Lean Management and Supply Chain Management: Common Practices

Jordi Olivella Nadal

Abstract In Operations Management, different approaches to make a company successful are applied. Which practices are part of which approaches is not always clear. This work is devoted to a particular comparison between two specific approaches, Lean and Supply Chain Management (SCM). The comparison is presented as an example of the relation between two sets of practices and is also interesting in itself. Starting from the concepts and practices included in Lean and SCM according to the literature, the common practices are obtained. Lean Supply Chain is also taken into account. A critical point in common between Lean and SCM, Value Stream Management, is also highlighted.

1 Introduction

Students and researchers of Operations Management have to confront a range of approaches supposedly able to make a company successful. The list is long: Total Quality Management (TQM), Lean Management (hereafter called Lean), World Class Manufacturing, Six Sigma, Supply Chain (SC), Supply Chain Management (SCM), and so on. The immediate question is what the best option is.

As no approach is clearly predominant, we can think that it depends on the characteristics of each case. But a closer analysis shows that we cannot give a conclusive answer because there is not a single Total Quality or Lean set of practices, for example. Very different practices are developed by organizations that claim to follow these approaches. In fact, most of the tools and practices are included in several or all the approaches.

When someone states that a Lean program is being implemented, we could think that they are following a program similar to the one the best known lean companies

J. Olivella Nadal (✉)
Department of Management, Institute of Industrial and Control Engineering, Universitat Politècnica de Catalunya, Av. Diagonal, 647, 08028 Barcelona, Spain
e-mail: jorge.olivella@upc.edu

A.P. Barbosa-Póvoa et al. (eds.), *Optimization and Decision Support Systems for Supply Chains*, Lecture Notes in Logistics,
DOI 10.1007/978-3-319-42421-7_8

apply and some books describe. However, the Lean program that they are implementing can be more similar to some TQM or Six Sigma implementations than to other Lean implementations.

The uncertainty about what the content of a Lean or a TQM implementation really is, probably less damaging in practice that it could seem. A real implementation is an adaptation of the same principles and tools to the context of the company involved. Companies are not worried about whether they are following or not a "pure" version of some theory. Lean or TQM, for example, can be useful for them as an inspiration and also as a communication tool, even if they do not imply a specific program. In any case, confusion regarding these concepts can raise doubts.

This work is devoted to a particular comparison between two approaches, Lean and SCM. It is presented as an example of the relation between two well-known sets of practices and is also interesting in itself. To make the comparison, two lists of principles and concepts of Lean and SCM are considered. The common practices are presented and a special emphasis is given to a mixed approach, Lean Supply Chain (LSC), and to a critical common practice of Lean and SCM, Value Stream Management (VSM).

In the academic field, the different combinations of practices that are included in Lean implementations have been called "lean bundles". Naturally, this expression is not used by managers or consultants promoting Lean, as asking a company to implement something called "bundle" would not be commercial. But it is a useful concept for observers. In a set of analysed examples of Lean implementations, only three practices were found in all of them (Shah 2003): Just in Time (JIT), pull and quick changeover. Although they are of capital importance, the number of coincidences between all "lean bundles" is small. The topic of what the most important elements of Lean are is addressed in Sect. 2.

Many doubts arise when dealing with SC or SCM. The concept of Supply Chain comprises the different elements of the network, from raw material to the final customer. Beyond this general coincidence, many different definitions have been suggested. Some include objectives of SC and SCM as "customer satisfaction" or "maximizing profitability" (Corominas 2013). Common points between SCM and Lean can be potentially numerous when the objectives of SCM are considered. Coincidences between Lean and SCM are discussed in Sect. 3.

LSC is the application of Lean principles to the whole supply chain, that is to say, the application of Lean approach to a wider approach. LSC is an extension of Lean and will not necessarily consider all the elements of the SCM. Section 4 deals with LSC.

A central concept both in Lean and SCM is VSM. Regarding Lean, the concepts of Value Stream and Flow Management define the lean enterprise (Womack and Jones 1994). The identification of wastes and the focus on customer value cannot be obtained with a functional or departmental vision. Similarly, SC integration, that is to say, integrated management of the flow through improved communication, partnerships, alliances, and cooperation, is one of the central topics in Supply Chain literature (Power 2005). For this reason, Sect. 5 is devoted to VSM. Finally, Sect. 6 is devoted to the conclusions.

