University of Bahrain
College of Business Administration
Department of Management and Marketing

MGT 236: **Production Management**

Spring Semester 2014

Homework 1: Supply Chain Management
Answers

Short Answer Questions

1. *Explain the different revenue models used in e-commerce.*
   Operators of e-commerce web sites can support their activities using one or more of several revenue models. A site that attracts users and then displays advertisements from other businesses is using the advertising revenue model. A site that charges a fixed periodic fee for access to its content is using a subscription revenue model. Some sites charge a fee for a completed transaction, such as a stock trade. This is the transaction fee model. Companies that earn directly from what customers buy use the sales revenue model. Finally, a site may earn its revenue by referring visitors to other sites. This is the affiliate model.

2. *Describe the evolution of business-to-business (B2B e-commerce).*
   B2B can be said to have started in the 1970's with automated order entry systems that used telephone connections. In the late 1970s electronic data interchange (EDI) provided standards for the computer-to-computer exchange of information such as invoices and purchase orders.

3. *For the next item you buy, determine its supply chain.*
   I recently bought some soft drinks in cans. The cans are produced by obtaining the raw materials from mines, followed by a processing in a plant. The cans are then filled with the liquid at the bottling companies. They are then placed in a warehouse. From there, they are shipped to the retailers who then sell to you and me.

4. *How do supply chains for service organizations differ from supply chains for manufacturing organizations?*
   Service supply chains typically do not include external suppliers. In addition, the tier one supplier is a company that produces the final packaged product. Manufacturing supply chains typically include a greater variety of links in the chain in terms of the types of companies. Manufacturers have external suppliers in the different tiers, as well as processing operations.

5. *Describe the additional factors that affect global supply chains.*
   Global supply chains face several additional challenges. The members of the supply chain can be dispersed around the world. This can increase shipping time and pipeline inventory. Longer delivery times can make forecasting less accurate. The partners in the supply chain

will not all use the same currency. Currency fluctuations can change prices between contract and delivery. Different countries will have varying levels of infrastructure development. This can impact transportation, the availability of trained workers, communications, and manufacturing operations. Firms may need to provide many market specific variants and versions of their products to meet local tastes, conditions, and regulations. This is referred to as product proliferation.

6. *Explain the concept of partnering, including advantages and disadvantages.*
Partnering is the development of a close relationship with a supplier, based on trust, shared information and vision. The advantages are the ability to reduce costs, improve quality and planning. The disadvantages are the violation of trust that can cause problems and the inability to quickly change suppliers if problems arise. Recall the Ford/Firestone quality fiasco that is currently being litigated. The presumption of trust may have caused the delay in detecting quality problems.

Problem 1
Indifference Point: Total Cost of Insourcing = Total Cost of Outsourcing
Total Cost = $FC + VC(Q)$
a. $300{,}000 + 1.5(Q) = 120{,}000 + 2.25(Q)$
$Q = 240{,}000$ units
b. Since the demand is expected to be over the indifference point, insourcing is cheaper. The total cost for insourcing would be $750,000 and the total cost for outsourcing would be $795,000.
The actual difference may be computed to be $45,000.

Problem 2
Indifference Point: Total cost of insourcing = total cost of outsourcing
Total Cost = FC+VC(Q)
The price from a new supplier is now $1.80.
The new fixed cost is $200,000.
$300{,}000 + 1.5(Q) = 200{,}000 + 1.8(Q)$
$Q = 333{,}333.3$ units
Since the demand of 300,000 is lower than the indifference point, outsourcing is a cheaper alternative. The total cost for outsourcing now becomes $740,000. The actual difference may be computed to be $10,000.

Problem 3
a. Total Cost = $FC + VC(Q) = 125{,}000 + 0.90(160{,}000) = \$269{,}000$
b. Total Cost from Durable = $170{,}000 + 0.65(160{,}000) = \$274{,}000$
c. Indifference point: Total Cost of Insourcing =Total Cost of Outsourcing
$125{,}000 + 0.90(Q) = 170{,}000 + 0.65(Q)$
$Q = 180{,}000$ snow boards
d. Annual demand must exceed 180,000 snow boards to justify outsourcing as the cheaper process. That increase is 12.5%, or 20,000 units over the current demand.

Problem 4

a. Using the current demand of 160,000 units:
Total Cost from FFI = 230,000 + .23(Q) = $266,800 $2,200 lower than insourcing.

b. Indifference point: Total cost of insourcing = total cost of outsourcing
125,000+0.90Q = 230,000 + 0.23Q
Q = 156,716.41, so better to outsource when demand is 156,717 or more.

c. Additional factors that need to be considered include the economic stability of FFI, the technical ability of FFI to produce a quality product, the ability of FFI to "partner", the ability of FFI to deliver on time, and the impact of outsourcing on remaining employees.