Contemporary Logistics

Demand Management & Customer Service

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Sub-topics

- **Customer Demand Management**
  - **Forecasting (Concepts & Methods)**
  - **Management Tactics**
- **Customer Service**
  - **Basic Service**
  - **Satisfaction**
  - **Value & Relationship**
- Conceptual, technical, operational, subjective

I. Customer Demand Management

The Demand Management Concepts

Your business ultimately depends on meeting the customers' needs and providing them with value

Know what customers want, how much they want, when do they want it, how do they want it.

Know why do they want it, what do they expect from you as the provider, and how to add value to what you provide to keep them coming back to you.

The power of customer service is a potential means of differentiation (Competitiveness).

- **1. Know what customers want –**
  - Product Ideas - technology, market trends, R&D, etc. (e.g., IKEA co.)
  - Market survey, special needs (e.g, Haier)
  - Existing, variation, or new
- **How much do they want and when?**
  - **Certainty –** predictable? (E.g. McD)
  - **Uncertainty --** unpredictable? (e.g. Nokia)

- **2. Demand Classifications**
  - Similar but Unique items (e.g. fashion, apparel, meg., technological) - short-lived product (e.g., CD, mobile phone, special issue)
  - Mid- short-lived product line (e.g., Nike shoes)
  - Long-lived durable (e.g.,B747, Haier refrig.), or daily items (e.g., meat, eggs, Kellogg, Coke)
  - Long-term necessities – stable (e.g., electricity) or seasonal (e.g., tourism)
- Variation & volatility (range, pattern, magnitude)
- What's most difficult to forecast?

Harlan Co.– Check Forecasting System

- One of the largest check printing co. in US (1000 patterns, 20 plants in 16 states)
- Check printing: base (quant.) + ind. data (order)
- Used simple 3-mon MA forecasting -- not good
- Adopted modern forecasting software, generating TS forecast for each quarter
- Forecasting system + inventory management: result
  - Inventory cost reduced by 15%
  - Forecasting time: from 2 Weeks to 2 Days;
  - Forecasting staff reduced by 1/2

Demand Management Tactics

- How to deal with uncertainty?
  - Ample stock from long-term forecast
  - Minimum stock with risk of stock out
  - No stock - wait till demand occurs
- Other ways to manage uncertainty:
  - Postponement
  - Make-to-order

- 3. Needs for Collaborative forecasting
  - Reduce the Bull-whip Effect
  - Enhance internal and external coordination

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The Jin-Yi Enterprise(晉億) 2004-China

- World Largest Screw (Fastener) manufacturer
  - Established in 1979 by 3 brothers in Taiwan; Initial Capital= RMB$ 25,000.
  - In 25 yrs. expanded to Malaysia, China, Vietnam
  - SC – source steel from Brazil, Russia, China, Korea; production in China, sell to global market

    Annual volume =240k ton; Rev. $RMB 1.25B

    Automated warehouse => order-picking per container (from 3p, 18h to 1p, 20 min.)

Make money on Logistics. How?

JY's Strength

- Product qty. = 20k kinds; ½ all kinds; price=2c to ~ $$
- Warehouse = 48 football courts, 8 story, automated
- **Fame:**
- 8/29/05 New Orleans – Katrina destroyed 200k L.Posts
- Need repair screws (1 kg. each) = 1200 tons = 6/L.P.
- Other manufacturers (45 + 15 days) for prod. + shipment
- JY received order ~ 9/15, had Inv.=600 tons
- shipped in 700 tons steel from Russia; produced rest near Shanghai in 5 days; order arrived at New Orleans by ~10/5 . (20 days total lag time – **QR!!**)

JY's Demand/Inventory Management

- Data collection – 3 years; demands by type, country analysis; market condition adjustment
- Production based on forecast; holds 3 mon. inventory on all 20k kinds of screws.
- Contrary to 0-inventory theory; go with instant-time replenishment (time-based competition)
- One stop service for screws: order-picking for Fastenal; "produce-sort-ship";
- Savings sharing = at 5% service + 10% gross margin (offset inv. cost)

4. Forecast Management System

- **Database (extensive IT system)–** e.g. auto parts (Saturn), plane parts (Singapore Co.), hospital supplies (AHS), industrial materials (T. Plastics-daily clearance system)
  - Orders – demand quantity, pattern, etc.
  - History – time series for regular consumable items
  - Judgment – replenishment adjustment by experience
- **Forecast Process** (from subjective to consensus to elaborate mathematical analysis)
  - Forecast Technique – next page
  - Forecast Support System – tools, visual, statistical aid
- Forecast **Verification & Feedback** (frequent revision)
  - Marketing, Sales
  - Production, Logistics
  - Customers

- **5. Forecast Techniques & Software**
  - Moving Average
  - Exponential Smoothing
  - Time Series Analysis
    - Trend, Seasonality, Cycle, etc.
  - Regression
  - Multivariate
  - Many different types of software
    - SAS, SPSS, etc.