2 What is Lean Really?

We could define Lean as the set of principles, practices, and tools that the companies that claim to be Lean usually apply, inspired by the practices of Toyota. Such a definition establishes the scope but not the content of the elements included. The complete list of practices and tools used to support them is too long to consider it as an effective reference. The challenge is to obtain a limited number of ideas that give sense to the whole approach.

The literature is rich in analysing what the essence of Lean is. Often the objectives of "removing waste", that is to say, eliminating dispensable activities, and "focusing on customer value" have been considered to be central in Lean approach. However, to define objectives and to reach them is not the same. It has been reported that the success of a Lean implementation depends on the systematic application of the scientific approach in the day to day activities (Spear and Bowen 1999). A different vision of the Lean system emphasizes its Operations Management aspects. The diverse aspects are reflected in the 14 principles of Toyota (Liker 2003).

To compare Lean with other approaches such as SCM, it is necessary to focus on the practices that are commonly related to Lean approach. Lean implementation involves different aspects of a company activity. We can distinguish between production methods, work practices, and cultural aspects. The following production methods and tools have been considered to be central to Lean (Belekoukias et al. 2014):

- Just in Time. A manufacturing philosophy focusing on the elimination of waste (non-value added activities) in the manufacturing process by the most timely sequencing of operations (Gass and Fu 2013).
- Total Productive Maintenance (TPM). TPM is commonly associated with autonomous and planned maintenance activities and includes other activities that help to improve equipment effectiveness over the entire life of the equipment (Swamidass 2000).
- Autonomation. Autonomation means the autonomous control of quality and quantity. The initial idea was that every worker is personally responsible for the quality of the part or product that he/she produced. Quite often the inspection is performed automatically (Swamidass 2000).
- Value stream focus. Value stream includes the complete value-adding process, from the conception of requirement back through to raw material source and back again to the consumer's receipt of the product. Value stream focus is critical to remove wastes. Value Stream Mapping (VSM) is a tool that provides visibility along the value stream (Hines and Rich 1997).
- Continuous improvement. Continuous improvement or Kaizen is a constant endeavour to expose and eliminate problems at the root level (Swamidass 2000).

The implementation of Lean and, in particular, the production approaches mentioned above requires that day to day work practices are appropriately adapted. A description of Lean that would not include these aspects would give a false image of what Lean is. These practices can be summarized in the following points (Olivella et al. 2008):

- Standardization, Discipline, and Control. Standardization is an essential principle of Lean, encompassing both the sequence of tasks to be done by each worker and how those tasks are done. Discipline and close control are also indispensable for Lean.
- Continuing Training and Learning. Training and learning are critical to the implementation of Lean. Workers obtain knowledge from previous, initial and continuous training and, most importantly, from experience.
- Team-based Organization. Teamwork refers to joint, shared work. In organizations based on work teams, responsibilities—particularly, workloads—are assigned to the teams.
- Participation and Empowerment. Lean requires a leadership style in which hierarchical superiority is deemphasised, and which includes a system of suggestions and planned discussion.
- Common Values. Lean involves active engagement of all the staff that cannot be obtained through disciplinary procedures but from worker commitment to the company's values.
- Compensation and Rewards to Support Lean. Compensation to support Lean should be based on worker skills and team performance, while pay plans should be based on collective performance in the context of well-defined and well-understood indicators of quality, cost and delivery.

The third block in describing the main principles, practices, and tools of lean include the elements of the so called "lean culture". The elements of this block are not specific activities but rather general principles. A deep and sustainable implementation of Lean requires that such principles are assumed by the company. Lean culture includes the following principles (Bhasin and Burcher 2006):

- Make decisions at the lowest level to foster participation and take advantage of first-hand information about problems.
- Ensure that there is a strategy of change whereby the organization communicates how the goals will be achieved. People have to be aware of the process of change, its objectives, and its specific steps.
- Develop supplier relationships based on mutual trust and commitment. A real and profound transformation will not be possible unless supplier involvement is guaranteed.

