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Lean Logistics Implementation Level in Small and Medium Enterprises (SMES) Sector

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Abstract: The study of lean logistics management in small and medium-sized firms is rarely, especially for manufacturing and trading of food and beverages sector. That situation prompt the need to investigate the efficiency of logistics operations of SMEs based on the concept of lean logistics, particularly by identifying seven waste in the management of the SMEs. The topics were more developed for large industry on an international scale in developed countries. At the same time, the study discussing for small and medium-scale industries and in developing countries is limited. These facts indicate that research with these characteristics is necessary and this research is directed to fill these gaps. Through survey method, this study has identified the intensity level of seven logistics waste in SMEs. The logistics waste consists of inventory, waiting, overproduction, over processing, defect, motion and transportation, respectively sorted from the bigger.

Key words: Lean logistics, seven waste, SMEs, limited, level

INTRODUCTION

Enterprise that operate in the global competition wants to increase profit, reach competitive advantage, improve high quality of product and service and quickly respond to demand. To achive those objectives, enterprise needs to implement quality management system. Through implementing quality management system, enterprise can deliver products or services satisfying customer. In order to be a customer oriented enterprise, enterprise can introduce the concep of lean. Implementation of lean philosophy for continuous improvement is increasing in the last decade (Timans *et al*., 2012).

In order to achieve the successful of lean implementation, the enterprise system should support the implementation process (Sousa and Voss, 2001). There are several challenges to implement lean philosophy such as resource constraint (Achanga *et al*., 2006). Although, there are several barriers to implement lean concept, it promises several benefits. Lean implementation can increase efficiency, reduce cost of production (Dora *et al*., 2014), increase productivity, increase quality and delivery and satisfy customers and employees (Mann and Kehoe, 1994).

Although, implementation of lean concept is widely in large company, it is quiet scarce in SME sector. The topics have more developed for large industry on an international scale in developed countries. At the same time the studies discussing for small and medium-scale industries and in developing countries are quiet limited. The differences between SME and large company are in structure, policy making procedure, resource utilizations and culture. The different characteristics between SME and large company lead to the different result of the study. In other side, SME has vital role to economic development (Timans *et al*., 2012; Anggadwita and Dhewanto, 2016; Musa, 2016). Therefore, research that investigates lean implementation in SME sector is needed. This study is going to fill these gaps.

East Java is one of large provinces in Indonesia. In the last 5 years, East Java's economy has showed significant growth. Economy Structure of East Java consists of diverse subsectors. One of the subsectors is manufacturing and trading of food and beverages. Its subsector has showed larger contribution to economy of East Java. Most of the activities in that sector related to intensive logistics functions. Therefore, the great contribution of this subsector require good logistics service role. At this time in East Java, the study of lean logistics management in manufacturing and trading of food and beverages has not been performed, especially for small and medium-sized industrial level. This situation prompt the need for a study to investigate the efficiency of logistics operations of SMEs in East Java based on the concept of lean logistics, particularly identifying seven waste in management of the SMEs.

This study investigates lean practice in the context of the small and medium enterprises. Particularly, this study performs the picture of current situation regarding lean logistics implementation in SMEs in Indonesia focusing in East Java Province. The research questions of this study were showed as:

- RQ1: What is the current status of implementation of lean logistics in SMEs?
- RQ2: What is the highest waste in logistics practice in SMEs?

This study has contributed at both the theoretical and the practical scale. In a theoretical scale, this study enrich the body of knowledge about optimizing operational efficiency through the creation of lean logistics policy scenarios. In practice scale, this study contributes to the improvement of corporate governance to improve operational efficiency in SMEs in the manufacturing and trading of food and beverages. This study contributes to the reduction of cost of production in accordance with the target company. Increased performance will decline margin cost, improve the level of service that will be accepted by consumers, improve consumer demand in these subsectors and ultimately increase the contribution of these subsectors to regional gross domestic of East Java.

Literature review

Lean concept: Lean production is a proses elimination of non added value in organizations by using lean tools and techniques (Shah and Ward, 2003, 2007). "Lean as a system that utilize fewer inputs and creates the same outputs while contributing more value to customers" (Womack *et al*., 1990). The concept of lean aims to reduce waste and improve quality in an organization. The foundation of lean are achieving customer satisfaction through fast delivery and high quality product and service. Lean implementation deliver process improvement to customers by reducing waste and finding solution to achieve better results.

In global competition, company should focus in speed, efficiency and customer value. Lean principle help company to achieve significant economic benefits. Lean as a philosophy is about how company can going beyond and being best in every process (Cudney and Elrod, 2011). Lean approach focus on elimination of waste in production, product development and service delivery. The waste such as unnecessary delays, tasks, cost and error should be eliminated. The seven waste of lean include overproduction, transportation, inventory, processing, waiting, motion and defect. It can involve several departments such as procurement, engineering, inventory, scheduling, accounting and sales.

