4. Cooper et al. (1997); 5. Noordin et al. (2014); 6. Zainudin, M.F. (2006); 7. Siswanto. (2010); 8. Kitchenham, B. (2004); 9. Denyer & Tranfield. (2012), Dr. Garza-Reyes. (2015).

3.4. Conceptual Model

In this section, researcher will explain the steps to conduct SLR for every step, and also the tools will be used which are shown in figure 3.2 below.

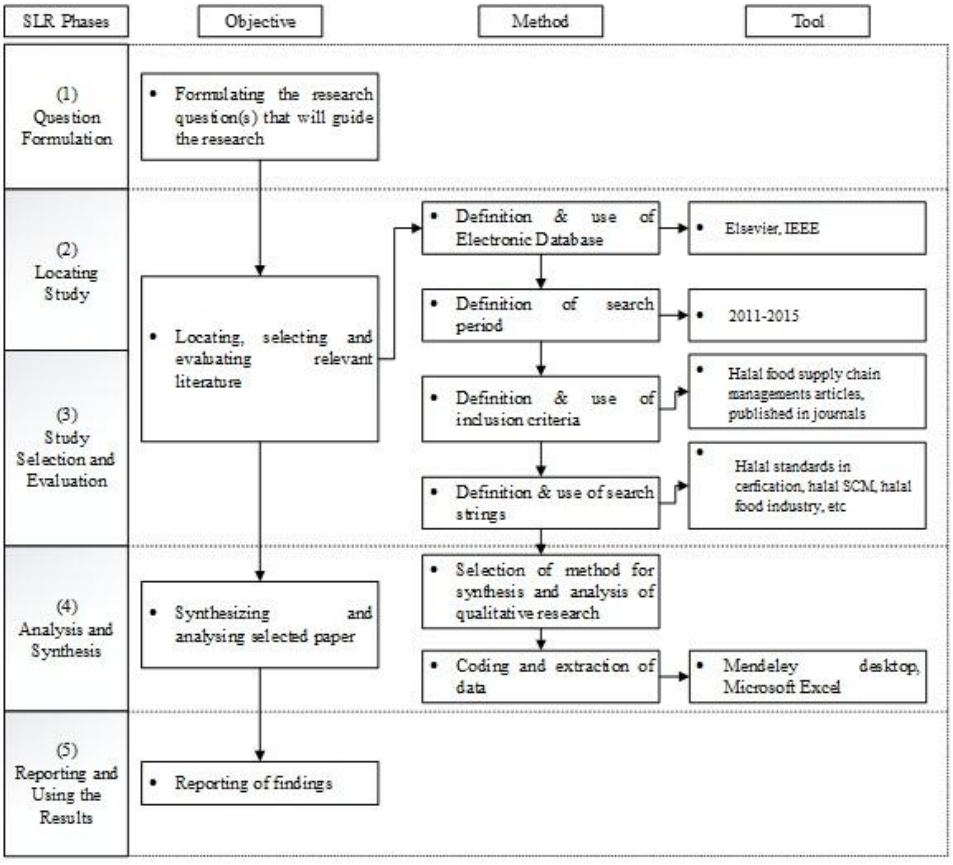


Figure 3.2. Step, method and tools Systematic Literature Review

Figure 3.2 illustrates steps to conduct SLR, objective and the method or steps for locating, selecting and evaluating relevant literature. It shows the electronic database

that is used, the publishing year when the research was conducted, the search strings, and the tools or software used to carry out this research. It also shows five steps to conduct SLR which are explained as follow:

1. Question formulation

It will formulate research question that will guide the research about standards in halal supply chain management on food industry.

2. Locating Study

This phase will choose the electronic databases which are Elsevier and IEEE to find the papers and its search period which starts from 2011 until 2015.

3. Study selection and evaluation

This phase will define inclusion criteria and search strings. Search strings include (standards in halal certification), (halal supply chain management), (halal food industry), (halal process), (halal ingredients), (halal supply chain management in food industry), and (halal certification). They will be only article published in academic journals and proceedings of international conferences with reference to halal global standards in whole process of supply chain in food industry.

4. Analysis and synthesis

This phase will synthesize and analyze the selected papers. The papers will be synthesized into macro processes of halal SCM, publication journal, and publication year. It will also analyze whole process of halal SCM in food industry in order to ensure the halal integrity.

5. Reporting and using the report for further research.

This phase will report the result of analysis and use it for further research.

3.5. Tools Analysis

This research uses some tools in synthesizing and analyzing the relevant papers, which are mentioned as follows:

1. Microsoft Excel®

   This tool is used for the synthesis of data and paper. The formula used is basic formula to sum and make graphics that has been provided by this software.

2. Mendeley Desktop®

   The tool is used to collect and arrange papers, then select and analyze those papers and journals, it also helps to create the references and citations

3. K-Chart

   The K-chart is used to analyze the position of this research. The method is developed by Khazani et al., (2006), and K-Chart can be seen in Figure 3.1.

3.6. Flow of Research

The flow of research will be shown in figure 3.3 below, it shows all steps in systematic literature step on this research.

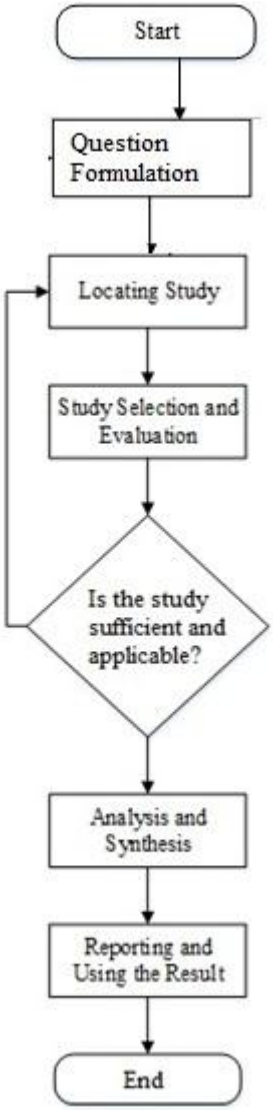


Figure 3.3. Research Flowchart

The research starts from question formulation in order to know the objective of the research. Then it will be preceded to the locating study, study selection and evaluation in order to find related studies to the topic. The relevant studies then will be analyzed and synthesized in order to get a proper result. Finally, the result report will be used as the reference for further research.

CHAPTER IV

DATA SYNTHESIS AND ANALYSIS

This chapter will explain about the data synthesis and data analysis that have been explained in chapter 2. The explanation about data synthesis and analysis will be repeated briefly.

4.1. Data Synthesis

There are 53 papers suitable with the selection criteria. The papers referred to halal global standards in processes of SCM on food industry as well as related topics of standards in halal certification, halal supply chain management, halal food industry, halal process, halal ingredients, halal supply chain management in food industry, and halal certification.

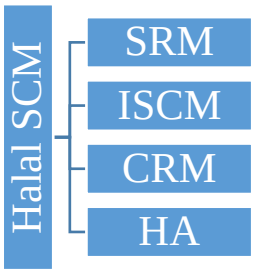


Figure 4.1 Macro Process in Halal SCM

Figure 4.1 shows halal SCM based on its macro process that will be implemented in this research. The flow of halal SCM that got from the 53 papers are SRM, ISCM, CRM, and HA.