Table 1 Main elements of Lean

Production methods	Work practices	Culture
Just in time Total productive maintenance (TPM) Autonomation Value stream focus Continuous improvement	Standardization, discipline and control Continuing training and learning Team-based organization Participation and empowerment Common values Compensation and rewards to support Lean	Decisions at the lowest level Strategy of change Supplier relationships Focus on the customer Lean leadership Long term commitment

- Systematically and continuously focus on the customer. For the lean company, customer focus is not only a general principle but a critical objective that is served by applying appropriate practices and tools.
- Promote lean leadership at all levels. Leadership style largely determines how work is developed and decisions are taken. Adapting leadership to the lean principles is a critical element of lean implementation.
- Have long term commitment. For a lean company, the implementation of lean practices is not a campaign with limited and specific objectives, but a strategic and long-term policy.

The different elements of Lean that have been mentioned are presented in Table 1. The high number and diversity of practices involved give rise to some confusion regarding what Lean really is, as mentioned before. It must be emphasized that a large number of the practices mentioned are closely related, and can be seen as different ways to define the same functioning. Focus on the Costumer and Value Stream Focus, or Participation and Decisions at the Lowest Level, for example, reflects the same vision and practices from different points of view.

3 SCM and Lean

As discussed in the previous section, Lean is a multifaceted approach, and so is SCM. To analyse the common practices of Lean and SCM, we start from lists of practices defining both approaches. In the case of Lean, an authoritative source is taken. The *Toyota way* principles (Liker 2003) have their origin in the internal documentation of Toyota. They are in consequence the principles of Lean, as seen by the creators of the approach. Production methods, management principles, and more specific practices are presented in Table 2. Aspects directly related to SCM are highlighted in bold. They are principles 2, 3, 4 and 5. Principles 1, 5, 6, 9, 12, 13 and 14 refer to cultural aspects, which are also taken into account by SCM.

The origin of SCM is not clearly tied to a specific company and author, and therefore no equivalent of the 14 Toyota principles for Lean is available. A work

Table 2 Toyota way 14 principles (Liker 2003)

1. Base your management decisions on a long-term philosophy, even at the expense of short-term financial goals 2. Create a **continuous process flow** to bring problems to the surface 3. Use "**pull**" **systems to avoid overproduction** 4. **Level out the workload** 5. Build a culture of stopping to fix problems, to get quality right the first time 6. Standardized tasks and processes are the foundation for continuous improvement and employee empowerment 7. Use visual control so no problems are hidden 8. Use only reliable, thoroughly tested technology that serves your people and processes	9. Grow leaders who thoroughly understand the work, live the philosophy, and teach it to others 10. Develop exceptional people and teams who follow your company's philosophy 11. **Respect your extended network of partners** and suppliers by challenging them and helping them improve 12. Go and see for yourself to thoroughly understand the situation 13. Make decisions slowly by consensus, thoroughly considering all options; implement decisions rapidly 14. Become a learning organization through relentless reflection and continuous improvement

Concepts related to supply chain are highlighted in bold

reflecting the topics dealt with in the literature will be used (Croom et al. 2000). The principle components of SCM literature are shown in Table 3. As the list of topics considered is an extensive enumeration of the literature concerns, the mere presence of a concept does not mean that it is relevant for SCM. Concepts related to Lean are highlighted in bold.

As we can observe, in the blocks "relationships and partnerships" and "best practices" there are many coincidences with Lean. This is not surprising due to the central role of coordination in both approaches and the general applicability of good practices.

A list of principles defining Lean is presented in Table 2, while a list of components of the SCM literature is given in Table 3. The elements of these lists that are common to Lean and SCM are presented in Table 4. They are classified by taking into account three elements present in both approaches: VSM, Continuous Improvement and Cultural Aspects and Relations Management.

