AGEC 632: AGRIBUSINESS LOGISTICS

Chapter 18.
Information Technology in the Supply Chain

2021

Manhattan, Kansas

KANSAS STATE UNIVERSITY | Agricultural Economics

Learning Objectives

- 1. Understand the importance of information and information technology in a supply chain
- 2. Know at a high level how each supply chain driver uses information
- 3. Understand the major applications of supply chain information technology and the processes that they enable

Responding to Predictable Variability in the Supply Chain

Role of IT in a Supply Chain

Role of IT in a Supply Chain

Information provides the foundation on which supply chain processes execute transactions and managers make decisions

Hardware, software, and people throughout a supply chain that gather, analyze, and execute upon information

1. Information must be accurate
2. Information must be accessible in a timely manner
3. Information must be of the right kind
4. Information must be shared

Information is used when making decisions about

1. Facility
2. Inventory
3. Transportation
4. Sourcing
5. Pricing and revenue management

The Supply Chain IT Framework

The Supply Chain IT Framework

- Provides access and reporting of supply chain transaction data
- Advanced systems layer a level of analytics that uses transaction data to proactively improve supply chain performance
- Enterprise software forms the foundation of a supply chain IT system

The Supply Chain Macro Processes

- Customer Relationship Management (CRM)
- Internal Supply Chain Management (ISCM)
- Supplier Relationship Management (SRM)
- Rest on Transaction Management Foundation (TMF), basic enterprise resource planning (ERP) systems
- When enterprise performance is closely linked to supply chain performance, firms must focus on macro processes

The Supply Chain Macro Processes

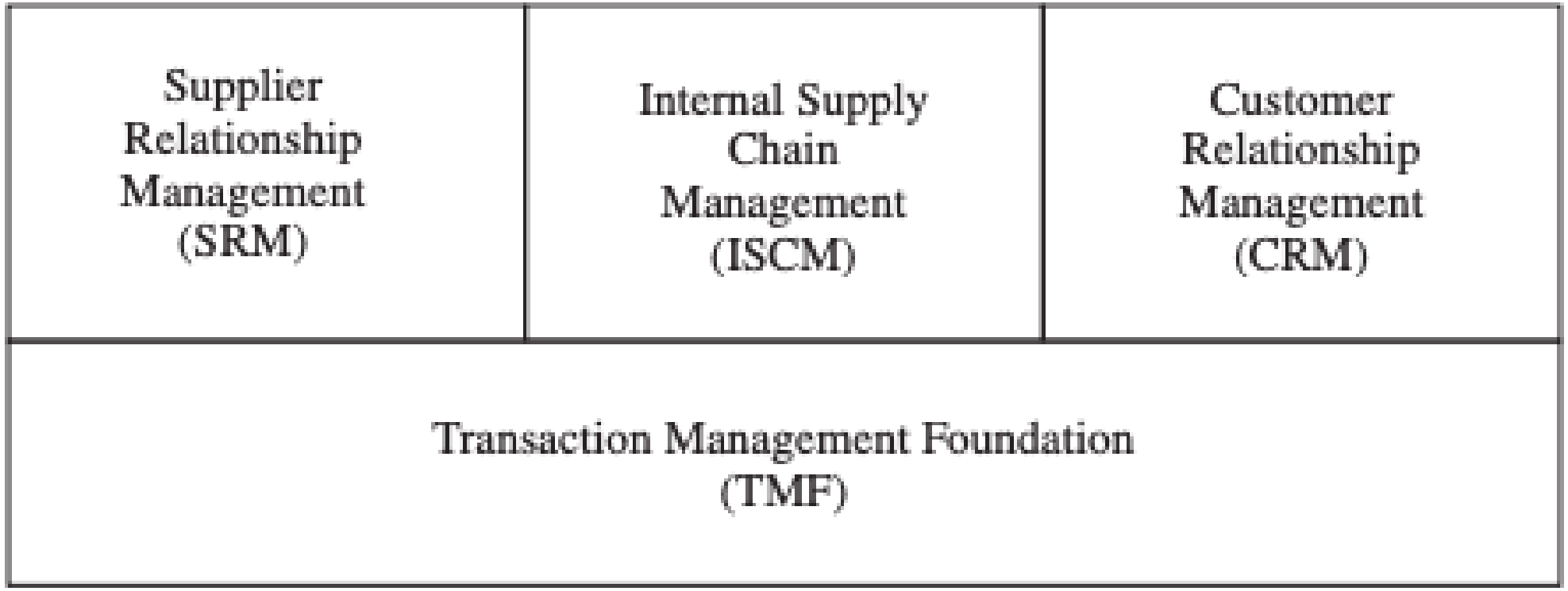

FIGURE 1 The Macro Processes in a Supply Chain

Customer Relationship Management

The processes that take place between an enterprise and its customers downstream in the supply chain

