

## 11.3: Firm's Role in the Supply Chain

### Learning Objectives

1. Learn about the importance of developing new types of relationships with suppliers and customers.
2. Businesses need to strive toward win-win scenarios with their supplier partners.
3. Understand the need for accurate metrics to evaluate the performance of the supply chain management system.

### Developing New Relationships

**Game theory** is a branch of mathematics. Broadly stated, game theory examines competitive situations in which one's outcomes may be influenced or dictated by the decisions of other players. It has been applied to a variety of worldwide domains, including economics, military operations, political science, and business strategy. It has its own very large literature base, and work in this field has been recognized by several Nobel prizes in economics. To better understand some of the risk associated for small businesses participating in supply chain management, we will briefly look at two types of games: zero-sum games and non-zero-sum games.

**Zero-sum games** are those in which the total benefits for all participants total zero. Baseball can be seen as a zero-sum game. If one is told that the New York Yankees and the New York Mets played an exhibition game and the Yankees won, then one also knows that the New York Mets lost. Basketball and most games in professional football are also zero-sum games because there is a winner and a loser. Poker can also be seen as a zero-sum game. If your five friends have a Friday night game of poker and one player is up \$100, then you also know that the other four players have suffered a cumulative loss of \$100.

**Non-zero-sum games**, on the other hand, are those that potentially have net results other than zero. This simply means that the loss of one player does not directly correspond to the game of another player. In a non-zero-sum game, it is possible for all the players to win or for all the players to lose. The classic illustration of a non-zero-sum game is known as the prisoner's dilemma. The prisoner's dilemma hypothesizes that two criminals (prisoner A and prisoner B) are arrested and charged with the same crime. At the police station, they are separated, and each is given the following option: if you inform on the other prisoner, you will be set free, while the other prisoner will receive a five-year sentence. Both prisoners would instinctively recognize that if they both remained silent, the police would have insufficient evidence to convict both of the crime. At worst, they would be held in the jail for several months. If, however, both prisoners informed on each other, they would probably receive a two-year sentence. Assuming that both prisoners wish to serve the minimal amount of time, their individual decisions will be dictated by what they believe will be the other prisoner's decision. There are four possible outcomes to this scenario:

1. Prisoner A informs on prisoner B while prisoner B remains silent. This is a win for prisoner A and a loss for prisoner B. This is a win-lose outcome.
2. Prisoner B informs on prisoner A while prisoner A remains silent. This is a win for prisoner B and a loss for prisoner A. This is a win-lose outcome.
3. Both prisoner A and prisoner B inform on each other. This situation essentially represents a loss for both prisoner A and prisoner B. This is a lose-lose outcome.
4. Both prisoner A and prisoner B trust each other and remain silent. This results in both prisoners doing a minimal amount of time. In effect, this is a win-win for both individuals.

The point of this brief introduction to game theory is to highlight the possibility of creating a **win-win scenario**. In the prisoner's dilemma, the key to achieving a win-win outcome is that both parties must have complete trust in each other. This concept of mutual trust plays a critical role in successful supply chain management. Far too often, both the supplier and the customer perceive the relationship as a win-lose outcome only. Customers want suppliers to provide items at the lowest possible cost, with the highest quality, delivered exactly when needed. Customers often use multiple suppliers and play them off against each other to guarantee the lowest possible price. Suppliers want to provide customers with items of the highest possible price, with acceptable quality, and delivered when it is convenient for the supplier. These attitudes produce a "dance" between the customer and the supplier, where both are trying to win even if that means that the other loses. These attitudes often stem from the fact that there is no trust between the customer and the supplier.

W. Edwards Deming, the famous management guru who was most commonly associated with the quality movement, had several interesting insights into areas that would be associated with supply chain management. As one of the few management theorists whose ideas were comprehensive enough to be synthesized into a coherent business philosophy, Deming summarized his approach

to management in fourteen points. One of these points is as follows: “End the practice of awarding business on the basis of price. Instead, minimize total cost. Move toward a single supplier for any one item, with a long-term relationship of loyalty and trust.” Ken Boyer and Rohit Verma, *Operations and Supply Chain Management for the 21st Century* (Mason, OH: South-Western, 2009), 38.