From the analysis of the content of Table 4, we can deduce that VSM is similarly important for both Lean and SCM. Concepts with a strategic relevance are common to the two approaches. Continuous Improvement and Cultural Aspects shared by Lean and SCM seem to be more important for Lean than for SC, as half of the 14 principles are involved in it. Conversely, Relations Management aspects that are common to both approaches are more detailed in SCM. On the whole, flow, Continuous Improvement, Cultural Aspects, and Relations Management play an important role both in Lean and SCM.

In addition, differences between the topics addressed by Lean and SCM can be deduced from the same analysis. Aspects regarding Production Methods and Quality, such as TQM, TPM, and Autonomation, are central to Lean and have little or no presence in SCM. The same happens with Work Practices of Lean, as

Table 3 Principal components of supply chain literature (Croom et al. 2000)

Strategic management	*Logistics*
1. Strategic networks	31. Integration of materials and information flows
2. **Control in the supply chain**	32. **JIT**, MRP, waste removal, VMI
3. **Time-based strategy**	33. Physical distribution
4. Strategic sourcing	34. Cross docking
5. Vertical disintegration	35. Logistics postponement
6. Make or buy decisions	36. Capacity planning
7. Core competencies focus	37. Forecast information management
8. Supply network design	38. Distribution channel management
9. Strategic alliances	39. Planning and control of materials flow
10. Strategic supplier segmentation	*Marketing*
	40. Relationship marketing
11. **World class manufacturing**	41. Internet supply chains
12. Strategic supplier selection	42. Customer service management
13. Global strategy	43. Efficient consumer response
14. Capability development	44. Efficient replenishment
15. Strategic purchasing	45. After sales service
Relationships/partnerships	*Best practices*
16. **Relationships development**	46. **JIT**, MRP, MRP II
17. **Supplier development**	47. **Continuous improvement**
18. Strategic supplier selection	48. Tiered supplier partnerships
19. **Vertical disintegration**	49. Supplier associations
20. Partnership sourcing	50. **Leverage learning network**
21. **Supplier involvement**	51. **Quick response, time compression**
22. Supply/distribution base integration	52. **Process mapping, waste removal**
	53. **Physically Efficient versus market oriented supply chains**
23. Supplier assessment	*Organizational behavior*
24. Guest engineering concept	54. Communication
25. Design for manufacture	55. Human resources management
26. Mergers acquisitions, joint ventures	56. Employees' relationships
	57. Organizational structure
27. Strategic alliances	58. Power in relationships
28. Contract view, trust, commitment	59. **Organizational culture**
	60. Organizational learning
29. Partnership performances	61. Technology transfer
30. Relationship marketing	62. Knowledge transfer

Concepts related to Lean are highlighted in bold

described in Sect. 2. Topics related to Logistics and Marketing have an important presence in SCM and are secondary for Lean.

4 Lean Supply Chain (LSC)

When Lean and SCM approaches are addressed, LSC must also be considered. LSC consists in applying the Lean concepts to the whole supply chain. In this case, SC refers to the scope and not to specific production management proposals. It can be

Table 4 Classification of common elements between Lean and SCM

Topic	SCM aspects of lean principles (elements of Table 2)	Lean aspects in the SCM literature (elements of Table 3)
VSM	• Continuous process flow (2) • Use "pull" systems to avoid overproduction (3) • Level out the workload (4)	• Time-based strategy (3) • JIT (32, 46) • Quick response, time compression (51)
Continuous improvement and cultural aspects	• Base your management decisions on a long-term philosophy (1) • Build a culture of stopping to fix problems (5) • Standardized tasks and processes (6) • Grow leaders (9) • Go and see for yourself (12) • Make decisions slowly by consensus (13) • Become a learning organization (14)	• Control in the supply chain (2) • Continuous improvement (47) • Process mapping, waste removal (52) • Market oriented supply chains (53) • Organizational culture (59)
Relations Management	• Respect your extended network of partners (11)	• Relationships development (16) • Supplier development (17) • Supplier involvement (21) • Vertical disintegration (19) • Leverage learning network (50)

said that the concept of SC implies an intention to integrate its elements, or, at least, a will to take all its elements into account. Beyond the generic intention to consider the SC globally, we cannot expect that LSC respects all SCM principles.

