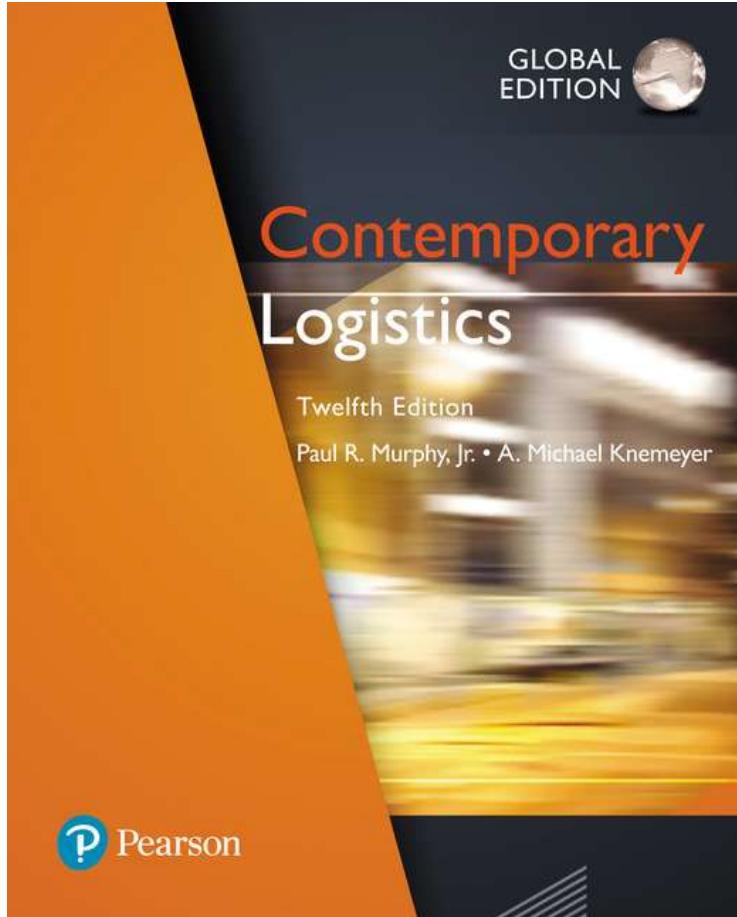


# Contemporary Logistics

Twelfth Edition, Global Edition



## Chapter 7

Demand Management,  
Order Management,  
and Customer Service

# Learning Objectives

- 7.1 To understand the linkages between demand management, order management, and customer service
- 7.2 To introduce you to demand forecasting models (SKIP)
- 7.3 To examine the order cycle and its four components
- 7.4 To understand the four dimensions of customer service as they related to logistics
- 7.5 To familiarize you with select managerial issues associated with customer service

# Demand Management, Order Management, and Customers Service

(1 of 7)



- Demand management determines how an organization determines what the customer wants. Can be defined as “the creation across the supply chain and its markets of a coordinated flow of demand.”<sup>1</sup> =Deciding what to prepare?
- Order management refers to management of the various activities associated with the customers order from start to end.  
= executing the promise
- Customer service strives to keep customers happy and creates in the customer’s mind the perception of an organization with which it is easy to do business. = *how the customer remembers you*

# Demand Management (2 of 7)

- Key component of demand management is **demand (sales) forecasting**
  - Refers to an effort to project future demand
  - Is helpful in **make-to-stock** situations and **make-to-order** situations
- Three basic types of demand forecasting models:
  - Judgmental: **expert opinion**
  - Time series: **historical data**
  - Cause and effect (associative): **promotions, price**

# Example : Demand uncertainty and aggregation)

2.8 Table 2.60 reports an estimate of the annual mean demand and the corresponding variance of fruit and vegetable products of Flanders, Belgium. The products are divided into five categories: fall–winter, spring–summer, exotic fruits, citrus fruits and dried fruits. Verify whether the aggregate forecast is more or less accurate than the estimated demand for each category

Table 2.60: Annual mean demand and variance of fruit and vegetable products of Flanders