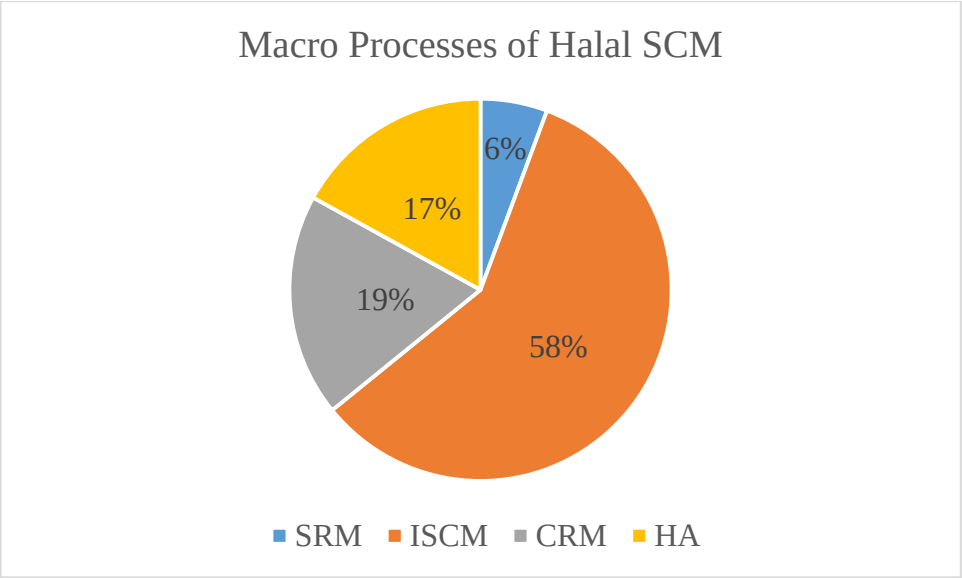


Figure 4.2 Distribution of Macro Processes in Halal SCM

Figure 4.2 shows distribution of papers complied with macro processes of halal supply chain management. In this study, there are 6% or 3 papers about SRM of 53 papers, 60% or 31 papers about ISCM of 53 papers, 19% or 10 papers about CRM of 53 papers, and 15% or 9 papers about HA of 53 papers.

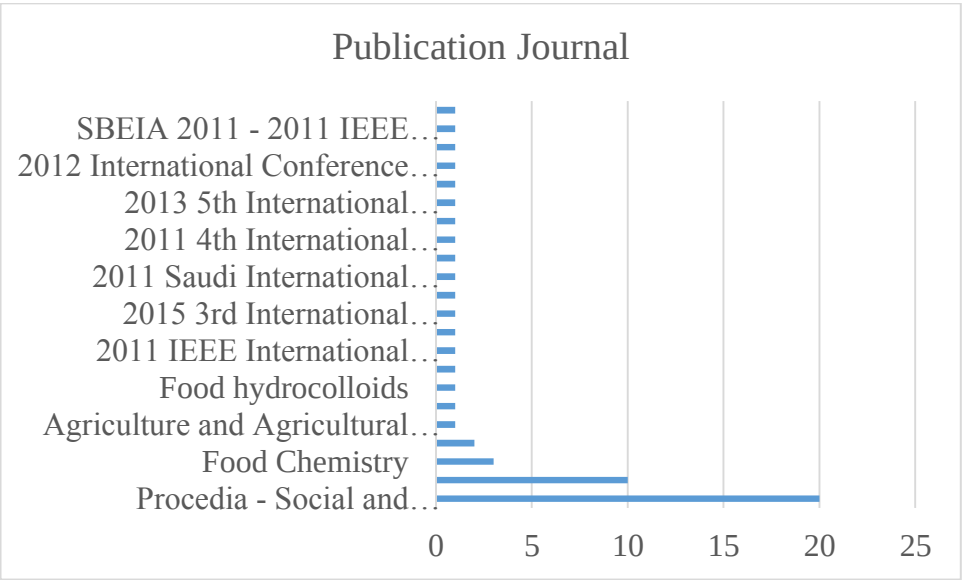


Figure 4.3 Publication Journal Distribution

Figure 4.3 shows the publisher of papers that applied. In terms of number of publication paper, Procedia - Social and Behavioral Sciences is the most commonly found with 20 papers of journal followed by Meat Science with 10 papers, then followed by Food Chemistry and Food Control with 3 and 2 papers respectively. Other 18 journals have 1 paper respectively.

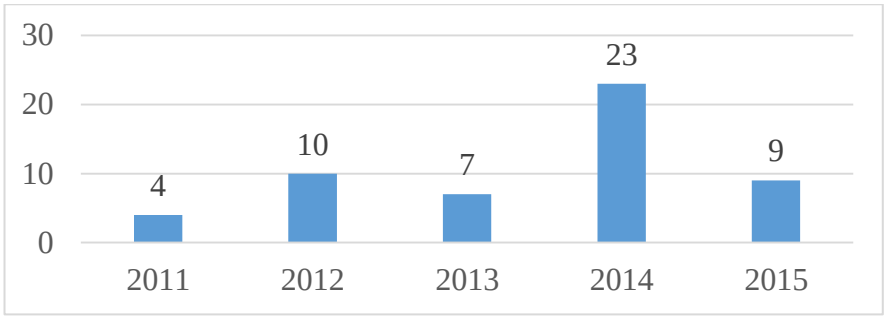


Figure 4.4 Publication Year Distribution

Figure 4.4 shows the publication year, it illustrates the publication year from the papers applied in this research, it employed papers that taken from 2011 until 2015. From the 2011, 4 papers were employed for the research, 10 papers from 2012, 7 papers from 2013, 23 papers from 2014, and 9 papers from 2015.

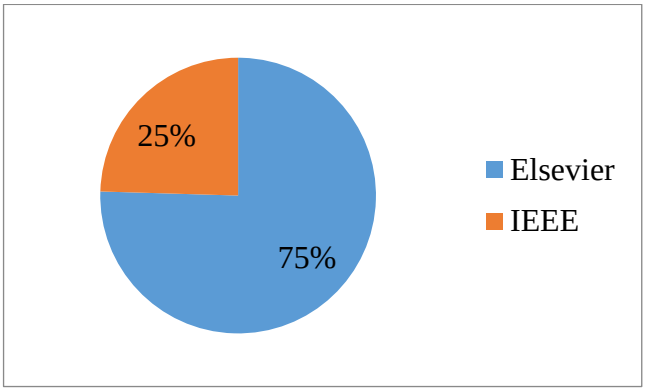


Figure 4.5 Electronic Publication Database

Figure 4.5 shows the electronic databases used for this thesis, Elsevier and IEEE. There are 53 papers used in this thesis, 40 papers (75%) are from Elsevier (sciencedirect.com) and 13 papers (25%) are from IEEE (ieeexplore.ieee.org).

Then, in order to find further research recommendation to explore better solution in global standards on halal food industry supply chain, researcher also classifies findings into their halal parameters, as mentioned in table below.

Table 4.1. Research Findings based on Halal Parameters

No	Halal Parameter	Researchs' Title	Author	Year of Publication
1	Foods have to be halal and wholesome.	Pyramid Shape Power as a New Halal-compliant Food Preservation and Packaging Technique	Abdelsamie et al.	2014
		Analysis of pork adulteration in commercial meatballs targeting porcine-specific mitochondrial cytochrome b gene by TaqMan probe real-time polymerase chain reaction.	Ali et al.	2012
		Multiplex PCR assay for the detection of five meat species forbidden in Islamic foods	Ali et al.	2015
		Detection of porcine DNA in gelatine and gelatine-containing processed food products—Halal/Kosher authentication	Demirhan et al.	2012
		Advances in the industrial production of halal and kosher red meat	Farouk	2013