Some of the key characteristics of Lean manufacturing principles that apply to supply chain strategies are (Ben Naylor et al. 1999): (1) Use of Market Knowledge; (2) Virtual Corporation, Value Stream and Integrated Supply Chain; (3) Lead Time Compression; (4) Eliminate Muda; and (5) Smooth Demand and Level Scheduling. Note that the use of market information is directly related to pull, because knowing the demand is necessary to produce according to demand. The mentioned principles are mainly focused on Value Stream Integration and Production Tools.

A set of 6 principles has been established to define a value chain as Lean (Vitasek et al. 2005). These principles are summarized as follows:

1. Demand Management Capability. In Lean, production is developed to cope with actual customer demand. This implies the need of having detailed immediate information of the demand and managing the flow to cope with this demand.

Table 5 Comparison of the topics treated by Lean, LSC and SCM

Topic	Lean	LSC	SCM
Continuous improvement and cultural aspects	●	•	•
Value stream management	●	●	●
Logistics			●
Marketing			●
Production methods and quality	●	●	
Relations management	•	●	●
Work practices	●		

● = essential
• = taken into account

2. Waste and Cost Reduction. This principle includes preventing wastes, and reducing inventories and times along the entire flow.
3. Process and Product Standardization. The standardization of processes and products enables continuous flow to the customer.
4. Industry Standards Adoption. Standardization also needs to extend beyond a company's particular supply chain to the industry overall. Industry product standards benefit not only consumers but also companies by reducing the complexity of product variations.
5. Cultural Change Competency. There is one recurring obstacle to successfully apply LSC concepts—resistance from the people who will be asked to embrace and implement the change.
6. Cross-enterprise Collaboration. The final attribute of the lean supply chain is Cross-enterprise Collaboration. Through collaborative practices and processes, supply chain partners must work to maximize the value stream to the customer.

A comparison of the principles and topics treated by Lean and SCM is presented in Sect. 3. The results of this comparison, together with the topics dealt with by LSC, are presented in Table 5. This kind of analysis cannot reflect the particular details of each approach, but gives a global vision of its priorities. The main emphasis of Lean is on Culture, Flow, Production Methods and Work Practices. For LSC, VSM and Productions Methods remain important and so does Relations Management. Although present, continuous Improvement and Cultural Aspects are not so important, probably because the emphasis is on aggregate aspects. Work Practices are not dealt with by LSC. On the other hand, SCM gives importance to Logistics, Marketing and Relations Management, and not to Continuous Improvement and Cultural Aspects, while Production Methods are not among its typical topics. Finally, it is important to remark the central role of VSM in the three approaches. The following section is devoted to it.

5 Value Stream Management

We conclude that VSM is the most important point in common between Lean, LSC, and SCM (Sects. 2 and 4). Value stream focus is consubstantial to SCM and is a clear priority for Lean and LSC implementations. In this section, some details of focusing on flow are given.

To be effective, VSM must consider value stream. Value stream is defined as the sequence of activities that are made from the reception of the customer order to the delivery of the product or service (Womack and Jones 1994). Value stream encompasses the production flow from raw material into the arms of the customer, and the design flow from concept to launch (Rother and Shook 2003). The concept of flow along the value stream is graphically represented in Fig. 1. The flow through different companies and departments of each company has to be considered, following the entire path from customer order to the product or service delivery.

Waste reduction and customer focus are two principles that are widely used in Operations Management. It can seem surprising that companies do activities that can be considered waste and take decisions that are not addressed to cope with customers. We can assume that a job is done when it is thought to be relevant. In fact, the problem is in knowing what is really necessary and addressed to customer needs and what is not. In complex value streams, the perceptions about what is needed and what will generate customer value are, in some cases, wrong (Zokaei and Hines 2007). This sometimes results in not needed activities taking place without taking into account the needs of final clients.

