

# The Implementation Framework of Halal Supply Chain Management Systems

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## Abstract

Recently, the network of halal supply participants is expanding across the globe. Most enterprises certify their products for halal compliance in responding towards demand of halal food especially in the Muslim dominated countries. Unfortunately, the implementation structure for Halal Supply Chain Management Systems is not standardized. This article aims to develop a Halal Supply Chain Management Systems implementation framework for Small and Medium Enterprises. The framework was constructed by integrating the supply chain participants, the supply operational cycles, business components and quality monitoring for systems development. The framework was organized according to the three phases comprised of pre-implementation, implementation and post-implementation. The study also incorporates most of the halal supply chain components towards the integration of comprehensive enterprise solution. It can be used as a point of reference in developing halal supply chain projects.

**Keywords:** Enterprise System, Halal Supply Chain Management, System Implementation Framework

## 1. Introduction

The world's Muslim population is increasing year by year. At present, Muslims total population is the second largest after Christianity. The Muslim population was assumed at 1.6 billion in 2010 is projected to grow at 73% in 30 years. It is predicted that the Muslim population will be close to Christian population by 2050<sup>1</sup>. In the Sunnah and Quran teachings, a Muslim should devoted to the Islamic lifestyles and practices according to Sharia laws. One of

the important value is on the purity of the food<sup>2</sup> which is known as Halal food. The halal aspect of the food is not only covered the slaughtering practices, but also include the aspect of hygiene, packaging, handling and storage<sup>3,4</sup>. Besides that, managing halal supply chain is among the most arduous task for halal industry<sup>5</sup>. In the competitive business, halal conformance is not only reflecting Sharia compliance product, but also be a standard in promoting cleanliness, purity and safety. Thus, there is a need to

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improve the implementation of halal supply chain systems in streamlining collaboration among halal stakeholders.

The aim of this article is to construct the halal SCM implementation framework for SMEs. At this point, the complete integration of Halal SCM cycle with the other main business function ensures the business can significantly benefit the halal participants<sup>6</sup>. Therefore, the halal participants specifically the Small and Medium Enterprises (SMEs) need to deploy an acceptable framework of practices in integrating the information movement between them. Contributions of the study are as follows:

- The halal SCM implementation framework that integrate the stakeholders of local and international into an effective halal ecosystems.
- Increase the positive perception towards practicing halal conformance for SMEs.

## 2. Motivation and Related Works

Numerous frameworks have been used to describe supply chain with different focus, scope, purpose and envision<sup>7</sup>.

**Table 1.** Existing Framework of Supply Chain and ES Implementation

No	Author (year)	Framework Structure
1	Markus & Tanis <sup>8</sup>	Project Chartering, Configure & Rollout, Shakedown, Onward & Upward
2	Chen & Paulraj <sup>9</sup>	Strategic Purchasing, Buyer-Supplier Relationship, Logistics Integration, Supply Network Structure & Information Technology
3	Bajwa, Mooney, & Garcia <sup>10</sup>	Awareness, Selection, Preparation, Implementation & Operation
4	Møller <sup>11</sup>	Foundation, Process, Analytical and Portal
5	Lambert <sup>12</sup>	Customer Relationship Management, Supplier Relationship Management, Customer Service Management, Demand Management, Order Fulfillment, Manufacturing Flow Management, Product Development & Return Management
6	Supply Chain Council <sup>13</sup>	Plan, Source, Make, Deliver, Return, Enable
7	Govindaraju <sup>14</sup>	Adoption Decision, Implementation Stage & Improvement Organizational Effectiveness

Table 2 Continued

8	Tieman & Ghazali <sup>15</sup>	Halal Policy, SC Objectives, Logistic, SC Resources, SC Process, SC Network, SC Measurements, Product & Market
9	du Toit & Vlok <sup>7</sup>	SC Participants, SC Cycle, SC Support Functions, SC Management & SC Enablers
10	Moulin <sup>16</sup>	Pre-Implementation, Implementation & Post-Implementation
11	Hamidin, Yunani & Zakiah <sup>17</sup>	Outcomes, Contextual factors, Core foundation & Collaboration Entities
12	Ahmad <sup>18</sup>	Initiation, Preparation, Realization and Maintenance & Operation
13	Nordin & Adegoke <sup>19</sup>	Pre-Implementation, Implementation & Post-Implementation

Generally, the selection of existing framework is based on the related research in halal supply chain and enterprise system implementation. The research is ranged within the context of SMEs. This research will focus on 13 frameworks as illustrated in Table 1.