No	Halal Parameter	Researchs' Title	Author	Year of Publication
		Halal and kosher slaughter methods and meat quality: A review	Farouk et al.	2014
		Effect of neck cut position on time to collapse in halal slaughtered cattle without stunning	Gibson et al.	2015
		New Approach of Samak Clay Usage for Halal Industry Requirement	Kassim et al.	2014
		A comparison of blood loss during the Halal slaughter of lambs following Traditional Religious Slaughter without stunning, Electric Head-Only Stunning and Post-Cut Electric Head-Only Stunning.	Khalid et al.	2015
		Embedding Islamic dietary requirements into HACCP approach	Kohilavani et al.	2013
		Food Hydrocolloids Characteristics and functional properties of gelatin from thornback ray skin obtained by pepsin-aided process in comparison with commercial halal bovine gelatin	Lassoued et al.	2014
		Determination of quarantine period in African catfish (Clarias gariepinus) fed with pig (Sus sp) offal to assure compliance with halal standards	Norhana et al.	2012
		Polymerase chain reaction assay targeting cytochrome b gene for the	Rahman et al.	2014

No	Halal Parameter	Researchs' Title	Author	Year of Publication
		detection of dog meat adulteration in meatball formulation		
		Halal authenticity of gelatin using species-specific PCR	Shabani et al.	2015
		Meat species identification and halal authentication using pcr analysis of raw and cooked traditional turkish foods	Ulca et al.	2013
		Analysis of dielectric constants of slaughtered and non-slaughtered chicken	Adam and Nasukha,	2011
		Halal compliance critical control point (HCCCP) analysis of processed food	Kamaruddin et al.	2012
		Photonics alcohol detector system for Syari'Ah compliance food and beverages	Maharom et al.	2011
		An approach of halal poultry meat comparison based on mean-shift segmentation	Mansor et al.	2013
		A prototype of Halal product recognition system	Kassim et al.	2012
		IIUM-fabricated portable electronic nose for halal authentication in beverages	Mutalib et al.	2013
		Halal authenticity issues in meat and meat products	Nakyinsige et al.	2012
		Enhancing the Halal Food Industry by Utilizing Food Wastes to Produce Value-added Bioproducts	Sulaiman et al.	2014
2	Do the	Awareness and Demand for 100%	Alqudsi	2014

No	Halal Parameter	Researchs' Title	Author	Year of Publication
	business with mutual consent.	Halal Supply Chain Meat Products		
		People's Awareness on Halal Foods and Products: Potential Issues for Policy-makers	Ambali and Bakar	2014
		Willingness to Pay for Halal Logistics: The Lifestyle Choice	Kamaruddin et al.	2012
		Young consumers ' attitude towards halal food outlets and JAKIM ' s halal certification in Malaysia	Khalek	2014
		Muslim's Purchase Intention towards Non-Muslim's Halal Packaged Food Manufacturer	Yunus et al.	2014
		Credence quality coordination and consumers' willingness-to-pay for certified halal labelled meat	Verbeke et al.	2013
		Factors Influencing Readiness towards Halal Logistics among Food-based Logistics Players in Malaysia	Tarmizi et al.	2014
		Adoption of Halal Supply Chain among Malaysian Halal Manufacturers: An Exploratory Study	Ngah et al.	2014
		Understanding Mechanisms to Promote Halal Industry-The Stakeholders' Views	Yunos et al.	2014
		Assessing Halal logistics competence: An Islamic-based and resource-based view	Karia et al.	2015
		Acceptance on Halal Food among	Mathew et	2014

No	Halal Parameter	Researchs' Title	Author	Year of Publication
		Non-Muslim Consumers	al.	
		Components of Customer Emotional Experience with Halal Food Establishments	Tama and Voon	2014
3.	There should be honesty in measure or weight to prevent loss to others.	7P's: A Literature Review of Islamic Marketing and Contemporary Marketing Mix	Hashim and Hamzah	2014
4	There should be no embezzlement (ghlool) in business.	-	-	-
5	There should be justice in treating people on business.	7P's: A Literature Review of Islamic Marketing and Contemporary Marketing Mix	Hashim and Hamzah	2014
6	There should be no gharar (transactions involving uncertainty).	7P's: A Literature Review of Islamic Marketing and Contemporary Marketing Mix	Hashim and Hamzah	2014
7	All parties should fulfill the obligations in business.	Assessment of the food control systems in the Sultanate of Oman	Al-Busaidi and Jukes	2015
		Consumer Protection of Halal Products in Malaysia: A Literature Highlight	Halim et al.	2014
		Halal Food Marketing: A Case	Ismoyowati	2015

No	Halal Parameter	Researchs' Title	Author	Year of Publication
		Study on Consumer Behavior of Chicken-based Processed Food Consumption in Central Part of Java, Indonesia		
		Perceived value and perceived usefulness of halal labeling: The role of religion and culture	Jamal and Sharifuddin	2015
		Halal supply chain in the food industry - A conceptual model	Omar and Jaafar	2011
		Smart handheld budget and halal tracker	Toha et al.	2012
		E-Service System Design in Registrating Certification and Presentating Halal Product Information on the Indonesian Olema Council (Case Study : Indonesian Olema Council (MUI) Bogor Regency)	Fauzi et al.	2014
		Strategic Approach to Halal Certification System: An Ecosystem Perspective	Noordin et al.	2014
		Quality Assurance Development of Halal Food Products for Export to Indonesia	Ratanamanei chat and Rakkarn	2013
		Assessing Consumers' Perception, Knowledge and Religiosity on Malaysia's Halal Food Products	Said et al.	2014
		Halal assurance in food supply chains: Verification of halal certificates using audits and laboratory analysis	Van der Spiegel et al.	2012

No	Halal Parameter	Researchs' Title	Author	Year of Publication
		Halal Certification on Chocolate Products: A Case Study	Shariff and Lah	2014
		Halal Control Activities and Assurance Activities in Halal Food Logistics	Tieman and Ghazali	2014
8	There should be no bribery (rashwa).	A conceptual design of genuine Halal logo detector	Mohd Albakir and Mohd-Mokhtar	2011
		Investigation on perceptual and robustness of LSB digital watermarking scheme on Halal logo authentication	Yahaya et al.	2012
		Application of NFC Technology for Premise Halal Certification	Kadir et al.	2015
9	Riba is prohibited			
	a. Riba an-nasiya	-	-	-
	b. Riba al-Fadl	Tawarruq as a Useful Instrument to Finance Retail the Halal Way	Rahman and Ab Manan	2014
10	Treatment to workers must be reasonable.	7P's: A Literature Review of Islamic Marketing and Contemporary Marketing Mix	Hashim and Hamzah	2014
11	There should be mutual respect and kindness in business dealing.	7P's: A Literature Review of Islamic Marketing and Contemporary Marketing Mix	Hashim and Hamzah	2014

4.2. Data Analysis

From total number of 53 papers that complied with selection criteria, they are divided into some macro processes of halal SCM which are SRM, ISCM, CRM, and HA. Following section will explain each macro process of halal SCM.

4.2.1. Supplier Relationship Management (SRM)

It is essential part of halal SCM in order to ensure halal integrity from farm-to-table in food industry. Unfortunately, there are still a few of papers found that discusses about SRM. In this research, there are only 3 papers of 53 papers that talk about it. They provide some recommendations in order to enhance the halal integrity from supplier until firm or producer of halal food.

They suggest that suppliers and manufacturers need to coordinate and participate in using halal labeling in their products and increasing halal awareness of consumers. The participation can be made by doing specific marketing strategy, such as making promotional messages that encourage such consumers to think about the quality, emotional, monetary and social value of a halal logo. They also said that both parties should have a role to educate consumers on halal principles in order to enhance their understanding on Halal production from the selection of materials until the products are ready to be consumed by doing advertisement, courses or trainings. Then, both parties, as logistics players, need to consider five factors before embark into halal logistics sector. They are vision to change, halal assurance system, environment, employee acceptance and managements support.

Thus, both suppliers and firms need to synergize in order to provide halal-complied food products for customers. They also have a duty to use genuine halal logo which is get from proper halal-compliant process and to increase halal awareness of consumers via marketing or education. The duty also has to be supported by all resources and system. Unfortunately, the findings about SRM on this research have a tendency to discuss more about the principals of SRM based on customer's perspectives and factors that influence readiness toward halal SRM itself. It makes this research too general. There is a chance to other researcher to discuss more about technical standards in halal SRM, such as the halal transportation requirements from supplier to food manufacturers or the requirements in contract or documents of transaction between firm and supplier.