Category	Mean ( $\mu$ )	Variance ( $\sigma^2$ )
Fall–winter	123,000	24,570
Spring–summer	245,000	35,650
Exotic fruits	9,860	320
Citrus fruits	98,000	2,980
Dried fruits	2,450	456

Gianpaolo Ghiani, Gilbert Laporte, Roberto Musmanno(auth.) - Introduction to Logistics Systems Management, Second Edition (2013)

# Example

## Step 1: Aggregate demand statistics

- Mean demand (aggregate):

$$\mu_{\text{agg}} = 123,000 + 245,000 + 9,860 + 98,000 + 2,450 = 478,310 \text{ t}$$

- Variance of aggregate demand

$$\sigma^2_{\text{agg}} = 24,570 + 35,650 + 320 + 2,980 + 456 = 63,976$$

$$\sigma_{\text{agg}} \approx 253$$

Aggregation reduces relative uncertainty.

# Example

Step 2: Coefficient of variation for each category (CV)

Category	Mean ( $\mu$ )	Variance ( $\sigma^2$ )	$\sigma$	CV ( $\sigma/\mu$ )
Fall–winter	123,000	24,570	157	157/123000 ≈0.00128
Spring–summer	245,000	35,650	189	189/245,000 ≈0.00077
Exotic fruits	9,860	320	17.9	17.9/9860 ≈0.00182
Citrus fruits	98,000	2,980	54.6	54.6/98000≈0.00056
Dried fruits	2,450	456	21.4	21.4/2450≈0.00873

Step 3: Coefficient of variation of aggregate demand

$$CV_{agg}=253/ 478,310\approx0.00053$$

# Example

## Step 4: Comparison and conclusion

- The **aggregate coefficient of variation (0.00053)** is lower than the CV of every individual category
- Therefore, the **aggregate forecast is more accurate in relative terms**

## Conclusion

The aggregate forecast is **more accurate** than the forecast for any individual product category.

Aggregation reduces relative demand variability because fluctuations across categories partially offset each other.

# Order Management (1 of 10)

From click to delivery — where does time get wasted?

- Order cycle (replenishment cycle or lead time) refers to the time from when a customer places an order to when goods are received
- Order management refers to management of the various activities associated with the order cycle
- Order to cash cycle refers to the length of time it takes an organization to receive payment for an order
  - Some organizations include order to cash cycle in their order management model

# Order Management (2 of 10)

- Order cycle time should be analyzed not only in terms of total cycle time but in cycle time variability (reliability) as well
- Order management has been profoundly affected by advances in information systems and tracking and tracking and tracing (HungerStation Order)
- Four stages of the order cycle include:
  1. Order transmittal
  2. Order processing
  3. Order picking and assembly
  4. Order delivery