Deming argued that the move toward a single supplier for a particular part could yield significant advantages. Using a single supplier requires that a customer must sign a multiyear agreement with the supplier. This enables both the supplier and the customer to better understand each other’s needs and capabilities. As this knowledge grows, the supplier can better serve the customer by improving quality, design, and service. W. Edwards Deming, *The New Economics for Industry, Government, Education*, 2nd ed. (Cambridge, MA: MIT Press, 2000), 232. From these improvements, one can easily anticipate that there will be lower costs and higher profits. A multiyear contract with a supplier guaranteeing particular sales is invaluable to many suppliers because of the benefit of such a contract when that supplier must deal with its bank. Deming counters the argument for the need for multiple suppliers, in case a catastrophe or a disaster strikes that single supplier, by suggesting that a tight and trusting relationship will lead the supplier to develop sufficient contingency plans. Deming argues that a sense of joint responsibility comparable to a marriage comes from such trust.

Building such trust between two organizations is not easy. It will often require significant changes in one or both parties. Such change is best induced when it is clear to all participants that there is top-level management support for the new ways of doing business. Top management must articulate the shared vision between the two organizations. Top management must clearly identify the objectives and metrics to be used by both the supplier and the customer. People need to clearly understand the joint benefits from adopting the new way of business. In addition, even with electronic communication, it is highly advisable that members of both organizations meet on a regular basis and perhaps tour each other’s facilities.

The new relationships that are required for the success of any supply chain management program are not easy to implement, but they are vital. Every effort must be made to adopt this win-win perspective.

#### Video Clip 11.3.1:

*Module 6: Supply Chain Integration*



*How elements of a supply chain must be brought together.*

#### Video Clip 11.3.2:

*Module 7: Global Supply Chain Management*



*An examination of global operations.*

**Video Clip 11.3.3:**

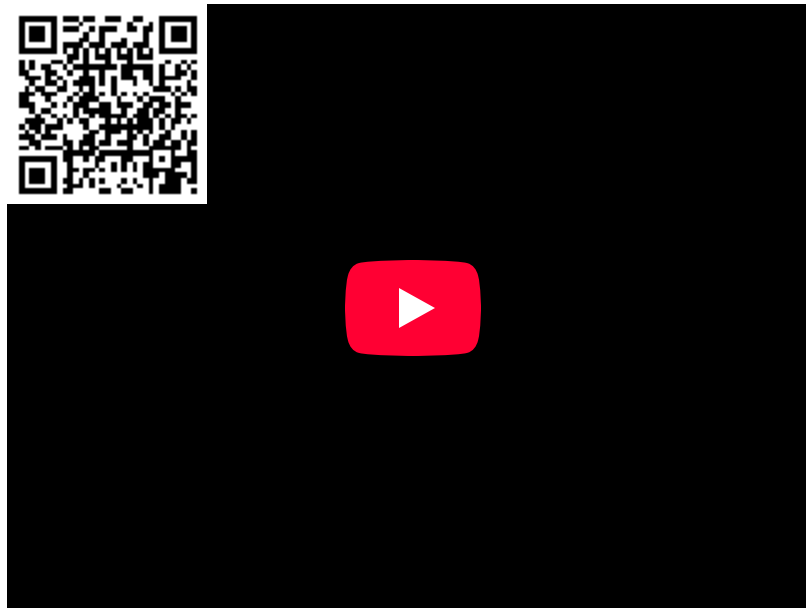
*Module 8: Socially Responsible Supply Chain Management*



*Social responsibility and sustainability are important concepts.*

**Video Clip 11.3.4:**

*Module 9: Business Processes*



*The moment a customer places an order through delivery.*

#### Video Clip 11.3.5:

*Module 11: Quality Management*



*Supply chains are tasked with producing high-quality products.*

### Managing Information in New Ways

Cost, profits, and financial ratios can provide useful insights into the overall efficiency and effectiveness of any business. However, they do not always tell the full story. A sudden spike in the price of oil, a flood that destroys a low-cost supplier, an increase in interest rates, the closing of a large plant in a small town, or a national banking crisis are all external factors that can cripple the financial viability of any business. These external factors lie beyond the control of even the best management team. Sometimes we need to be very careful about what we measure and how we should measure. Although it adds a layer of complexity to a basic accounting system, measurements that are useful for evaluating processes that serve customers can be provided.