4.2.2. Internal Supply Chain Management (ISCM)

In this macro process, there are some divisions which are purchasing, logistics, marketing and sales, production, research and development, and finance. They will be explained as follows.

a. Purchasing

Chartered Institute of Purchasing and Supply (2013) stated that purchasing' includes all procurement activities including leasing and hiring, and may where appropriate include other activities accompanying the life cycle of goods (or service contracts) and the end-of-life disposal of goods which have been procured (whether or not they remain in our ownership). Unfortunately, researcher does not find paper which specifically discuss about purchasing. Further researchs in purchasing really help to

construct unified standards in halal food SCM. Purchasing will be the first stage for firm in dealing with halal raw materials and ingredients from supplier. The person in charge must really understand halal material requirements on purchased products in order to prevent haram contaminants absorbed to the products. Beside of the material in purchased products, person in charge also has to watch carefully about the halal system in purchasing such as logistics, cleansing services, insurance purchased, certificates, and documents. The halal purchasing also has to consider the requirements for imported raw materials. Those requirements in material and system can be topics in further research.

b. Logistics

In this research, there are 5 papers that discuss about halal logistics. They give some suggested standards in logistics process. Based on papers, logistics play a quite important role because it has to maintain the halal status from stage to stage in halal food supply chain management. It has to prevent haram contaminants, bacteria, and bad substances for health. Therefore, logistics have to be supported by whole resources, such as technology and equipment, knowledge resources, relational sources, and organizational sources. Logistics also has to have an efficient future innovation to ease the work, such as pyramidal package. In this research, the technical standards in halal logistics from the findinds are quite detail in its system because they have explained about halal standards on transportation, inventory, warehousing, material handling, packaging and security. It will be better if the halal logistics players also try to consider halal integrity in material aspect by making the standards in humidity, temperature or other chemical requirements in truck, container, or warehouse for specific food products in order to maintain the products

wholesome, hygiene, and halal because halal products are not only following the Islamic law, but also good for our health. It can be the opportunity for further research.

c. Marketing and Sales

Marketing and sales has to work together to get profit. Marketing department will find the customers and sale department will sell the products or service to the customers. In this research, there are 2 papers discuss about marketing and sales based on perspective of halal SCM. In the marketing and sale process, as halal food producer, firms should have integrity, honesty, quality and respect in order to get customers. They also have to use good strategies which are suitable with customers' demand based on the research. The halal requirements of marketing and sales in this research is quite complete. It has discussed about 7P which are product, promotion, price, people, physical environment, process, and place. Unfortunately, the concept has been explained, but it has not been fully implemented to halal food costumers. Costumers are really crucial for marketing and sales system. It is necessary to do the research of this concept to consumers in order to know the effects to customers and additional demands from customers for developing the marketing and sales system.

d. Production

There are 5 papers that discuss halal production issues. Based on the researches, we can see that slaughtering is very important in production process of halal food supply chain. Unfortunately, there is still pro and contra about pre stunning. Unified and definite decision about requirements in slaughtering in worldwide is needed to make

a proper framework of halal food supply chain management. These findings in this research more focus to slaughtering process for meat and poultry, thus there are big opportunities for other researchers to discuss about halal requirements in halal food production of milk and eggs, plant and vegetables, also fish and seafood. The research can start examining source of origins, animal feed, and additional ingredients such as gelatin, glycerin, emulsifiers, enzymes, alcohol, animal fat and protein, and flavors and flavorings in order to prevent the existence of haram and bad contaminants. Beside the material, the further research also can examine the system, such as machining system, equipment used in production, and also sanitation.

e. Research and Development

Research and Development determine a firm's ability to innovate and compete. It is really important in halal supply chain management which is quite new in worldwide. Continuous innovation and development is needed to make a halal-compliant, safe, healthy, and wholesome supply chain. There are 18 papers in this research which discuss ways to gain halal integrity in supply chain. Based on explanation in the researches, we can say that when food producers have to run the business, they have to consider halal integrity remain intact in whole process of supply chain management. Technology, research, innovation, and developments can ease food producers to do it. There are many researches that help to overcome haram contaminants, abuse of halal logo, improper slaughtering, and waste of production. The current researchs about research and development in halal supply chain management are quite good, but it will be better if the technology does not only focus to detect haram contaminants and improper halal requirements for raw

materials of final products, but also to processed products, equipments, machines, and places.

f. Finance

There are only a few researches in halal finance around the world. In this research, researcher only found a paper that discuss about finance in halal supply chain. It discuss on *tawarruq* arrangement and application, also the arrangement to finance small entrepreneur using the concept. Based on the research, we can see that *tawarruq* is a good choice to facilitate an individual to get cash from the reselling of commodity that he/she purchased from the seller. Unfortunately, there is most important thing that has to be considered in *Tawarruq*. It can be *riba* if there is a possibility of non-existence of physical commodities in *Tawarruq* structure as well as an existence of fraudulent trading contracts which may lead to fictitious transaction. In order to make a clear and proper framework of global standards in halal food SCM, we need something definite without pro and contra. There is still lack of research in halal finance, it is big opportunity for other researcher to discuss about finance system without *riba* (excessive interest), excessive ambiguity (*gharar*) or frauds that can give disadvantages to customers or even firm itself.

4.2.3. Customer Relationship Management (CRM)

CRM is basic foundation in halal SCM because it is the reason why suppliers, manufacturers, distributors, retailers do their job which is to fulfill customer's demands about halal products, especially halal food. There are 10 papers in this research that discuss what suppliers until retailers have to do in order to comply what

consumer needs in halal food SCM. Generally, they agree that consumers, even non-Muslim consumers, nowadays people are highly aware to halal issues and have a positive attitude towards halal food products. Therefore, they give some information about what consumers expect in order to build a proper halal food supply chain management.

From those researches, it is known that what consumers need in halal food supply chain management are halal label based on proper halal certification, health, food safety, quality, halal requirement's compliance, education about halal issues, and government's firm policy about abuse of halal logo or halal products in order to make them buy the halal food products. Halal standards in CRM on this research are quite good because it is based on customers' perspective, specifically for their willingness to pay, religion, or influencing factors to buy. It makes the system really suit the customers.

4.2.4. Halal Assurance (HA)

There are 9 papers that discuss about Halal Assurance (HA) in this study. From the papers, we can know that there are some important things that firm and halal certification body should do to increase the halal integrity in whole process of halal food supply chain management. Firm has to ensure that their products comply with all relevant halal, safety, healthy and hygienic standards. Then halal certification bodies should have unified systems and standards with better control over the halal food systems and with harmonization of food laws and policies. They also can use technology to ensure the halal integrity of firm, thus it will make certification system more proper and precise.

Findings about HA on this research are quite conceptual, they lack in implementation side. It is really needed to apply the concept to firm and halal certification bodies in order to make better certification system. Implementation can ease to develop the system. This research also lacks in export and import system for certification. It can be opportunity to develop unified halal standards in export and import halal assurance based on its production, labelling, documentation, handling/storage, and also expiration date.

CHAPTER V

DISCUSSION AND RESULT

This chapter will discuss the research in a whole process of halal SCM and discuss the data analysis from SLR phases. Also, there will be a new framework of halal SCM in food industry.