The production system applied has a strong influence on the visibility of the flow. The mass production paradigm has emphasized the importance of operational efficiency by pushing goods in large batches into a stable marketplace. This results in massive disconnection between consumers and providers (Womack and Jones 2005). Lean attempts to combine the principles of craftsmanship with mass

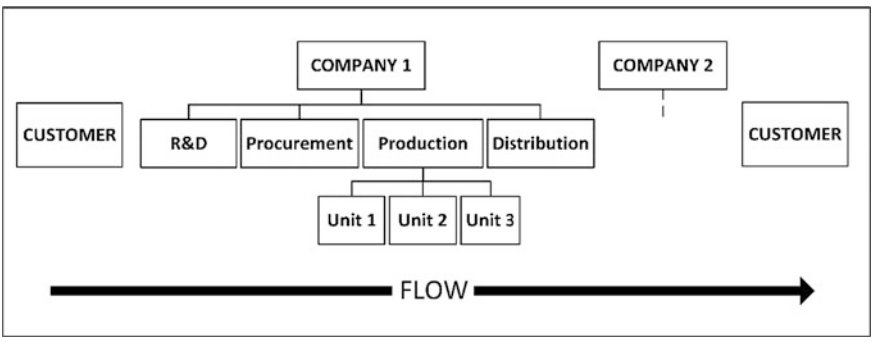

Fig. 1 Graphical representation of the concept of flow

production while avoiding the high cost of the former and the rigidity of the latter (Womack et al. 1990).

Some authors view value stream as a central and strategic concept for Lean transformation. VSM develops the VSM approach into a strategic and holistic method. VSM was defined as a strategic and operational approach designed to help a company or a complete supply chain to achieve a lean status (Hines et al. 1998). The lean enterprise has been considered as a new organizational model that is characterized by the concept of value stream (Womack and Jones 1994). Getting managers to think in terms of value stream is the critical first step to achieving a lean enterprise. It is suggested that someone with real leadership skills and a deep understanding of the product and process must be responsible for the process of creating value for customers and must be accountable to the customers (Liker 2003).

Focusing on value stream requires specific measures to be adopted. A multiple case study analysing what companies do to focus on value stream concluded that they adopt (Olivella and Gregorio 2014):

(1) Organizational units based on value streams, or, when not possible, the appointment of a manager that coordinates the value stream.
(2) Performance measurement system based on value streams.
(3) Formal meeting system focused on value stream issues.

Adaptation of company metrics to value stream has been suggested. It is about eliminating the old metrics and to measure a variety of value stream metrics from lead time to inventory levels to first-pass quality (Liker 2003). To do this, value stream costing has been defined as the process of assigning the actual expenses of an enterprise to value streams, rather than to products, services, or departments (Stenzel 2008). Companies using lean accounting have better information for decision making, have simple and timely reports that are clearly understood by everyone in the company, understand the true financial impact of lean changes, and focus the business on the value created for the customers (Maskell and Kennedy 2007).

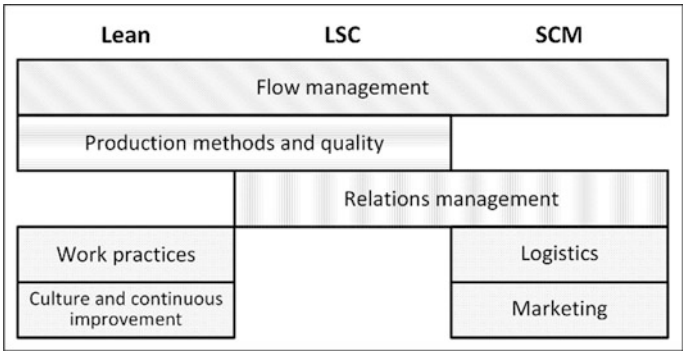

Fig. 2 Graphical comparison of the topics treated by Lean, LSC and SCM

6 Conclusions

In this chapter, the relation between Lean and SCM has been addressed. Both approaches include long lists of principles, practices, and tools. In addition, what Lean and SCM really are is a very controversial topic and very different proposals can be found in the literature. In this context, conclusive results regarding Lean and SCM relations do not seem attainable. The analysis performed tries to reflect which are the topics commonly dealt with by both, Lean and SCM, and those only usual in one of the approaches. Besides, LSC, the application of Lean to SCM, has also been considered as an extension of Lean closely related to the SC concept.