- Marketing
- Sell
- Order management
- Call/service center

Internal Supply Chain Management

Internal Supply Chain Management

- Strategic Planning
- Demand Planning
- Supply Planning
- Fulfillment
- Field Service

There must be strong integration between the ISCM and CRM macro processes

Supplier Relationship Management

Supplier Relationship Management

- Design Collaboration
- Source
- Negotiate
- Buy
- Supply Collaboration

There is a natural fit between ISCM and SRM processes

The Transaction Management Foundation

The Transaction Management Foundation

- Early ERP systems focused on transaction management and process automation
- Current focus on improving decision making in the three macro processes

The Future of IT in the Supply Chain

The Future of IT in the Supply Chain

The three SCM macro processes will continue to drive the evolution of enterprise software

Four important trends

1. The growth in software as a service (SaaS)
2. Increased availability of real-time data
3. Increased use of mobile technology
4. Increased use of social media

Risk Management in IT

Risk Management in IT

- Installing new systems
  - Revised business processes
  - Integration
- Problems can shut down the business
  - Software glitches
  - Power outages
  - Viruses

- Mitigating strategies
  - Install new IT systems in an incremental fashion
  - Run duplicate systems to make sure the new system is performing well
  - Implement only the level of complexity that is needed

Supply Chain IT in Practice

Supply Chain IT in Practice

1. Select an IT system that addresses the company's key success factors
2. Take incremental steps and measure value
3. Align the level of sophistication with the need for sophistication
4. Use IT systems to support decision making, not to make decisions
5. Think about the future

Chapter 18.
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Section Two

Data

- Data: Assumed, given, measured or otherwise determined fact or proposition used to draw a conclusion or make a decision.
- Not data: Measures automatically collected with no provision for comprehending, using or analyzing.
- Distinction is important because lots of measures can be collected with no good provision to use what is collected.

Information

- Organized facts or data
  - The key is organized. The issue is how to organize, analyze and interpret the results. That takes knowledge.
- Information is a higher level of knowing than with just data
- Information can be used to make decisions.

Knowledge

- Awareness or understanding gained through experience and/or study
- Higher level of knowing than that which comes with just information.
- Knowledge means knowing how to produce and use information, such as in decision making.
- We will see the importance of this distinction when considering ERP as we go from operational to strategic.

Two Kinds of Knowledge

- Explicit or formal knowledge
  - Can be written or told to another
- Tacit or personal knowledge
  - Knowledge that comes strictly from experience and cannot be passed to another through telling or writing.
- Even explicit knowledge is limited in its ability to impart full understanding through telling.
  - Reason for alternative learning paths in education.

When Knowledge is Imperfect

- In the real world we do not have perfect knowledge. Ignorance is pervasive.
  - That is reality and that is what makes knowledge an interesting economic and business topic.
- In an imperfect world, knowledge has economic value because it is so limited.
  - It is a key source of competitiveness
  - The constitution protects intellectual property with patents, copyrights and trademarks.
- Managing knowledge is a critical management concern
- Peter Drucker—"the firm is no more than knowledge and people . . ."
  - Drucker argued that the trick is to manage these two, jointly.

Information, Knowledge and Supply Chain Management

- Six SC drivers
  - Governance
  - Inventories
  - Transportation
  - Facilities
  - Pricing
  - Information
- First four are part of the downstream process of providing customer service
- Information flows up and down stream as well as in a web.
  - It coordinates over the whole supply chain in the provision of customer service—see next slide.

Information

- Unlike the other drivers, information flow is not linear, but more of a complex network with lots of feedback mechanisms and lots of unrecognized possibilities.
  - Recall ignorance is pervasive.
- Steps to produce information—Gathering, organizing and analyzing data
  - How do we efficiently capture the data, organize it, analyze it, and use the resulting information?

Information: The Foundation for Decision Making

- Within the firm
- Up and down the supply chain
  - Information flows upstream from consumer

Supply Chain Visibility

- Information is what gives good visibility to the supply chain for management.
  - By visibility, I mean our ability to see and understand the operations that make up the supply chain.
- Visibility facilitates good decisions

Information and the Scope of Management

- Supply chain scope is determined by the scope of the information
  - Management is local
    - When information is local only
  - Management can be global
    - When information is global in nature

Characteristics of Good Information

- Accurate
- Accessible
- Appropriate
- Timely

Examples of How Information Used With the Other Drivers

- Setting optimal inventory policies
- Deciding on transportation networks, routing, etc.
- Determining facilities locations, capacities and determining optimal arrangements and resource use

Levels of Decisions

- Strategic—several years time frame
- Planning—several months to a year
- Operations—day-to-day or week-to-week
  - Operations is executing the plans based on current conditions

Review Summary

- Data, information and Knowledge
- Formal vs tacit knowledge
- Economics of imperfect knowledge
- How information powers the supply chain
- IT in business over time
- Module of ERP

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