5.1. Systematic Literature Review

Nowadays the demand on halal food industry is growing continuously. This growth is followed by anxiety about the food itself. Consumers question on the halal status of the food products because many of the halal food producers were from non-Muslim country. It becomes more risky for all parties in halal food industry when there is no unified or standardized regulation on ensuring and maintaining the halal status in all processes throughout the supply chain. Moreover, there are only a few researches about standards in halal supply chain in food industry. A proper framework of halal supply chain management in food industry is needed to ensure halal integrity, customer satisfaction and company's profit exist from farm-to-table. Fortunately, there are some researches about processes on food industry supply chain around the world, this study will try constructing framework of global standards through whole processes on food industry SCM. Finding the good framework of halal global standards can be helped by SLR. It can ensure a rigorous review of research results. Existing contributions on global standards in halal SCM will be

systematically collected and critically analyzed by SLR in order or make a good framework of halal SCM in food industry.

SLR is used to analyze the processes of halal SCM in food industry, the steps to conduct it have been explained in chapter three which are question formulation, locating studies, study selection and evaluation, analysis and synthesis, and reporting and using the report for further research. The question formulation, locating studies and study selection and evaluating have been explained in chapter one and two, and for the analysis and synthesis have been explained in chapter two and four. The final phase which is reporting and using the result will be explained in this chapter. Question formulation related to halal SCM is the main topic to conduct SLR about global standards in whole process of halal food industry supply chain.

Elsevier (sciencedirect.com) and IEEE (ieeexplore.ieee.org) are selected to conduct locating studies of researches in 5 years which are derived from 2011 to 2015. Then search strings included are (standards in halal certification), (halal supply chain management), (halal food industry), (halal process), (halal ingredients), (halal supply chain management in food industry), and (halal certification). As the result, 53 papers are chosen to do systematic literature review. 40 papers (75%) are from Elsevier (sciencedirect.com) and 13 papers (25%) are from IEEE (ieeexplore.ieee.org).

Those papers are divided then analyzed into macro processes of halal supply chain management which are SRM, ISCM, CRM, and HA. In this study, there are 6% or 3 papers about SRM of 53 papers, 60% or 31 papers about ISCM of 53 papers, 19% or 10 papers about CRM of 53 papers, and 15% or 9 papers about HA of 53

papers. ISCM is the most available macro process to conduct study on halal supply chain management.

Papers are taken from 2011 until 2015. From the 2011, 4 papers were employed for the research, 10 papers from 2012, 7 papers from 2013, 23 papers from 2014, and 9 papers from 2015. The most employed publisher is Procedia - Social and Behavioral Sciences with 20 papers of journal followed by Meat Science with 10 papers, also followed by Food Chemistry and Food Control with 3 and 2 papers respectively. Other 18 journals have 1 paper respectively.

5.2. Macro Processes of Halal Supply Chain Management in Food Industry

From systematic literature review, the papers of halal SCM in food industry is synthesized and analyzed. The papers discuss about macro processes of that topic which are SRM, ISCM, CRM, and HA Chapter two and four have mentioned and explained about the macro processes.

It is proven that every macro processes have to be synergized in order to maintain halal integrity in food industry because they are continuous processes. Every processes have to ensure that the foods are halal, safe, clean, hygiene, and wholesome. In SRM, both suppliers and firms have a duty to use genuine halal logo which is get from proper halal-compliant process and to increase halal awareness of consumers via marketing or education. The duty also has to be supported by all resources and system.

In ISCM, there are some divisions which are purchasing, logistics, marketing and sales, production, research and development, and finance. Generally, all divisions have to maintain halal integrity, quality, honesty, food safety, and health. Unfortunately, although this macro process has most papers in this research, there is still scarcity of research in some divisions such as purchasing and finance. Also, there is still pro-contra in some divisions such as production with its pre-stunning and finance with its *tawarruq* because there is no unified and definite standard.

In CRM, what firm has to fulfill related to consumers need in halal food SCM is halal label based on proper halal certification, health, food safety, quality, halal requirement's compliance, education about halal issues, and government's firm policy about abuse of halal logo or halal products in order to make consumers buy halal food products.

In HA, there are some important things that firm and halal certification body should do to increase the halal integrity in whole process of halal food SCM. Firm has to ensure that their products comply with all halal, safe, healthy and hygienic standards. Then halal certification bodies should have unified systems and the standards with better control over the system with harmonization of food laws and policies. They also can use technology to ensure the halal integrity of firm, thus it will make certification system more proper and precise.

Thus, it is really needed to combine halal requirements, health, and quality in whole macro processes of halal SCM in order to produce halal and wholesome foods.

5.3. Framework of Halal Supply Chain Management in Food Industry

This framework is the result of SLR in order to make unified global standards of halal SCM in food industry based on Holy Quran and Sunnah. This framework will be divided based on macro processes which are previously mentioned. Hopefully, it will maintain halal integrity in whole process of halal SCM, especially food industry. Table 5.1 will show the framework.

Table 5.1. Proposed Framework of Halal SCM in Food Industry

No	Macro Process	Halal Requirements
1	Supplier Relationship Management (SRM)	➢ Suppliers and Firm have to coordinate and participate in using halal labeling in their products and increasing halal awareness of consumers via education or marketing. ➢ They need same vision to change, halal assurance system, environment, employee acceptance and managements support that are needed to build halal integrity. ➢ Suppliers and Firm have to have trust and commitment in providing halal food products. ➢ Logistics process from supplier to firm has to be ensured halal. ➢ Documents and contracts in transaction must be clear and proper.
2	Internal Supply Chain Management (SCM)	
	a. Purchasing	➢ The manufacturers have to ensure that starting materials purchased are halal-compliant according to Islamic Law. ➢ The manufacturers have to ensure certification or documentation of purchased halal materials is available for verification.

No	Macro Process	Halal Requirements
		➢ Starting materials should only be purchased from approved suppliers with some agreements between supplier and firm. ➢ Person in charge must really understand the halal requirements for material and system in purchasing, also dedicate himself to Allah.
	b. Logistics	➢ Firms have to check cargo label, freight documents, and logistics and customs systems in order to ensure halal status of food products. ➢ Firms have to make control measures during transportation to prevent contamination from haram contaminants, dust, fumes, or fluctuation of temperature and humidity. ➢ Segregate halal and non halal products. ➢ Ensure that cargo, equipment, terminal, package, truck, and container are halal, clean and safe.
	c. Marketing and Sales	➢ Firms have to sell products with good quality and do not mix it with low quality. ➢ Do not do overpromising promotions. ➢ The pricing does not become the burden for consumers. ➢ Customers or buyers should be treated well. ➢ Firms have to provide the guarantee for quality, honesty and integrity to customers. ➢ Firms and customers should have mutual agreement in the selling-buying process. ➢ There should be no hidden and fake things in dealing the transaction
	d. Production	➢ The basic material, additional material, process, equipment, and person-in-charge

No	Macro Process	Halal Requirements
		should follow definite Islamic Law. ➢ The production should be in an area where there is no harmful and haram substances. ➢ Equipment and facilities should be located, designed and constructed to ensure minimum contamination, easy maintenance and cleaning, and regularly disinfected and protected against pest and haram contaminants. ➢ There should be proper control and audit program in halal production. ➢ There should be proper cleaning and maintenance program. ➢ There should be good hygiene assurance and halal education for workers in halal production.
	e. Research and Development	➢ There should be continuous development in technology in system in order to increase and maintain halal integrity.
	f. Finance	➢ It should prevent riba (excessive interest), excessive ambiguity (gharar) or frauds. ➢ There should be clear statements and calculations about cash outflow and cash inflows.
3	Customer Relationship Management (CRM)	➢ Firms have to provide halal label based on proper halal certification, health, food safety, quality, halal requirement's compliance, good services, education about halal issues, and government's firm policy about abuse of halal logo or halal products
4	Halal Assurance (HA)	➢ Firms have to follow the regulations and steps from halal certification body.

