

Supply Chain Management: A Learning Perspective

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Instructor's Manual

Chapter 2 Learning and Learning Perspective

1. Chapter synopsis

In this chapter, we discuss what the learning and learning perspective are, and why it is important to approach operations and supply chain management issues from a learning perspective. We also discuss two perspectives (i.e., horizontal and vertical perspectives) to understand essential characteristics of operations capability.

2. Learning goals

The students will learn:

- how to define learning and learning capability and how they relate to SCM,
- what are single-loop, double-loop learning and learning propensity model,
- what are the three representative operations capabilities and how the firm can overcome the trade-off relationship using integrating capability,
- what is the chain of capability.

3. Chapter summary

Learning is quintessential for managing a supply chain effectively. Learning in operations is a process through which a company identifies, analyzes, and internalizes complex cause-and-effect relationships for operations problems. Learning capability is the ability to enhance its performance through applying its learning to solving real-world managerial problems.

There are two different types of learning processes, i.e., single-loop and double-loop learning. Single-loop learning is short-term oriented, fixing the symptoms. Double-loop learning is long-term oriented, tackling root causes underlying problem symptoms. A capable organization should integrate the two types of learning in a balanced way. Learning propensity model suggests how an organization develops a learning propensity for either on-shop or off-shop learning over time.

There are horizontal and vertical perspectives to understand characteristics of operations capability. In the horizontal perspective, operations capabilities consist of controllability,

flexibility, and integrating capability. Although there is a trade-off relationship between efficiency and flexibility in a short-term, a firm can mitigate the trade-off by improving integrating capability (learning). In the vertical perspective, a chain of capability suggests a hierarchical perspective for capabilities, i.e., basic - control (process) - system capability.

4. Answers to the discussion questions

1) Can you define a learning organization?

A learning organization is an organization that solves managerial problems and enhances its performance by applying its understanding of cause-and-effect relationships on the problems.

2) Why is it important to take a learning perspective in studying supply chain management?

Coordination between strategic supply chain partners is the key to successful implementation of effective SCM. But such coordination cannot be forged without mutual learning between partners. Building a relationship that facilitates the coordination between strategic partners is the process of learning, learning from each other as well as learning how to solve supply chain problems together more effectively.

3) Explain and compare single-loop and double-loop learning.

In a single-loop learning, an organization tries to fix the symptoms without tackling more fundamental causes. Thus, the single-loop learning is short-term oriented, focusing on mitigating temporary irregularity. However, in the double-loop learning, an organization directly identifies and rectifies the root causes underlying problem symptoms. Therefore, the double-loop learning is more long-term oriented. An organization should integrate these two types of learning in a balanced way. It should retain flexibility to utilize any type of learning depending on the actual (i.e., real-world) situation.

4) What is the learning propensity model (LPM)?

It consists of the dynamics as follows. Managers form a particular propensity for either on-shop or off-shop learning to solve operational problems. Following the managers' initial perceived effectiveness, more resources and managerial attention are allocated, and as a result, the initial perceived effectiveness of their chosen learning method becomes a realized effectiveness. Then, the managers formulate a similar strategy to allocate resources in favor of their chosen learning method. The managers' initial learning propensity is thus strengthened and reinforced by positive results from the successive implementation of such approaches. When this learning cycle has repeated for a long time, it will be extremely difficult for the company to change the dynamics. In that case, one of the most effective and promising intervention methods is to tackle the determining factors (i.e., top management, infrastructure, and logistical system).

5) Can you suggest a case to which you can apply the LPM to analyze a managerial problem?

Students can suggest a case in which a particular learning propensity has been formed in an organization for a long time, and the propensity has been reinforced through resource allocation or determining factors.

IBM is an interesting case. Until facing the drastic IT revolutions in the 1990s, IBM had been the most powerful company in the computing industry, especially in the mainframe computing area. The company had been so much aligned with the mainframe computing that it couldn't adapt to new reality shaped by the IT revolutions such as the PC, the client server, and later the internet in the 1990s. This is a classic case, where a company that has become so strong by developing a particular capability (i.e., learning propensity) eventually faces a catastrophic obstacle (usually caused by huge environmental disruptions such as new IT revolutions) and fails to adapt to the new reality. In order to revive the dying company, IBM had to implement an extreme measure to redirect its determining factors, i.e., hiring a new CEO outside the computing industry.

- 6) What are the major differences between static and dynamic operations management? Why do you think such differences occur?

Dynamic view regards learning as one of the most fundamental activities in operations, however, static view ignores it. There are many differences between static and dynamic operations that relate to these contrasting positions to learning.

First, the static view assumes that the production technology is well-known and there is one optimal way to do operations, implying no need for learning capability. On the contrary, the dynamic approach views the learning capability as a quintessential part of effective operations management due to uncertainty and advocates firm's effort to manage learning.

Second, the static view considers labor's role to be passive while the dynamic approach suggests that effective learning must be supported by all members in an organization – from field workers, supervisors, R&D engineers, middle managers, to top managers.

Third, the static view assumes a known and stationary environment, however, the dynamic approach suggests that the environment is inherently uncertain.

Finally, the static view considers that the company can define its goal clearly. But the dynamic approach emphasizes refining and adapting its goals dynamically through learning.

- 7) Define controllability, flexibility, and integrating capability, respectively. Why do you think there is a short-term trade-off relationship between capabilities? Is there such a relationship in the long run? Why or why not?

Controllability is a firm's capability to control its processes so that it can attain an enhanced level of efficiency (e.g., high conformance quality). Flexibility is a firm's capability to deal with uncertainties in the market and increase responsiveness to the changing market. Integrating capability is based on the firm's learning ability. There exists a trade-off relationship between controllability and flexibility in a short-term because critical sources of these two capabilities contradict each other. The key source of controllability is the scale economy and its effect is enhanced operational efficiency, however, the primary source of flexibility is the

firm's ability to deal with diverse dimensions simultaneously and its effect is superior responsiveness. But a firm can overcome the trade-off relationship in the long-run by firm's integrating capability since the integrating capability can shift the firm's capability curve upward, mitigating the negative impact of the inverse relationship between controllability and flexibility.

- 8) Explain the concept of chain of capability. In what ways is it different from the horizontal model consisting of controllability, flexibility, and integrating capability?

A chain of capability consists of three capabilities, i.e., basic, process (control), and system capability. The basic capability consists of overall knowledge and experience (e.g., culture, employees' general understanding of production process). The process (control) capability focuses on an individual function and process. The system level capability relates to capabilities such as responsiveness, lead-time, quality, design, and NPD capability that customers can observe. While the horizontal model of capability focuses on fundamental roles played by the capabilities, the vertical perspective on firm's operations capability helps managers understand and reconcile the contrasting relationship between incremental and radical changes in the organization.

- 9) Define radical and incremental improvements. Which one do you think is more realistic for your (future) business? Explain why.

The incremental improvement relates to small and continuous improvements over time while the radical improvement relates to huge and discontinuous improvements.

- 10) Explain how you can reconcile the two different improvement patterns by using the chain of capability.

There can be both incremental and radical innovations in an organization. For instance, an accumulation of incremental improvements in basic capability over time can induce radical improvements in process capability.

5. Teaching notes for the cases

- 1) Case Study 2.1 Global knowledge management at Danone (A) (abridged)
 - Refer to the Teaching Note for Case 2.1
- 2) Case Study 2.2 Global Capacity Expansion Strategies of Two Korean Carmakers [*Online Appendix 2A*]
 - Refer to the Teaching Note for Case 2.2