The results are summarized in Table 5 and graphically represented in Fig. 2. Culture and Continuous Improvement, together with Work Practices, are mostly specific to Lean; Productions Methods are shared between Lean and LSC, which has in common with SCM the topics on Relations Management. Logistic and Marketing are specific to SCM. On the other hand, VSM is important for the three approaches. For this reason, details about this concept are in Sect. 5.

References

Belekoukias, I., Garza-Reyes, J. A., & Kumar, V. (2014). The impact of lean methods and tools on the operational performance of manufacturing organisations. *International Journal of Production Research, 52*, 5346–5366. doi:10.1080/00207543.2014.903348

Ben Naylor, J., Naim, M. M., & Berry, D. (1999). Leagility: Integrating the lean and agile manufacturing paradigms in the total supply chain. *International Journal of Production Economics, 62*, 107–118. doi:10.1016/S0925-5273(98)00223-0

Bhasin, S., & Burcher, P. (2006). Lean viewed as a philosophy. *Journal of Manufacturing Technology Management, 17*, 56–72. doi:10.1108/17410380610639506

Corominas, A. (2013). Supply chains: what they are and the new problems they raise. *International Journal of Production Research, 51*, 6828–6835. doi:10.1080/00207543.2013.852700

Croom, S., Romano, P., & Giannakis, M. (2000). Supply chain management: an analytical framework for critical literature review. *European Journal of Purchasing & Supply Management, 6*, 67–83. doi:10.1016/S0969-7012(99)00030-1

Gass, S. I., & Fu, M. C. (2013). *Encyclopedia of operations research and management science*. New York: Springer Science + Business Media.

Hines, P., & Rich, N. (1997). The seven value stream mapping tools. *International Journal of Operations & Production Management, 17*, 46–64.

Hines, P., Rich, N., Bicheno, J., et al. (1998). VSM. *The International Journal of Logistics Management, 9*, 25–42. doi:10.1108/09574099810805726

Liker, J. K. (2003). The Toyota way. McGraw-Hill.

Maskell, B. H., & Kennedy, F. A. (2007). Why do we need lean accounting and how does it work? *Journal of Corporate Accounting & Finance, 18*, 59–73. doi:10.1002/jcaf.20293

Olivella, J., Cuatrecasas, L., & Gavilan, N. (2008). Work organisation practices for lean production. *Journal of Manufacturing Technology Management, 19*, 798–811. doi:10.1108/17410380810898750

Olivella, J., & Gregorio, R. (2014). Organizational practices lean enterprises adopt to focus on value streams. *Journal of Enterprise Transformation, 4*, 309–328. doi:10.1080/19488289.2014.919973

Power, D. (2005). Supply chain management integration and implementation: A literature review. *Supply Chain Management: An International Journal, 10*, 252–263. doi:10.1108/13598540510612721

Rother, M., & Shook, J. (2003). Learning to see: Value stream mapping to add value and eliminate Muda. Lean Enterprise Institute.

Shah, R. (2003). Lean manufacturing: Context, practice bundles, and performance. *Journal of Operations Management, 21*, 129–149. doi:10.1016/S0272-6963(02)00108-0

Spear, S., & Bowen, H. K. (1999). Decoding the DNA of the Toyota production system. *Harvard Business Review, 77*, 96–108.

Stenzel, J. (2008). Lean accounting: Best practices for sustainable integration. Wiley.

Swamidass, P. M. (2000). Encyclopedia of production and manufacturing management. Kluwer Academic Publishers.

Vitasek, B. K., Manrodt, K. B., & Abbott, J. (2005). What makes a lean supply chain? *Supply Chain Management Review, 8*, 39–45.

Womack, J., & Jones, D. (1994). From lean production to lean enterprise. *Harvard Business Review, 72*, 93–103.

Womack, J. P., & Jones, D. T. (2005). Lean consumption. *Harvard Business Review, 83*, 58–68.

Womack, J. P., Jones, D. T., & Roos, D. (1990). The machine that changed the world. Simon and Schuster.

Zokaei, K., & Hines, P. (2007). Achieving consumer focus in supply chains. *International Journal of Physical Distribution & Logistics Management, 37*, 223–247. doi:10.1108/09600030710742434