No	Macro Process	Halal Requirements
		➢ Halal certification bodies should have laws and policies about halal certification and logo. ➢ Halal certification bodies should control and monitor regularly the certified firms. ➢ Halal certification bodies can use technologies and laboratory tests to ensure the halal integrity of firm. ➢ Firm has to follow the requirements for imported and exported food products of every country's halal certification bodies.

The framework will be explained below.

5.3.1. Supplier Relationship Management (SRM)

SRM is all processes that focus on the interface between the firm and its suppliers (Chopra and Meindl, 2013). This macro process should enhance the halal integrity from supplier until firm or producer of halal food. There are 3 requirements in halal SRM. First, suppliers and firm have to coordinate and participate in using halal labeling in their products and increasing halal awareness of consumers via education or marketing (Yunos et al., 2014; Jamal and Sharifuddin, 2015). Suppliers and manufacturers can do some marketing strategies, such as making promotional messages that encourage such consumers to think about the quality, emotional, monetary and social value of a halal logo. Both parties should have a role to educate consumers on halal principles in order to enhance their understanding on Halal production from the selection of materials until the products are ready to be consumed by doing advertisement, courses or trainings.

Second, they need same vision to change, halal assurance system, environment, employee acceptance and managements support that are needed to build halal integrity (Tarmizi et al., 2014). These requirements can really help in order to make genuine halal food products because halal requirements are supposed to be same based on Islamic law.

Third, suppliers and Firm have to have trust and commitment in providing halal food products. Zulfakar et al. (2014) said that installing trust among all parties involved in the management of Halal food products movement is essential element towards enhancing the integrity status of the Halal food supply chain. Also, commitments such as willingness to provide dedicated assets to cater the Halal clients' requests, willingness to apply Halal certification for raw materials/ingredients required by the buyers, and willingness to send the workers to Halal food handling related training are among the measures that can help enhance the integrity of the Halal food supply chain.

Researcher also add two halal requirements for SRM. First, logistics process, such as transportation, inventory, warehousing, material handling, or packaging from supplier to firm has to be ensured halal. It can be used to prevent haram contaminants absorbed in raw material that will be used to firm. Second, documents and contracts in transaction must be clear and proper in order to prevent further disadvantages for both parties. In Islam, it is prohibited to give disadvantages for other people, especially in transaction.

5.3.2. Internal Supply Chain Management (ISCM)

ISCM is all processes that are internal to the firm (Chopra and Meindl, 2013). In this macro process, there are some divisions based on Cooper et al. (1997) about manufacturers in SCM. They are purchasing, logistics, marketing and sales, production, research and development, and finance.

1. Purchasing

Chartered Institute of Purchasing and Supply (2013) stated that purchasing' includes all procurement activities including leasing and hiring, and may where appropriate include other activities accompanying the life cycle of goods (or service contracts) and the end-of-life disposal of goods which have been procured (whether or not they remain in our ownership). There are some requirements that have to be fulfilled in purchasing. First, the manufacturer has to ensure that starting materials purchased are halal-compliant according to Islamic Law. It should be done in order to protect halal integrity of upcoming food products. Second, the manufacturer has to ensure certification or documentation of purchased halal materials are available for verification. It can assure the halal integrity in front of religion policies and administrative law. Third, starting materials have to be purchased from approved suppliers with some agreements between supplier and firm. It is recommended that suppliers and manufacturers discuss all requirements and the specifications for the materials before manufacturers buy the materials from suppliers in order to maintain halal consistency in the future (Tieman, 2014; The Religious Council Negara Brunei Darussalam, 2010; Majelis Ulama Indonesia, 2008). Last, researcher recommends that person in charge must really understand the halal requirements for material and

system on purchasing because purchasing is first crucial stage in ISCM. The good understanding can prevent bad effects later. Person in charge also has to dedicate himself to Allah for maintaining the purchasing system following the Islamic Law.

2. Logistics

Logistics can be defined as the management of the flow of goods, information and other resources, energy and people between the point of origin and the point of consumption in order to meet the requirements of consumers. Logistics involves the integration of information, transportation, inventory, warehousing, material handling, packaging and security (Stukalina, 2014). There are some requirements in logistics. First, firms have to check cargo label, freight documents, and logistics and customs systems in order to ensure halal status of food products. Second, firms have to make control measures during transportation to prevent contamination from haram contaminants, dust, fumes, or fluctuation of temperature and humidity. Third, firms have to segregate halal and non halal products. Fourth, firms have to ensure that cargo, terminal, package, truck, and container are halal, clean and safe (Abdelsamie et al., 2014; Tieman and Gazali, 2014; Kamaruddin et al., 2012; Ngah et al., 2014; Karia et al.,2015). Those rigorous requirements have to be done in order to assure halal integrity in whole process of SCM on food industry.

3. Marketing and Sales

According to Kotler (1997), marketing is a social and managerial process by which individuals and groups obtain what they need and want through creating, offering and exchanging products of value with others. In the other hand, sale is about selling

the product or service to customers. They have to work together to get profit. The halal requirements that are needed in marketing and sales, explained as follows. First, firms have to sell products with good quality and do not mix it with low quality. It is part of honesty in halal trade. Second, firms should not do overpromising promotions. Firms only have to do normal promotions, such as accessible and easy-to-find outlets, electronic media promotion, membership program, etc. Third, the pricing does not become the burden for consumers. Firm has to ensure that the price is suitable with market target. Fourth, customers or buyers should be treated well. Fifth, firms have to provide the guarantee for quality, honesty and integrity to customers. Sixth, firms and customers should have mutual agreement in the selling-buying process. Last, there should be no hidden and fake things in dealing the transaction (Hashim and Hamzah, 2014; Ismoyowati, 2015). Thus, in the marketing and sale process, as halal food producer, firms should have integrity, honesty, quality and respect in order to get customers. Besides, they also have to use good strategies which are suitable with customers' demand based on the research.

4. Production

Fioretti (2008) stated that productions functions map the inputs of a firm or a productive system onto its outputs. Production is quite important in halal food supply chain because it is where halal status of products mostly created. There are some requirements for halal production in food industry. First, researcher recommends that basic material, additional material, process, equipment, and person-in-charge should follow definite Islamic Law. It is really important, especially when it relates to slaughtering that has specific law in Islam. Second, the production should be in an area where there is no harmful and haram substances. It can prevent the

contamination of those forbidden substances. Third, equipment and facilities should be located, designed and constructed to ensure minimum contamination, easy maintenance and cleaning, and regularly disinfected and protected against pest and haram contaminants. Fourth, there should be proper control and audit program in halal production. There should be better and continous improvement in halal production in order to maintain halal status. Fifth, there should be proper cleaning and maintenance program. Last, there should be good hygiene assurance and halal education for workers in halal production (Farouk, 2013; Farouk et al., 2014; Gibson et al., 2015; Khalid et al., 2015 and Omar and Jaafar, 2011).

5. Research and Development

Research and development determine a firm's ability to innovate and compete. It is really important in halal SCM which is quite new in worldwide. Continuous innovation and development is needed to make a halal-compliant, safe, healthy, and wholesome supply chain. Thus, the requirement to halal research and development is the existence of continuous development in technology in system in order to increase and maintain halal integrity. There are many researches that can help to overcome haram contaminants, abuse of halal logo, improper production, and waste of production. The firm can take a look on those researchs in order to ease maintaining halal integrity (Ali et al., 2012; Ali et al., 2015; Demirhan et al., 2012; Kassim et al., 2014; Lassoued et al., 2014; Nakyinsige et al., 2012; Norhana et al., 2012; Rahman et al., 2014; Shabani et al., 2015; Sulaiman et al., 2014; Ulca et al., 2013; Adam and Nasukha, 2013; Kassim et al., 2012; Maharom et al., 2011; Mansor et al., 2013; Mutalib et al., 2013; Toha et al., 2012 and Yahaya et al., 2012).