# Order Management (3 of 10)

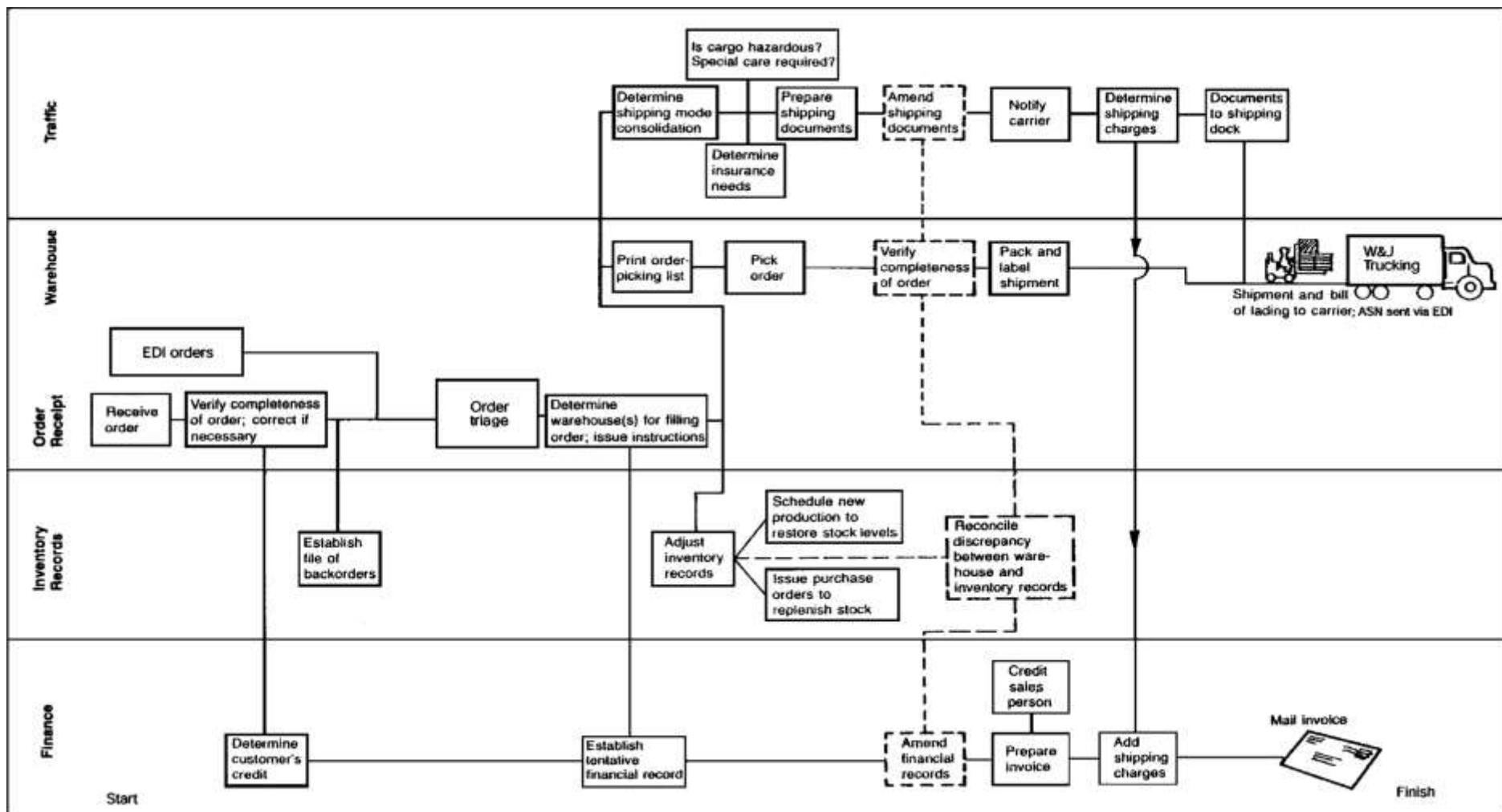
1. Order transmittal      Place order.....seller receive order
  - Refers to the time from when the customer places an order until the seller receives the order
  - Methods of order transmittal
    - In person (slow)
    - Mail, Telephone, Fax (subject to errors)
    - Electronically online and via mobile apps (accurate and fast but data privacy issue)
2. Order processing Seller receive order .....customer receive order
  - Refers to the time from when the seller receives an order until an appropriate location (i.e., warehouse) is authorized to fill the order