SCM<sup>20</sup> directly engaged as a domain practices by showing the traceability from “as-is” to “to-be” components in the context of business solution. Other similar research might extend towards the integration concerning from minor SCM to broad ERP that could improve organization efficiency<sup>21</sup>. Thus, systems implementation is not only focusing on the timely fashion but in some extent should infer the business practices that converted into application modules. The purchasing, supply management, logistics and supply network are being viewed for strategic components<sup>22</sup> and construct of measurement of SCM<sup>9</sup>. It is also leading toward the integration between

the internal and external components<sup>23</sup>. In consequent, the strategic fundamental component of the SCM framework should be the main position in the construction of the SCM implementation structure. Previous related research on implementation framework adapted in three categorized phases is explained in Table 2 for comparison purpose.

The study on fundamentals framework by du Toit had covered comprehensive knowledge towards the organization of SCM<sup>7</sup>. It highlights the holistic perspective of strategy formulation up to the systems implementation. Alignment between the business direction and proper functional operation is needed as this will ensure success of the implementation<sup>24</sup>. The functional processes fit the organizational goal is intended to produce the acceptable framework especially when upholding the halal requirements.

**Table 2.** Comparison of Adapted Three Phased Implementation Framework

No	Author	Pre-Implementation Phase	Implementation Phase	Post-Implementation Phase
1	Markus & Tanis <sup>8</sup>	Project Chartering	Configure & Rollout	Shakedown, Onward & upward
2	Bajwa, Mooney, & Garcia <sup>10]</sup>	Awareness Selection	Preparation Implementation	Operation
3	Marnewick & Labuschagne <sup>28</sup>	Pre-implementation Analysis	Design Construct Implementation	
4	Govindaraju <sup>14</sup>	Adoption Decision	Implementation Process	Improved Organization Effectiveness
5	Moulin <sup>16</sup>	Pre-Implementation	Implementation	Post-Implementation
6	Ahmad <sup>18</sup>	Initiation	Preparation Realization	Maintenance & Operation
7	Nordin & Adegoke <sup>19</sup>	Pre-Implementation	Implementation	Post-Implementation

From the previous study, the SCM frameworks include common structure such as supply chain participants, logistics, supply chain network, buyer-supplier relationship and supply chain enablers<sup>7,9,12,15</sup>. The SCM framework by Lambert is focused on broader related integrating elements<sup>12,25,26</sup>. The standard strained by Supply Chain Council through SCOR model covered SCM mainly on the processes, performance, practices and people. The SCOR framework emphasizes the SCM practices to boost the organizational competitiveness and industry standardization<sup>27</sup> to satisfy the customers' demand<sup>13</sup>.

This study revealed that the implementation focuses on the development cycle mostly consist from three to maximum five milestones in reaching complete roadmap<sup>8,10,14</sup>. According Tanis and Markus<sup>8</sup>, the implementation framework consist of i) Project Chartering Phase, ii) project phase, iii) the shakedown phase, and iv) the onward and upward phase. The generic implementation framework<sup>16</sup> draw three important phases of i) pre-implementation phase, ii) implementation phase, and iii) post-implementation phase.

### 3. Implementation Framework for Halal SCM Systems

Implementation Framework for Halal SCM Systems (IF-HSCMS) is designed to fulfill the effective operational of halal supply chain systems. The framework aims to reduce operational cost in long run by promoting integrated and standardized data between the halal stakeholders. The IF-HSCMS is based on the aspects of Implementation Phases, Halal SCM Participants, Halal SCM Cycle and Business Platform.

The proposed implementation framework is recognized through three important phases that are pre-implementation, implementation and post-implementation. In this earlier version, the pre-implementation exist as a single building block in providing the requirements in developing a complete checklist for systems implementation. The pre-implementation is generally important for the preliminary planning of the project by specifying the overall goal setting through enterprise systems functional requirements and others strategic needs in the SCM implementation. Pre-implementation covered three main activities. The first part covers the needs, fit and readiness assessment. Secondly the consideration for adaptation such as proposed buy-in from main stakeholders, resources and staff acquisition; and related technical training. The final part of pre-implementation is to develop the implementation plan and team<sup>29</sup>. The Continuous Quality Monitoring (CQM) process is considered as a critical factor in Malaysian food industries<sup>30</sup> in compliance to the systems best practices. The quality monitoring is needed to measure the objectives before move to the next level.