6. Finance

Welch (2009) states that finance concerns about a set of flows of money (cash flows) which require an upfront cash outflow (an investment or expense or cost) and is followed by a series of later cash inflows (payoffs or revenues or returns). In order to make a good halal finance system, Rahman and Ab Manan (2014) suggested that there should be no riba (excessive interest), ambiguity or frauds. Then, researcher also add a requirement which is that there should be clear statements and calculations about cash outflow and cash inflows in order to prevent corruption, embezzlement, etc.

5.3.3. Customer Relationship Management (CRM)

CRM is all processes that focus on the interface between the firm and its customers (Chopra and Meindl, 2013). Halal CRM requires firm to provide halal label based on proper halal certification, health, food safety, quality, halal requirement's compliance, good services, education about halal issues, and government's firm policy about abuse of halal logo or halal products in order to make them buy the halal food products (Alqudsi, 2014; Ambali and Bakar, 2014; Halim et al., 2014; Kamaruddin et al., 2012; Khalek, 2014; Mathew et al., 2014; Said et al., 2014; Tama and Voon, 2014; Verbeke et al., 2013 and Yunus et al., 2014)

5.3.4. Halal Assurance (HA)

HA is all processes that focus on ensuring halal status between the firm and halal certification body. It will explain what company has to consider in being certified

and trusted halal food producer. It is what researcher develops based on the main goal of halal supply chain which is not only to ensure that costumers satisfied, but also to ensure that the Halal status of the food product remains intact throughout the whole process of the supply chain (Bahrudin et al., 2011).

There are some requirements in HA. First, firms have to follow the regulations and steps from halal certification body. Generally, according to Riaz and Chaudry (2004) there are some steps involved in halal certification. It begins by filling out an application to the organization on paper or on the Internet. Then, the authorities' body will review of the information by the organization, especially the type of product and its components. Next the bodies will inspect and approve the facility. It will be followed by review of the production equipment, inspection of ingredients, cleaning procedures, sanitation, and cross-contamination. For slaughterhouse, inspection involves review of holding areas, method of stunning, actual slaying, pre- and post-slaughter handling, etc. Next, the bodies will determine the cost and fees involved and sign the contract. Last, firm has to pay fees and expenses and the halal authorities' body will issue the halal certificate.

Second requirement is that halal certification bodies should have firms' laws and policies about halal certification and logo. Third requirement is that halal certification bodies should control and monitor regularly the certified firms. Last, Halal certification bodies can use technologies and laboratory tests to ensure the halal integrity of firm, thus it will make certification system more proper and precise (Al-Busaidi and Jukes, 2015; Noordin et al., 2014; Ratanamaneichat and Rakkarn, 2013; Shariff and Lah, 2014; Van der spiegel et al., 2012; Mohd Albakir and Mohd-Mokhtar, 2011; Kohilavani et al., 2013; Fauzi et al., 2014 and Kadir et al., 2015).

Researcher also recommend that firm has to follow the requirements for imported and exported food products of every country's halal certification bodies because nowadays there are differences about halal imported and exported food products regulation in each country.

5.4. Lack of Research

The lack of research will be divided into two perspectives which are supply chain management (SCM) perspective and halal parameter perspective, as explained below.

5.4.1. Lack of Research based on SCM Perspective

In order to make a better unified standards in halal supply chain management, especially in halal food industry, this research is still too general because the standards in halal SCM are divided into macro processes. It can be more detail and technical if the standards divided into micro processes of halal supply chain management and relate it with law, food policy, and halal requirements. For example in prodution, there will be slaughtering process for poultry and the research can divide it into defeathering, chilling, eviscerating, processing, and storing.

Then, based on the findings in this research, there are still lacks of some macro processes that can be opportunities for further research. First, in SRM, the findings about SRM on this research have a tendency to discuss more about the principals of SRM based on customer's perspectives and factors that influence readiness toward halal SRM itself. It makes this research too general. There is a

chance to other researcher to discuss more about technical standards in halal SRM, such as the halal transportation requirements from supplier to food manufacturers or the requirements in contract or documents of transaction between firm and supplier.

In ISCM, there are some shortages in some divisions. For purchasing, there is no paper found in this research. Purchasing is really crucial in ISCM because it will be the first stage for firm in dealing with halal raw materials and ingredients from supplier. The person in charge must really understand halal material requirements on purchased products in order to prevent haram contaminants absorbed to the products. Beside of the material in purchased products, person in charge also has to watch carefully about the halal system in purchasing such as logistics, cleansing services, insurance purchased, certificates, and documents. The halal purchasing also has to consider the requirements for imported raw materials. Those requirements in material and system can be topics in further research.

Then, in this research, the technical standards in halal logistics from the findinds are quite detail in its system because they have explained about halal standards on transportation, inventory, warehousing, material handling, packaging and security. It will be better if the halal logistics players also try to consider halal integrity in material aspect by making the standards in humidity, temperature or other chemical requirements in truck, container, or warehouse for specific food products in order to maintain the products wholesome, hygiene, and halal because halal products are not only following the Islamic law, but also good for our health.

For marketing and sales, the halal requirements of them is quite complete. It has discussed about 7P which are product, promotion, price, people, physical

environment, process, and place. Unfortunately, the concept has been explained, but it has not been fully implemented to halal food costumers. Costumers are really crucial for marketing and sales system. It is necessary to do the research of this concept to consumers in order to know the effects to customers and additional demands from customers for developing the marketing and sales system.

For production, findings in this research more focus to slaughtering process for meat and poultry, thus there are big opportunities for other researchers to discuss about halal requirements in halal food production of milk and eggs, plant and vegetables, also fish and seafood. The research can start examining source of origins, animal feed, and additional ingredients such as gelatin, glycerin, emulsifiers, enzymes, alcohol, animal fat and protein, and flavors and flavorings in order to prevent the existence of haram and bad contaminants. Beside the material, the further research also can examine the system, such as machining system, equipment used in production, and also sanitation. Next, in research and development, The current researchs are quite good, but it will be better if the technology does not only focus to detect haram contaminants and improper halal requirements for raw materials of final products, but also to processed products, equipments, machines, and places.

Last division is in finance, there is still lack of research in halal finance, it is big opportunity for other researcher to discuss about finance system without *riba* (excessive interest), excessive ambiguity (*gharar*) or frauds that can give disadvantages to customers or even firm itself.

Next macro process that can be improved is halal assurance. Findings about HA on this research are quite conceptual, they lack in implementation side. It is

really needed to apply the concept to firm and halal certification bodies in order to make better certification system. Implementation can ease to develop the system. This research also lacks in export and import system for certification. It can be opportunity to develop unified halal standards in export and import halal assurance based on its production, labelling, documentation, handling/storage, and also expiration date.

5.4.2. Lack of Research based on Halal Parameter Perspective

This research only discusses a few of Islamic ethics which are relevant for the halal SCM in food industry. A detailed and deep study of Quran and Hadiths are required to cover all the areas of this topic. Lack of current studies which explain about halal parameters in halal SCM also becomes one of shortages in this research. Based on some parameters attached in this research, there are some absences of research in some types of parameters, as mentioned in table 5.2 below.

Table 5.2. Further Research Recommendations based on Halal Parameters

No	Halal Parameter	Current Research	Further Research
1	Foods have to be halal and wholesome.	Mostly focus on customer relationship to firms.	Halal and wholesome standards referred to differents relationships.
2	Do the business with mutual consent.	Mostly focus on customer relationship to firms.	Mutual consents between differents relationships.
3	There should be honesty in measure or weight to prevent loss to others.	Only found in halal marketing mix.	Study case about the effects, implementation standards or current conditions of honesty.