# Order Management (4 of 10)

## 2. Order processing

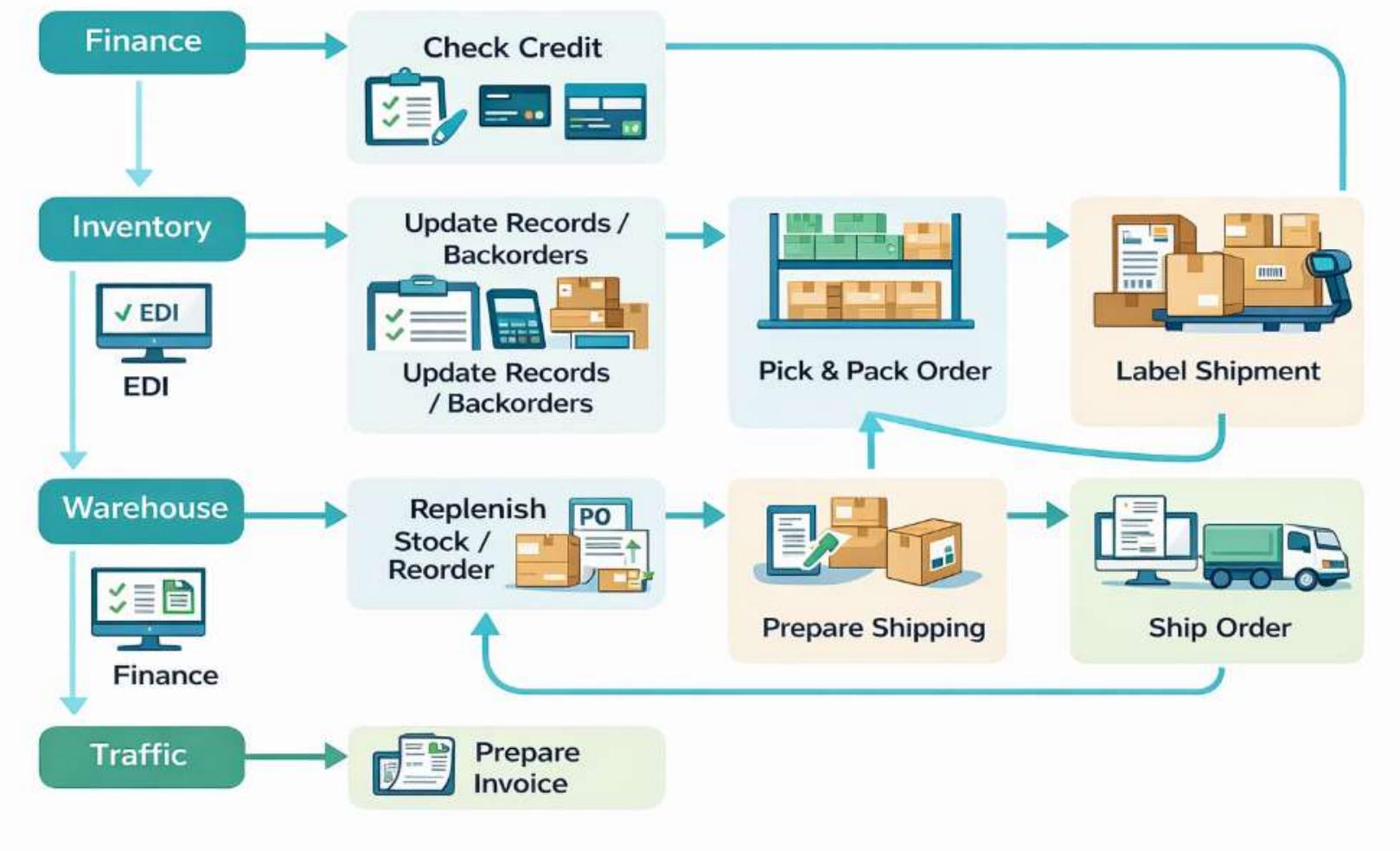
- Order processing activities include:
  - Checking for completeness and accuracy
  - Checking the buyer's ability to purchase
  - Order entry into the computer system
  - Crediting salesperson with the sale
  - Recording the transaction
  - Determining inventory location
  - Arranging for outbound transportation
- Some of these activities are sequential (should be done in order) others can be done parallel. This helps in reduce order cycle time

# Figure 7.1: Flowchart of Order Handling (2. Order Processing) System



# Simple Figure: Flowchart of Order Handling (2. Order Processing) System

## Order Fulfillment Process



# Order management

## Managerial approaches in order processing

- Order receipt
  - EDI orders bypass checking for completeness as opposite to other order transmissions method
- Order triage refers to classifying orders according to **pre-established guidelines** so that a company can prioritize how orders should be filled
  - Prioritizing attribute(s) delight those that exhibit the chosen attribute and disappoint other customers
- Assigning order to a location
  - Fill an order from closest facility location to customer
  - Facility with largest amount of requested product