There are four key components needed in supporting the implementation phase. The four components are the Halal SCM Participants (HSP), Halal SCM Cycle (HSC),

Business Platform (BP) and CQM that are shown in Figure 1. The components linked by arrow sign to show the direct information flows between the components. The information from the pre-implementation is referred by this phase for its main configurations, requirements and structure of the overall systems implementation. All in the rectangular shape line is a mandatory component while the business platform in dotted line is optional. The mandatory components are the core enabler for the operational of supply chain systems. While the component of BP classified as optional when it is completely independent from the supply chain systems.

The HSP is directly interacting with the HSC in the operational of supply chain trading, logistic and halal validation process. HSC shall automate the supply chain activities until the sequence for the focus product is completed. HSC comprise of the plan, halal certify, source, make, delivery and return (if applicable) processes. Most of the latter process is a generic supply chain practices that were originated from renowned SCOR model<sup>13</sup>. In order to complement with the halal compliance application, the halal certify is added to the cycle which could be the main differences between halal and conventional supply chain processes. Generally, the halal certify processes is divided into 5 activities: 1) Halal Certification Application, (2) On-site Inspection, (3) Panel Decision, (4) Certification Issuance, and (5) Halal Compliance and Enforcement<sup>31</sup>.

Besides that, the BP is the way the organization expand the capabilities in their business competitiveness. The BP identified in this research is the ERP Systems, E-Commerce and Data Analytics and Virtualization (DAV). The component of ERP could enhance the productivity by integrating and automate all of the key functional business operation of an organization<sup>32</sup>. The ERP platform will focus on functional elements for organization activi-

ties which are compulsory for each SME to relate with their halal process and the existing business function such as manufacturing, sales, procurement and others<sup>18</sup>. The information of every application within the ERP systems could be accessible by other application in fully integrated mode. This will help the operation to refer to a single system for more effective flow of process. Meanwhile, the E-commerce platform encourages engagement and transaction of the customers on procuring the halal product for the particular organizations. Access to the halal product could transcend to the international level by the use of e-commerce to promote halal brand. The unstructured data from various Social Networking Sites (SNS) are the main sources to disseminate the business information toward achieving the strategic goals. Unstructured and structured data also being the input for DAV. The combination of structured and unstructured data for DAV process which aim towards the predictive, preemptive and prescriptive allow the top management to plan with more reliable results for planning purpose. However, the BP modules are not mandatory as the supply chain management is concerned due to the SMEs capability by this moment.

The post implementation could sum-up the overall success of any systems implementation. The indication of the successes in components integration should lead to the value of using such implemented systems<sup>33</sup>. The benefit from systems implementation related to the efficiency in managing the organization operation. From post-implementation the organization could reassess the system features and capabilities based on actual performance<sup>34</sup>. There are some activities during the post implementation. There are some activities during the post implementation. The CQM from the earlier stage shall identified the weaknesses of the strategic and operation to be upgraded. The

systems will be customized and retested to improve the process. Meanwhile, the new requirements will screen and proposed through program change request. The post implementation also proposed the area of lesson learnt as input for future strategic plan.

The systems will be customized and retested to improve the process. Meanwhile, the new requirements will screen and proposed through program change request. The post implementation also proposed the area of lesson learnt as input for future strategic plan. Structure related to quality framework is monitored from initial setting, implementation structure, and ongoing implementation prior to the improvement that shall be made to the future systems<sup>29</sup>. Continuous improvement cycle similarly adapted in the structure of SCM construct<sup>9</sup> is highlighted for upholding quality standard of the implemented systems.

There are 7 actors identified the main players for the framework. Their roles arise from the customers, business participants such (i.e. suppliers, retailers, distributors and manufacturers), the halal governance body and halal logistics. The Halal SCM participants shall have a bidirectional flow to the Halal Supply Chain Management Cycle (HSCMC) component. The HSCMC is expected to be the main SCM engine in coordinating the movement of the halal goods. The SCM functions that are based from SCOR Model<sup>13</sup> adapted to fit the halal features. The activities is iterated unidirectional starting from plan, certify, source-return, make and delivered-return as shown in Figure 1. HSCMC shall exist as the main activities on day-to-day basis for halal organization. Certification practice could be started when the production plan the products and the processes. The structure of halal governance and assurance<sup>35</sup> should be establish in order to guarantee full halal status of the production.