Demand Pattern – Seasonality

- Most erratic during pre-Christmas period
  - 20% of annual sales in 3 weeks
  - Double staff (~150) & quadruple telephone lines
  - Must deal with post-season build-down
- Historical data show other info:
  - Strong day-of-week pattern (M, T >>>>S)
  - Q2 = Q3 <Q4 (max. in Dec.) >> Q1
  - TM more volatile than TI, peak hours
  - TI peaks 2-3-weeks after TM
  - Holiday patterns – Father's, Valentine's day
  - Catalog receipt pattern – High Tuesday
- Did two 4-yr time series analysis → pattern

Forecasting & Verification

- Use SAS Package to forecast
- Use 5-yr daily data of calls to build forecast

  Accuracy (TM : MAPE = 7.4% ; TI : MAPE = 11.4%)
- Ex-post Forecasts – 3-week forecast

  Accuracy (TM : MAPE= 9.8% ; TI : MAPE = 12.0%)

- Better-matched schedule of staff/workload: increased order transactions, increased sales by 6% (> $50M)
- Other benefits: less waiting, higher customer satisfaction, higher staff morale ($ x M)

II. Customer Service – (in)tangible

- 1. Customer service – competitive weapon
  - Continual rising of customer expectations
  - Need differentiation in “commodity” market
  - Personalized service attract customers
- 2. Customer value – a relative index
  - CV = Quality x Service / Cost x Time
  - e.g., Caterpillar tractors – 48 hr parts/service globally

- Customer Service Values
  - A. Palmer hospital
  - Hard Rock Cafe
- Malcolm Baldridge award of quality
- 1. Spatial convenience (e.g., Mall)
- 2. Time efficiency (e.g.,Avis car rental)
- 3. Product (service) variety/ specialty
- 4. Quality
- 5. Cost

2. 3S's of Customer Value Achievement

- The Basic Service
- a. Availability – have it as needed
  - Fill rate - % of orders met as required
  - Survey of customer response on **Stock-out**:
    - 9% do not buy; 26% buy different brand; 31% buy item at another store

      19% substitute same brand; 15% delay buy
    - 2/3 customers buy on sight, only 1/3 will stay
  - Perfect order (correct, on time, condition, etc.)
    - E.g., beef package contract

- **b. Operational Performance**
- e.g. Lian-Chiang Int. - 3C supplies, repair service = 7-11+Dell;
  e.g., South-West airlines
  - Speed – 25 min turn-around
  - Consistency – shuttle-like
  - Flexibility – seating policy (non-assignment)
  - Recovery – correction, compensation, etc.
- **c. Service Reliability**
  - Low Damage rate – shipping & handling - fragile
  - Few Mis-shipments, etc.- e.g. Kantola- videos

- Customer Satisfaction – e.g., Cicoci
  - Responsiveness – planning
  - Access – assigned staff
  - Courtesy
  - Communication
  - Credibility - trust
  - Security
  - Tangibles
  - Personal touch

- Customer Success –
- Understand customer's requirements
- Know customer's processes
- Use your capability to enhance your customer's performance; have lasting customer
- Customer's "Life Value"

  CLV = average transaction value x frequency

  x customer "life expectancy"

  - e.g., car dealer

- Customer Success – **e.g., TAL & Penney**
- **TAL – HK-**basedglobal shirts supplier, sells 1/8 shirts sold in US
  - Plants in HK, Taiwan, Malaysis, Tailand
  - US clients: Penney, Crew, Klein, Banana Rep., Hilfiger, Claiborne, Lauren, Brooks, Land's Ends, etc.
- Saw need – Penney held excessive inventory (9. mon)
- 1. proposed direct shipping for cost savings (28>>14c), skepticism, >> successful test in 1 store; later, deliver directly to > 1000 stores
- 2. forecast demands for Penney using advanced system and real data,; design, test-market 100,000 shirts in 50 stores, then produce and ship to all 100 stores, taking over entire replenishment function
- Propose JV for expansion for SCM of other manufacturers