# Order Management (6 of 10)

## 3. Order picking and assembly

1. Order transmittal
2. Order processing
3. Order picking and assembly
4. Order delivery

- Includes all activities from when an appropriate location is authorized to fill the order until goods are loaded aboard an outbound carrier
- Accounts for up to two-thirds of a facility's operating cost and time
- Represents best opportunity to improve the effectiveness and efficiency of an order cycle using improvement:
  - combining multi-order, minimizing movement, positioning frequently ordered items near loading area



# Order Management (8 of 10)

## 3. Order picking and assembly

- Examples of improvement include:
  - Handheld scanners
  - Radio-frequency identification (RFID)  
uses electromagnetic tags to identify objects
  - Voice-based order picking
  - Pick-to-light technology
  - Smart glasses with Augmented Reality to help vision picking
  - Robotics and Automation for Automated storage / Automated retrieval (AS/AR)



# Order Management (10 of 10)

## 4. Order delivery

1. Order transmittal
2. Order processing
3. Order picking and assembly
4. Order delivery

- Order delivery refers to the time from when a transportation carrier picks up the shipment until it is received by the customer (Transportation Chap 12 &13)
- Three key order delivery issues:
  - Variety of options in terms of transit time are now available, such as delivery by 12 noon and 4:30 p.m.
  - Number of shippers are emphasizing both elapsed transit time as well as transit time reliability
  - Transportation carriers are revamping their operations to provide faster and less variable transit times
  - Customers are requiring for delivery windows and measuring delivery reliability

# Customer Service in Logistics (1 of 4)

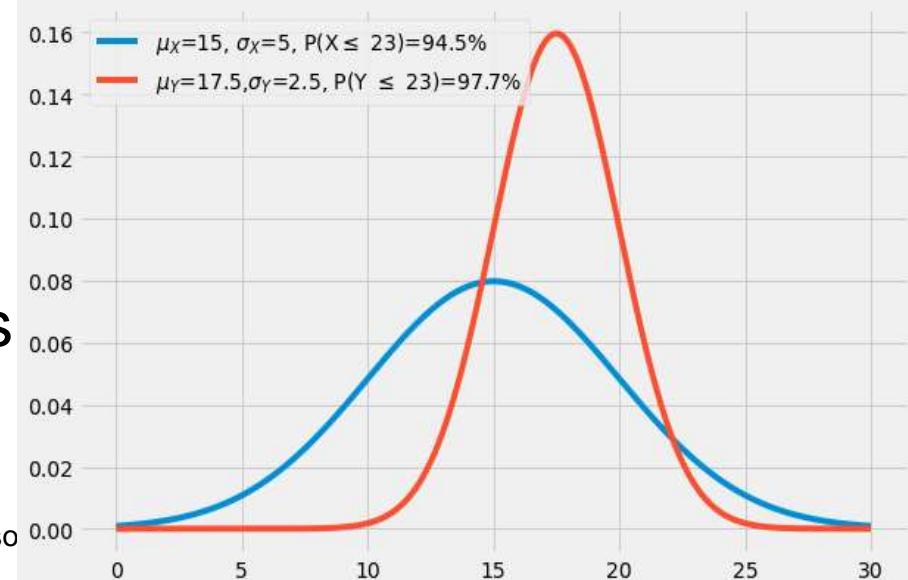
- Defined as “the ability of logistics management to satisfy users in terms of time, dependability, communication, and convenience.”<sup>2</sup>
- Customer service is much more difficult for competitors to imitate than other marketing mix variables such as price and promotion
- Four dimensions of customer service:
  - Time
  - Dependability
  - Communication
  - Convenience