When evaluating the supply chain of a business, there is a great need to carefully consider what metrics should be employed. Such a consideration should include at least some of the following factors:

- **Total supply chain cost.** All the operational expenditures of a cost associated with the requisite information systems.
- **Cash-to-cash cycle time.** The time between when an organization purchases raw materials and when they are paid by the customer.
- **Delivery.** The percentage of orders delivered on or before customer due dates.
- **Flexibility.** The amount of time required to handle a significant ramp up in production. Joel D. Wisner, G. Keong Leong, and Keah-Choon Tan, *Principles of Supply Chain Management: A Balanced Approach* (Mason, OH: South-Western, 2004), 442.

For those who are seriously committed to maximizing the benefits from successful supply chain management, study the **supply chain operations reference (SCOR) model**. This model enables businesses to benchmark their supply chain management systems. Developed in 1996 by the Supply Chain Council in conjunction with AMR Research and Pittiglio Rabin Todd and Rath, Scott Webster, *Principles and Tools for Supply Chain Management* (Boston: McGraw-Hill, 2008), 55. the purpose of the SCOR model is to provide methods to measure and benchmark the performance of the supply chain management system of a business. Currently, one thousand firms, universities, and government agencies participate in the continuing evolution of the SCOR model. It is predicated on three major components: process modeling, performance measurement, and the determination of best practices.

The process-modeling component begins with five essential elements that link together the supply chain: plan, source, make, deliver, and return. Plan refers to those processes associated with the design of the supply chain, planning activities associated with the other four processes, and the implementation of all these plans. These plans should enable management to identify any significant gaps and determine how these gaps will be closed. Source refers to the ordering and the acquisition of goods and services to meet anticipated demand, including purchase orders, scheduling, receipts, and storage. Make refers to those processes used to create the product or the service, including, for example, make to stock, make to order, or engineer to order. Deliver refers to those processes associated with the development and the fulfillment of customer orders, including scheduling, packaging, and shipping all orders. Lastly, return refers to those processes associated with the return of finished products by a customer. The SCOR model attempts to be as inclusive as possible with respect to these five major processes. Each process can be broken down into subcomponents. Currently, there are thirty subcomponents for the plan element, twenty-seven subcomponents for the source element, thirty-one subcomponents for the make element, sixty-one subcomponents for the deliver element, and thirty-six subcomponents for the return element. This program then goes on to identify specific metrics for nearly every subcomponent. It is the most comprehensive system of evaluation for supply chain management.

#### Video Clip 11.3.6:

*Walmart Logistics*



*A Walmart logistics commercial.*

Video Clip 11.3.7:

*Ford Manufacturing Supply Chain*



*A Cisco promotional video on supply chain management.*

Video Clip 11.3.8:

*Module 10: Measuring Performance*



*Supply chains are tasked with being effective, efficient, and adaptable.*

Web Resources

Game Theory

A comprehensive set of materials from a professor's course on game theory.

[www.agsm.edu.au/bobm/teaching/SGTM.html](http://www.agsm.edu.au/bobm/teaching/SGTM.html)

Prisoner's Dilemma

A computer application that allows individuals to play a game based on the prisoner's dilemma.

[www.gametheory.net/Mike/applets/PDilemma](http://www.gametheory.net/Mike/applets/PDilemma)

## SCOR Frameworks

An overview of SCOR from the Supply Chain Council.

[supply-chain.org/resources/scor](http://supply-chain.org/resources/scor)

The SCOR Model for Supply Chain Strategic Decisions

An article describing SCOR.

[scm.ncsu.edu/scm-articles/article/the-scor-model-for-supply-chain-strategic-decisions](http://scm.ncsu.edu/scm-articles/article/the-scor-model-for-supply-chain-strategic-decisions)

## KEY TAKEAWAYS

- In game theory's non-zero-sum model, it is possible to produce win-win scenarios for multiple players.
- Win-win scenarios require mutual trust.
- Supply chain management success needs new levels of trust and respect for it to function properly in the long run.
- Supply chain management needs metrics to evaluate its performance.
- Existing models of supply chain metrics (SCOR) can handle the most complicated of supply chains.

## EXERCISES

1. Identify some examples in your life and in business of win-win scenarios.
2. How were these scenarios achieved?
3. What were the greatest threats to these scenarios?
4. Interview five small business owners and ask them if they have had any experiences with win-win scenarios and how were they achieved.
5. Ask the same five small business owners how they measure (if they do) the effectiveness of the performance of their supply chain.
6. Imagine a local bakery that produces goods for a regional supermarket chain. Examine the SCOR model and determine if it is appropriate for evaluating the bakery's supply chain.

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