The focus of lean is on the customer. Company should identify value-added and non-value-added tasks. Value-added tasks are the operations that give value to the customer. The idea of creating flow in lean is to deliver products and services in the right amounts, at the right quality and at the right place. A good implementation of lean allows organization to give effective response to customers (Cudney and Elrod, 2011).

Lean has impacts on productivity, quality, delivery, customer satisfaction and employee satisfaction (Mann and Kehoe, 1994). The other benefits are accelerating throughput, reducing inventory and increasing profit (Jain and Lyons, 2009). Lean can create value creation (Haksever *et al*., 2004). Value is what buyers are willing to pay. Value creation depend on customers, employee and investor of point of views. Lean thinking can be used as a framework to improve enterprise activities (Shamah, 2013).

In order to create value for customers, enterprise should define the value, understand the value steam, eliminate barriers and perform continuous improvement (Womack and Jones, 2003). There are several barriers of lean implementation, such as low commitment, no focus, lack of employee involvement and inappropriate training methods (Cudney and Elrod, 2011). Lean can be conceptualized as a driver for supply chain competence through allocating efficient resources. It would help creating value to competitiveness (Shamah, 2013).

Lean logistics: Logistics is part of a process of supply chain planning, implementing and controlling the flow and storage of goods, services and information efficiently and effectively to meet the needs of customers. From these definitions it appears that logistics has a complex role in managing the flow of goods, services and information. That role is not only related to the movement of goods, services and information but also related to the competitiveness of a company to meet customer needs (Chapman *et al*., 2002). By fulfilling the needs of customers, the logistics service quality can increase sales volume (Stank *et al*., 2003). When the service can integrate logistics and marketing operations function properly then the business performance of an enterprise will increase and promote the sustainability of its business (Sezen, 2005).

Lean is a concept rooted in the Toyota Production System. Lean is a concept related to the effort to eliminate waste and improve the speed and flow. The main goal of lean is to eliminate waste from all processes. Referring to lean theory, the greatest waste on logistics is excess inventory. Companies need to eliminate the inventory that is not necessary to support operational process and to meet customer needs. There are seven waste that can be source of inefficiency such as transport, facility, space, time, packaging, administration and knowledge. All of these resources will be a waste if not used effectively to generate value for the customer and the company.

MATERIALS AND METHODS

Research model: This study identify lean logistics implementation in SMEs, particularly identify waste

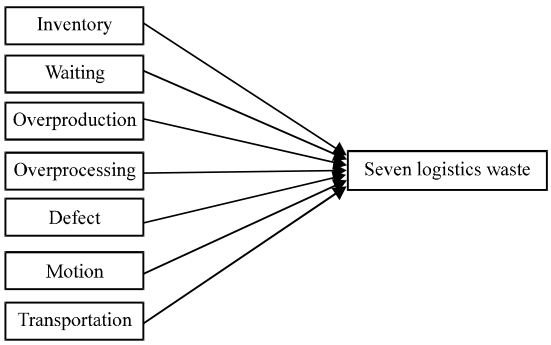

Fig. 1: Research model

logistics. This research was performed by observation and interview SMEs in East Java. Data were collected from 60 SMEs selected from a database of the Chamber of Commerce in East Java. The questions of questionnaire concerned the lean logistics. From 60 small and medium-sized enterprises in the first survey, 30 enterprises give responses to involve in this study. Below is the research model (Fig. 1).

RESULTS AND DISCUSSION

Data analysis and discussion: There are seven waste logistics identified in SMEs, namely overproduction; inventory waste; waiting time; motion; transportation; defect and over processing. Overproduction is happened because the SMEs do not have skill to estimate production schedule. This condition impacts on the number of inventory either work in process inventory or finished goods inventory. Waiting time waste is sourced from the time for waiting the next process. The bottleneck process exists in the system. Motion waste is caused by operators look for tools rested not on the proper location. The root of transportation waste is the minimum skill to arrange transportation plan. Defect source from the lack of standard operation procedure to perform production process. That source is same for over processing waste. The common logistics wastes shorted from the bigger are inventory, waiting, overproduction, over processing, defect, motion and transportation, respectively. Overall, the current status of lean implementation in SMEs is quite low.

There are several critical success factors to implement lean principle perceived by enterprise, consisting of top management commitment; process management; education and training. Some barriers exist in the SMEs such as internal resistance, availability of resources, lack of leadership and poor of training. The application lean determine the effect on productivity, delivery and quality.

CONCLUSION

The current status of lean implementation in SMEs East Java is quite low. The logistics waste consists of inventory, waiting, overproduction, over processing, defect, motion and transportation, respectively sorted from the bigger. Several critical success factors to implement lean principle perceived by enterprise, consisting of top management commitment; process management; education and training. The barriers existing in the SMEs East Java are internal resistance, inavailability of resources, lack of leadership and poor of training.

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