1. Time
2. Dependability
3. Communication
4. Convenience

# Customer Service (3 of 4)

- Time refers to period between successive events (e.g., order cycle time) with target to reduce it.
  - Amazon continues to add to the number of locations where it offers *one-hour delivery* for online orders. Example in maintenance as service.
- Dependability refers to ‘reliability of encountered service’
  - Consists of three elements:
    - Consistent order cycles  
(cycle time more regular)
    - Safe delivery (without loss or damage)
    - Complete delivery



# Customer Service (4 of 4)

- Communication
  - To be effective, should be a two-way exchange between seller and customer
  - Goal is to keep both parties informed
  - Requires correct parties to be involved in the process
  - Facilitated nowadays with feedback systems and rating systems
- Convenience
  - Focuses on the ease of doing business with a seller
  - Plays a key role in a consumer's purchasing decision
  - Leads to multichannel marketing and omnichannel retailing

# Managing Customer Service (1 of 2)

1. Goal
2. Objectives
3. Measurement
4. Profitability
5. Failure/Recovery

- Five specific customer service considerations:
  - Establishing customer service goal (specific vs broad)
  - Translate goal into set of SMART objectives:
    - SMART: Specific, Measurable, Achievable, Realistic, Timely
  - Measuring customer service as part of quality-control program
  - Customer profitability analysis (CPA)
  - Service failure and recovery

# Managing Customer Service: setting objectives

1. Goal
2. Objectives
3. Measurement
4. Profitability
5. Failure/Recovery

- Objectives are the means by which goals are to be achieved. Should be “SMART”:
  - Specific, Measurable, Achievable, Realistic, Timely
  - Example: Reduce order picking errors from 5 to 2 percent within a 12-month. Is it SMART?
- Goal and objectives should take into account
  - Customer needs, eg, What services are needed? Which one is most important? How well are we doing? What could be improved?
  - Benchmarking against competitors in performance (fill rate) and process (to get more insight)

# Managing Customer Services

## Measuring customer service

1. Goal
2. Objectives
3. Measurement
4. Profitability
5. Failure/Recovery

- You cannot manage what you cannot measure!
- Key issues in measuring customer service involve:
  - Finding data sources (internal and external)
  - Determining factors to measure in relation to time, dependability, communication, and convenience
  - Limiting measurement to few important metrics
  - Communicating with IT to design a dashboard
  - Visualizing the metrics in clear way



**TABLE 7.2** Select Customer Service Measures

Customer Service Dimension	Measure
Time	Order cycle time
	Inquiry response time
Dependability	Perfect order
	On-time delivery
Communication	Customer complaints
	Order status information
Convenience	Returns process
	Response to emergency situations

# Managing Customer Services

## Customer Profitability Analysis (CPA)

1. Goal
2. Objectives
3. Measurement
4. Profitability
5. Failure/Recovery

- CPA refers to the allocation of revenues and costs to customer segments or individual customers
- Which one is most important?
- Which one is least important?



# Managing Customer Services

## Service Failure and Recovery

1. Goal
2. Objectives
3. Measurement
4. Profitability
5. Failure/Recovery

- 100% service level is hard to realize
- Some situations will occur in which actual performance does not meet the customer's expected performance
- Examples of order-related service failures in logistics include: lost delivery, late delivery, early delivery, damaged delivery, and incorrect delivery quantity
- **Service recovery** refers to a process for returning a customer to a state of satisfaction after a service or product has failed to live up to expectations
- **Service recovery paradox**

# Key Terms (1 of 3)

- Activity-based costing (ABC)
- Benchmarking
- Cause-and-effect forecasting
- Collaborative planning, forecasting, and replenishment (CPFR)
- Customer profitability analysis (CPA)
- Customer service
- Demand management
- Judgmental forecasting
- Make-to-order
- Make-to-stock

# Key Terms (2 of 3)

- Multichannel marketing systems
- Order cycle
- Order delivery
- Order fill rate
- Order management
- Order picking and assembly
- Order processing
- Order to cash cycle
- Order transmittal
- Order triage

# Key Terms (3 of 3)

- Pick-to-light technology
- Service recovery
- Service recovery paradox
- Time series forecasting
- Voice-based order picking