

Design Performance Measurement Model for Retail Services Using Halal Supply Chain Operation Reference (SCOR): A Case Study in a Retail in Indonesia

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Abstract—The purpose of this study is to design process-based performance measurements on retail businesses that integrate the value of halal in its business processes. Halal means everything that is allowed according to Islamic rules. The model developed is a Supply Chain Operation Reference (SCOR) model because it has advantages to measure process-based performance in detail. The design of the measurement model begins with designing criteria derived from performance measurement literature, halal performance literature and expert opinions. In order to obtain the importance weight of each criterion toward performance score, a questionnaire to weighted the criteria are distributed to expert and analyzed the answers using the Analytical Hierarchy Process (AHP) method. The final performance value is obtained from the multiplication of the weights with the performance values that have been standardized using the normalization (SNORM) standard. This research is done in one of the retail in Indonesia. The results of this study obtained 22 criteria with 4 halal criteria found in the process plan, source and deliver and return. The results of this study are useful for performance improvement, especially in halal retail business.

Index Terms— performance measurement, halal supply chain, Supply Chain Operation Reference (SCOR), retail business

I. INTRODUCTION

Performance is one of the important factors in maintaining the existence of companies. Performance is a success rate in order to realize the goals of the company. Therefore, performance measurement is essential for the purpose of achieving a successful business process [1]. Business competition does not only happen to the organization but has also grown up to the supply chain process. Recently, the measurement of supply chain performance has received much attention from researchers and practitioners [2], as focusing on supply chain management can reduce costs, increase market share and sales, and build relationships either with the members involved in it [3].

Performance measurement design can be done by using performance measurement method of Supply Chain Operation Reference (SCOR) [4]. The SCOR model provides a unique framework, SCOR supports communication between supply chain partners and improves supply chain management effectiveness and provides improvements. The SCOR model is a management tool that can handle, improve, and communicate supply chain management decisions within a company to meet customer demand by measuring reliability, responsiveness, flexibility, cost and asset company [5]. The advantage of performance measurement by using SCOR, the company can measure supply chain performance objectively and detailed based on existing data and can identify improvements that need to be done. In the process of improvement is needed a tool for decision making to determine which factors should be prioritized, the tool that can be used is AHP (Analytical Hierarchy Process). AHP is the most effective method or decision-making tool for complex problems by simplifying the search for solutions to the problems being experienced [6]. Previous research conducted by [7] the use of SCOR models has a positive impact on customer and company relationships because reliability, fast response and corporate flexibility will affect company performance. In addition, research conducted by [8] performance measurement is done by combining it with AHP method which aims to know which performance becomes a priority so as to facilitate decision making.

Currently, the design of performance measurement models in service companies is still rarely done. The research focus on cases study in a retail company specializing in business shari'a retail. It sells all kinds of daily necessities products in accordance with Islamic Shari'a in every aspect as well as the products sold at each outlet is a product that is 100% halal and thoyib. Halal and thoyib products are very influential in everyday life considering Indonesia is one of the countries whose majority population embraced Islam. Currently, the population of Indonesia is more aware of the importance of halal products in accordance with Islamic Shari'a. Halal itself means everything that is allowed in accordance with Islamic Shari'a. So that the presence of

halal products become the main factor needed in the majority of society. This study aims to measure the performance of the company's supply chain management using SCOR and AHP based on Islamic/halal value.

II. LITERATURE REVIEW

A. Supply Chain and Supply Chain Management

Supply chain is a system-based approach to performance improvement that exploits the opportunities made by upstream and downstream relationships with suppliers and customers [7]. Supply chain is an important element in the logistics process in an industry. Supply chains can improve efficiency and effectiveness, not just on the product delivery process, but also share information with all organizational networks [8]. While the supply chain management is a unity of the process from the start of raw material production, then change the raw materials into finished goods until the finished product to the hands of consumers.

B. References

Halal is everything that is allowed in accordance with Islamic Shari'a. Previously halal only fixated on everything that can be consumed by humans, but it is different now. Halal has been floating up to the supply chain process which is also a concern which means the addition of Islam to the supply chain process. Activities within the supply chain management halal include warehousing, raw material sources, transportation, handling and shipping of products, and inventory management [9].

C. Supply Chain Operation References (SCOR)

SCOR (Supply Chain Operation Reference) is a conceptual model developed by the Supply Chain Council (SCC) which is an independent non-profit organization as an inter-industry standard whose purpose is to facilitate the understanding of the supply chain in order to obtain an effective and efficient supply chain management [4]. The advantage of performance measurement by using SCOR is that the company can measure supply chain performance objectively and in detail based on existing data and can identify where improvement is needed [10]. In addition SCOR model enables companies to analyze their supply chain performance in a systematic way, to improve communication among members in the supply chain, and to design better supply chain networks [11]. The SCOR method uses several common dimensions, along with an explanation based on the supply chain council; reliability, responsiveness, flexibility, cost, and assets.

D. Analytical Hierarchy Process

Analytical Hierarchy Process (AHP) was first developed by Thomas L. Saaty a mathematician in the 1970s. This decision support model is usually used to describe multifactor problems or it could be interpreted that the criteria of a multicriteria, the uncertainty of the problem structure, the uncertainty of opinion from the decision maker, the decision of more than one person and

the inaccuracy of available data. According to. Saaty (1994), hierarchy is defined as a representation of a complex problem in a multi-level structure with the first level is the goal, followed by the next level of factors, criteria, sub-criteria, and so on down to the last level of the alternative. With the hierarchy, a complex problem can be broken down into groups so that problems will seem more structured and systematic.