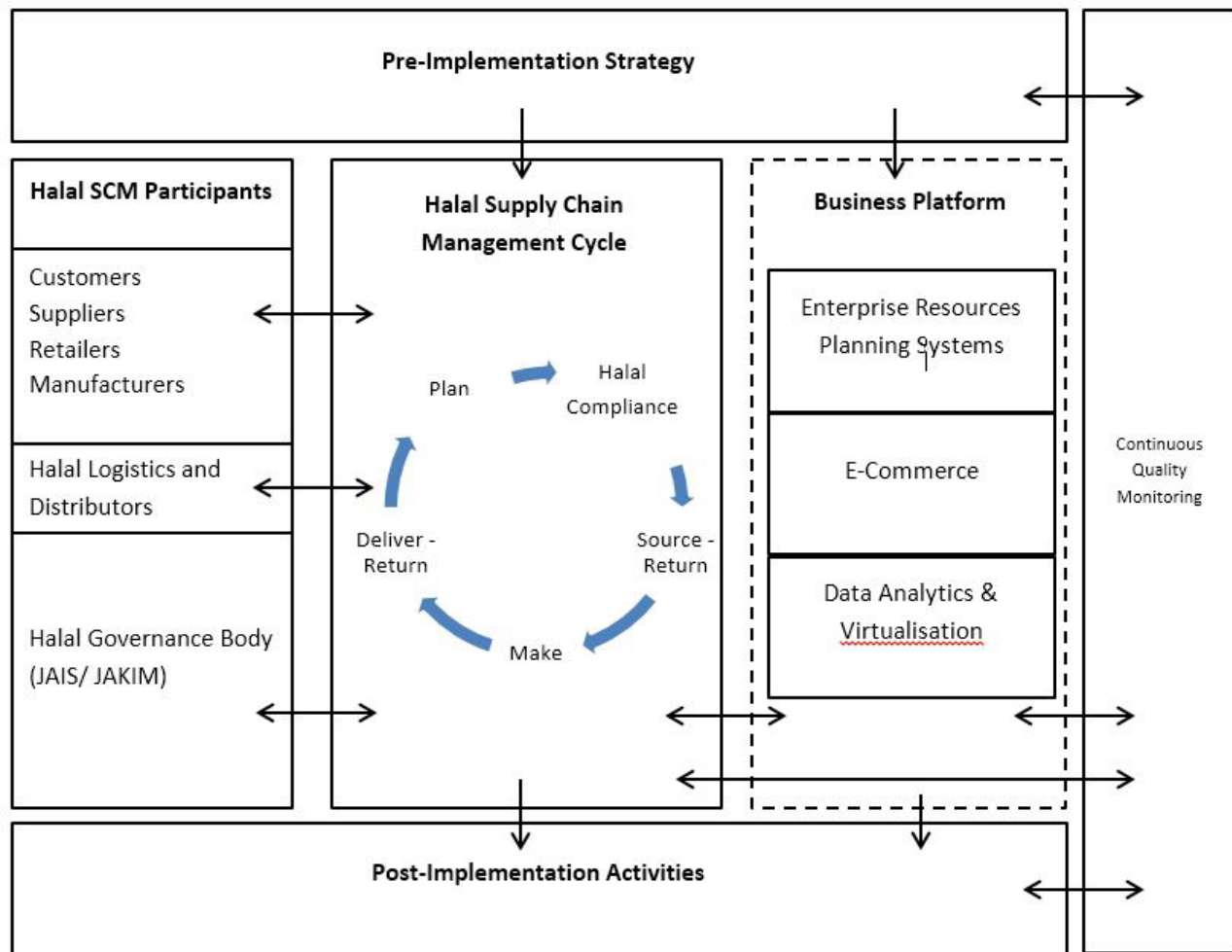


Figure 1. Proposed Halal Supply Chain Implementation Framework.

## 4. Conclusion

The framework for HSCMS implementation consists of three layers that are pre-implementation, implementation and post-implementation layers. The research expanded toward constructing elements for the IF-HSCMS. The first layer contain the pre-implementation strategy that consist of project governing structure and operational standards used plus quality monitoring procedure required by most system implementation. The second

layer consists of systems implementation that is the main area of the system functionality. The implementation is divided into three components that are the halal participants, halal SCM cycle and business platform. Element of continuous quality monitoring shall be cross layers in maintaining continuous improvement. The third layer of post-implementation activities focus on the efficiency of operation in dealing with organizational change and new request. The post-implementation important in gather-



ing the actual performance data for assessment for future CQI purposes. The finding heading toward acceptable systems implementation framework in halal SCM. This future study can be extended to validate the IF-HSCMS.

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