No	Halal Parameter	Current Research	Further Research
4	There should be no embezzlement (ghlool) in business.	No research found.	Examine the current condition of halal SCM parties in order to find the signs of embezzlement and ways to delete it from the management.
5	There should be justice in treating people on business.	Mostly focus on customers.	Justice applied on other stakeholders, such as retailer, distributors, investors, etc.
6	There should be no gharar (transactions involving uncertainty).	Only found in halal marketing mix.	Study case about the effects, implementation standards or current conditions of *gharar*.
7	All parties should fulfill the obligations in business.	Mostly focus on customer relationship to firms.	Obligations or responsibilities between differents relationships.
8	There should be no bribery (*rashwa*).	Only found in halal marketing mix.	Study case about the effects, implementation standards or current conditions of *rashwa*
9	*Riba* is prohibited		
	a. Riba an-nasiya	No research found.	Business transactions by using credit payment.
	b. Riba al-Fadl	Concept of *Tawarruq*.	Study case or implementation of halal finance retail.
10	Treatment to workers must be reasonable.	Mostly focus on customer.	Reasonable treatment applied on other stakeholders, such as retailer, distributors, etc.

No	Halal Parameter	Current Research	Further Research
11	There should be mutual respect and kindness in business dealing.	Mostly focus on customers.	Mutual respect and kindness applied on other stakeholders, such as retailer, distributors, investors, etc.

Generally, the current findings mostly discuss about these parameters which are "foods have to be halal and wholesome", "do the business with mutual consent" and "all parties should fulfill the obligations in business". Unfortunately, they are only explained based on customer relationship to firms, then it should be needed that there are some further researchs about halal and wholesome standards, mutual consents, and obligations referred to differents relationships, such as reationships between firms and supplier, firms and workers, firm and retailers, or firms and distributors. These relationship also can apply to "there should be justice in treating people on business", "treatment to workers must be reasonable" and "there should be mutual respect and kindness in business dealing" because actually before serving the customers, firm has to consider its internal management. A good human resource reflects a good firm. Justice, reasonable treatment, respect, and kindness also have to be applied on other stakeholders, such as retailer, distributors, investors, etc in order to survive on business. The effects of this acts can be another opportunities to further researchers in order to prove the Greatness of Allah SWT.

Another parameters also need some inspections in their implementation on halal SCM, especially food industry. Further researcher can develop a study case about the effects, implementation standards or current conditions of honesty, *gharar*, and *rashwa* in stakeholders of halal food industry because they are only found in a

paper which discuss halal marketing mix. The absences of current findings in some parameters also make some new ideas to do a research. They are about embezzlement (*ghlool*) and riba. Further researchs can examine current condition of halal SCM parties in order to find the signs of embezzlement and ways to delete it from the management. Then, further research about riba can be divided into *riba an nasiya* and *riba al fadl*. Further research of *riba an nasiya* which has not been found any paper can focus on business transactions by using credit payment. Meanwhile *riba al fadl* which has been found in a paper about concept of *tawarruq* can make a further research about study case or implementation of halal finance retail. The implementations of those recommendations above hopefully can be useful for exploring better solution global standards on halal food industry supply chain.

CHAPTER VI

CONCLUSION AND FURTHER RESEARCH

This chapter will describe the overall conclusions from the results of study and the suggestion for the future research.

6.1. Conclusion

Based on the result of the discussion and objectives of the research, there are several results which can be concluded. First, in order to conduct systematic literature review, there are five steps to conduct systematic literature review, which are; question formulation, locating study, study selection and evaluation, data analysis and synthesis and reporting the result and using the result. The systematic literature review collect and analyzes the halal supply chain management in food industry, then it explains the macro processes of halal supply chain management which are Supplier Relationship Management (SRM), Internal Supply Chain Management (SCM), Customer Relationship Management (CRM) and Halal Assurance (HA). Based on the distribution of papers, SCM is most available macro process in halal food supply chain management because there are many researches conducted in that macro process. Therefore, researcher explains it more detail based on some divisions which are purchasing, logistics, marketing and sales, production, research and development, and finance. Based on the findings, it is found that every macro processes have to be synergized in order to maintain halal integrity in food industry because they are continuous processes. Every process has to ensure that the foods are safe, clean,

hygiene, wholesome, and halal-compliant. Thus, researcher makes a framework for maintaining halal status, safety, cleanliness, health of food product in halal food supply chain management based on that macro processes. Hopefully, the framework will help constructing unified halal global standards in halal supply chain management, especially halal foods. Next, further research recommendation to explore better solution in global standards on halal food industry supply chain will be explained in section 6.2.

6.2. Further Research

In order to make a better unified standard in halal supply chain management, especially in halal food industry, researcher gives some recommendations which are explained as follows.

1. Researcher recommends other researchers to conduct a more detail framework of halal supply chain management in It can be done by dividing the framework into micro processes of halal supply chain management and relate it with law, food policy, and halal requirements. For example in prodution, there will be slaughtering process for poultry and the research can divide it into defeathering, chilling, eviscerating, processing, and storing.
2. Further research can discuss more about technical standards in halal SRM, such as the halal transportation requirements from supplier to food manufacturers or the requirements in contract or documents of transaction between firm and supplier.

3. In halal purchasing, there should be further research about education for person in charge. It can be about material requirements on purchased products in order to prevent haram contaminants absorbed to the products. It can also be about the halal system in purchasing such as logistics, cleansing services, insurance purchased, certificates, and documents. The halal purchasing also has to consider the requirements for imported raw materials.
4. In halal logistics, further research can try to consider halal integrity in material aspect by making the standards in humidity, temperature or other chemical requirements in truck, container, or warehouse for specific food products in order to maintain the products wholesome, hygiene, and halal because halal products are not only following the Islamic law, but also good for our health.
5. In halal marketing and sales, there should be implementation or study cases about halal 7P. It is necessary to do the research of this concept to consumers in order to know the effects to customers and additional demands from customers for developing the marketing and sales system.
6. In halal production, further research can discuss about halal requirements in halal food production of milk and eggs, plant and vegetables, also fish and seafood. The research can start examining source of origins, animal feed, and additional ingredients such as gelatin, glycerin, emulsifiers, enzymes, alcohol, animal fat and protein, and flavors and flavorings in order to prevent the existence of haram and bad contaminants. Beside the material, the further research also can examine the system, such as machining system, equipment used in production, and also sanitation.

7. In research and development, there should be the technology that does not only focus to detect haram contaminants and improper halal requirements for raw materials of final products, but also to processed products, equipments, machines, and places.
8. In finance, there should be further researchs about finance system without riba (excessive interest), excessive ambiguity (gharar) or frauds that can give disadvantages to customers or even firm itself.
9. In halal assurance, further researchs can implement the concept of halal assurance system in findings beccause they lack in implementation side. It is really needed to apply the concept to firm and halal certification bodies in order to make better certification system. Implementation can ease to develop the system. Further research can also develop unified halal standards in export and import halal assurance based on its production, labelling, documentation, handling/storage, and also expiration date.
10. A detailed and deep study of Quran and Hadiths are required to cover all the areas of halal SMC in food industry in order to suit the topic with Islamic Law.
11. There also should be some further researches about halal and wholesome standards, mutual consents, and obligations referred to different relationships, such as relationships between firms and supplier, firms and workers, firm and retailers, or firms and distributors.
12. The effects of justice, reasonable treatment, respect, and kindness applied on stakeholders, such as customers, retailer, distributors, investors, etc can be another opportunities to further researchers in order to prove the Greatness of Allah SWT.

13. Further researcher can develop a study case about the effects, implementation standards or current conditions of honesty, *gharar*, and *rashwa* in stakeholders of halal food industry.
14. Further researches also can examine current condition of halal SCM parties in order to find the signs of embezzlement and ways to delete it from the management. The research about *riba an-nasiya* on business transactions by using credit payment and *riba al fadl* about study case or implementation of Islamic finance retail also can be made into a new research.

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