III. RESEARCH METHODOLOGY

The study was conducted in four phases. The first phase is to mapping supply chain structure that comprise of 5 process, i.e planning, procurement, receiving & storage, distribution, return. The process consists of 4 activities namely plan, source, deliver and return. In this study, make is not exist because the retail has absolutely no production process whatsoever. Thus, only 4 processes exist in SCM structure. The second step is to identify and design halal performance indicators. Performance indicators/metrics were obtained based on previous researches and from expert opinions. The metric is validated by the General Manager who has full experience and responsibility for the halal retail supply chain. The third step is calculating weighting of indicators using AHP and calculating score of performance supply chain by multiplying the weighted and value of indicators.

IV. RESULT AND DISCUSSION

The supply chain of retail business process that mapping in SCOR model is described in Table I. There are two level of SCOR Process namely process type (SCOR level 1) and process category (SCOR level 2).

TABLE I. RETAIL BUSINESS PROCESS

No	Business Process	Scor Level 1	Scor Level 2
1	Planning	Plan	Plan source
2	Procurement	Source	Source stocked product
3	Receiving and Storage	Source	Source stocked product
4	Distribution	Deliver	Deliver stocked product
5	Return	Return	Return defect product

Performance indicators/metrics is determined based on expert interviews, observation and literature study. It is found 22 performance metrics in accordance with the conditions of the company, four of which are metrics based on Islamic/halal values. Metrics of SCOR is presented in Table II.

The weighted of indicators is obtained by distributing questionnaire that consist of importance rating between indicators using scale 1-9 (1 = equally, 3 = moderate, 5 = strong, 7 = very strong, 9 = extreme) and analyzing the result using AHP. The halal SCOR indicators then normalized using standardized normalization method, i.e. SNORM De Boer [12]. The final score of each process is calculated by multiplying importance weight with normalized value of indicators, as seen in Table III.

TABLE II. METRIC SCOR

No	Scor		Metric	Performance Attribute
	Level 1	Level 2		
1	Plan	Plan source	The accuracy of procurement planning (%)	Reliability
2			Inventory inaccuracy	
3			Warehouse utilization (%)	
4			Inspection of halal certification and logo on the product	
5			Number of Halal Products	
6			Time planning of product procurement process	Responsiveness
7	Source	Source stocked product	Percentage of defective products returned to supplier (%)	Reliability
8			Percentage of the number of requests that can be fulfilled by suppliers (%)	
9			Percentage of unit shortage (%)	
10			Order completeness	
11			No usury transaction	
12			Product warranty does not mix with non-halal products	
13			Percentage of items stored in accordance with FIFO and LIFO	
14			Lead time	Responsiveness
15			Supplier availability	Flexibility
16	Deliver	Deliver	Order fulfillment	Reliability
17			Hygiene of transportation	
18			On time Delivery	
19			Ease of obtaining product information	Responsiveness
20	Return	Return defective product	The number of complaints received by the company	Reliability
21			The number of defective products returned to the company	
22			the defective product return time	Responsiveness

TABLE III. FINAL SCORE OF HALAL PERFORMANCE

N o.	SCOR	Performance Attribute	Score	Weight	Score x Weight	Total	Weight of process	Final Score
1	Plan	Reliability	93,68	0,66	62,45	95,79	0,42	40,23
2		Responsiveness	100	0,33	33,33			
3	Source	Reliability	86,06	0,59	50,67	75,86	0,20	15,17
4		Responsiveness	100	0,25	25,18			
5		Flexibility	0	0,16	0			
6	Deliver	Reliability	100	0,75	75	100	0,22	22
7		Responsiveness	100	0,25	25			
8	Return	Reliability	100	0,66	66,66	100	0,14	14
9		Responsiveness	100	0,33	33,33			
Final Score								91,4

The supply chain performance measurement model by integrating the halal indicator in the SCOR model yields 22 performance metrics that suitable with the company. There are 4 halal indicators (namely inspection of halal

certification and logo on the product, number of halal products, no usury transaction, product warranty does not mix with non-halal products) are on perfect performance because the retail in accordance with all halal procedure. The final score of 91,4 indicates that the retail has excellent process, although still need to improvement especially in procurement process (supplier availability) and inventory accuracy. Supplier availability is low as there is only one single supplier for a particular product, so flexibility becomes low. This indicates that the implementation of halal indicators should be communicated with suppliers and sought by suppliers that have the same value so there are several alternative suppliers.

Inventory inaccuracy in which there is a deviation of the number of products recorded on the system and the actual number of products in the warehouse. This happens because there are various reasons one of them is the existence of human error because too many products in the warehouse. It is suggested to balancing workload and using technology in counting merchandise such as using barcode. This can be an alternative to reduce input error in warehouse. Overall, this model can be used for any of retail industry to improve their performance, especially for retail which incorporate halal indicator in its process business.

V. CONCLUSION

The halal supply chain performance measurement model is conducted by integrating the halal indicator in the SCOR model. There are 4 halal indicators namely inspection of halal certification and logo on the product, number of halal products, no usury transaction, product warranty does not mix with non-halal products integrating in this model and resulted total of 22 indicators. The final score of 91,4 indicates that the retail has excellent process, although still need to improvement especially in procurement process (supplier availability) and inventory accuracy. Improvement in performance can be done by communicating halal indicators to partner in supply chain so that many suppliers can cooperate from the beginning and increase supplier flexibility. It can be concluded that this model can be used for any of retail industry to improve their performance, especially for retail which incorporate halal indicator in its process business.

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