Module Seven

Procurement and Outsourcing

Outline

- Sourcing
- Outsourcing
  - Examples

Sourcing

- Sourcing is the entire set of business processes required to purchase goods and services. Sourcing processes include the selection of suppliers, design of supplier contracts, product design collaboration, procurement of materials, and evaluation of supplier performance.

Benefits of Sourcing

- Better economies of scale can be achieved if orders within a firm are aggregated.
- Efficient procurement transactions significantly reduce the overall cost of purchasing. This is most important for items where a large number of low-value transactions occur.
- Good procurement process can facilitate coordination with supplier and improve forecasting and planning. Better coordination lowers inventories and improves matching of supply and demand.
- Appropriate supplier contracts can allow for the sharing of risk, resulting in higher profits for both the supplier and the buyer.
- Firms can achieve a lower purchase price by increasing competition through the use of auctions.

Supplier Scoring and Assessment

- Factors considered
  - Replenishment lead time
  - On-time performance
  - Supply flexibility
  - Delivery frequency (minimum lot size)
  - Supply quality
  - Inbound transportation cost
  - Pricing terms
  - Information coordination capability
  - Design collaboration capability
  - Exchange rates, taxes, and duties
  - Supplier viability

Example of Sourcing

- Green Thumb, a manufacturer of lawn mowers and snow blowers, has historically purchased a thousand bearings per week from a local supplier who charges $1.00 per bearing. The purchasing manager has identified another potential source willing to supply the bearings at $0.97 per bearing. Before making his decision, the purchasing manager evaluates the performance of the two suppliers. The local supplier has an average lead time of two weeks and has agreed to deliver the bearings in batches of 2000. Based on past on-time performance, the purchasing manager estimates that the lead time has a standard deviation of one week. The new source has an average lead time of six weeks and a standard deviation of four weeks. The new source requires a minimum batch size of 8,000 bearings. Which supplier should the purchasing manager go with? Green Thumb has a holding cost of 25 cents. They currently use a continuous review policy for managing inventory and aim for a cycle service level of 95 percent.

Cost of Using Current Supplier

- Annual material cost = (annual demand in units) x unit cost = 1000 x 52 x 1 = $52,000
- Average cycle inventory = (order quantity)/(cycle length) = 2,000 / 2 = 1000 (unit)
- Annual cost of holding cycle inventory = (average inventory value) x 25%
- = 1000 x 1 x 0.25 = 250 (UDS)
- Safety inventory required with current supplier = $z\sqrt{AVGL^2 \times STD^2 + AVG^2 \times STDL^2}$ =1.65*1086=1792 (units)
- Annual cost of holding safety inventory = 1792 x 1 x 0.25 = 448 ($)
- The total annual cost of using current supplier =material cost + safety inventory cost + cycle inventory cost= 52,000+250+448 = **52,698.00 (**$)

Note: Here we assume that the standard deviation of demand during the lead time is 30% of the average demand. Therefore STD=300 units.

Cost of Using New Supplier

- Annual material cost = 0.97x1000x52=$50440
- Average cycle inventory = 8,000 / 2 = 4000 (units)
- Annual cost of holding cycle inventory = 4000 x 0.97 x 0.25 = $970
- Safety inventory required with new supplier
  = $z\sqrt{AVGL^2 \times STD^2 + AVG^2 \times STDL^2}$
  =1.65*4066.94 units (for 95% service level)
  =6710 (units)
- Annual cost of holding safety inventory = 6710 x 0.97 x 0.25 = $1627
- The total annual cost of using the new supplier = $53037.00

Answer

- The total annual cost of using current supplier = $ **52,698**
- The total annual cost of using the new supplier = $ **53,037**

Supplier Selection and Contract

- ***Buyback*** contract has been popular in the recent past years. The supplier buys back the remaining inventory at a discount price. This provides incentives to the buyer to purchase a larger variety and at a larger quantity of products to solicit demand. It is suitable for products with a low variable cost. But it can lead to surplus inventory.
- ***Revenue-Sharing*** contracts apply in the retail sector. It allows the buyer to pay a minimal amount for each unit purchased from the supplier, but shares a fraction of the revenue for each unit sold. In this way, there is no product returns.
- ***Quantity flexible*** contracts allow the buyer to modify the order (within limit agreed to by the supplier) as demand visibility increases closer to the point of sale.
- ***Contracts to coordinate supply chain costs*** apply to supply chain parties with strategic relationship. It aims at reducing the total supply chain cost including manufacturing, distribution, and inventory.
- ***Contracts to induce performance improvement*** leaves the flexibility of rewarding the supplier based on its supply performance such as percentage of on-time delivery, percentage of damage, etc.

Outsourcing

- Outsourcing is when a firm subcontracts for services that it would otherwise perform in-house.
- The 3rd party logistics service providers provide services such as transportation, distribution, warehousing, as well as IT services directly to the outsourcers. If the functions outsourced are too complex, the outsourcer may subcontract to a single 4th party service provider which again has contracts with multiple 3rd party logistics service providers and ensures the delivery of final service/products to the outsourcer.

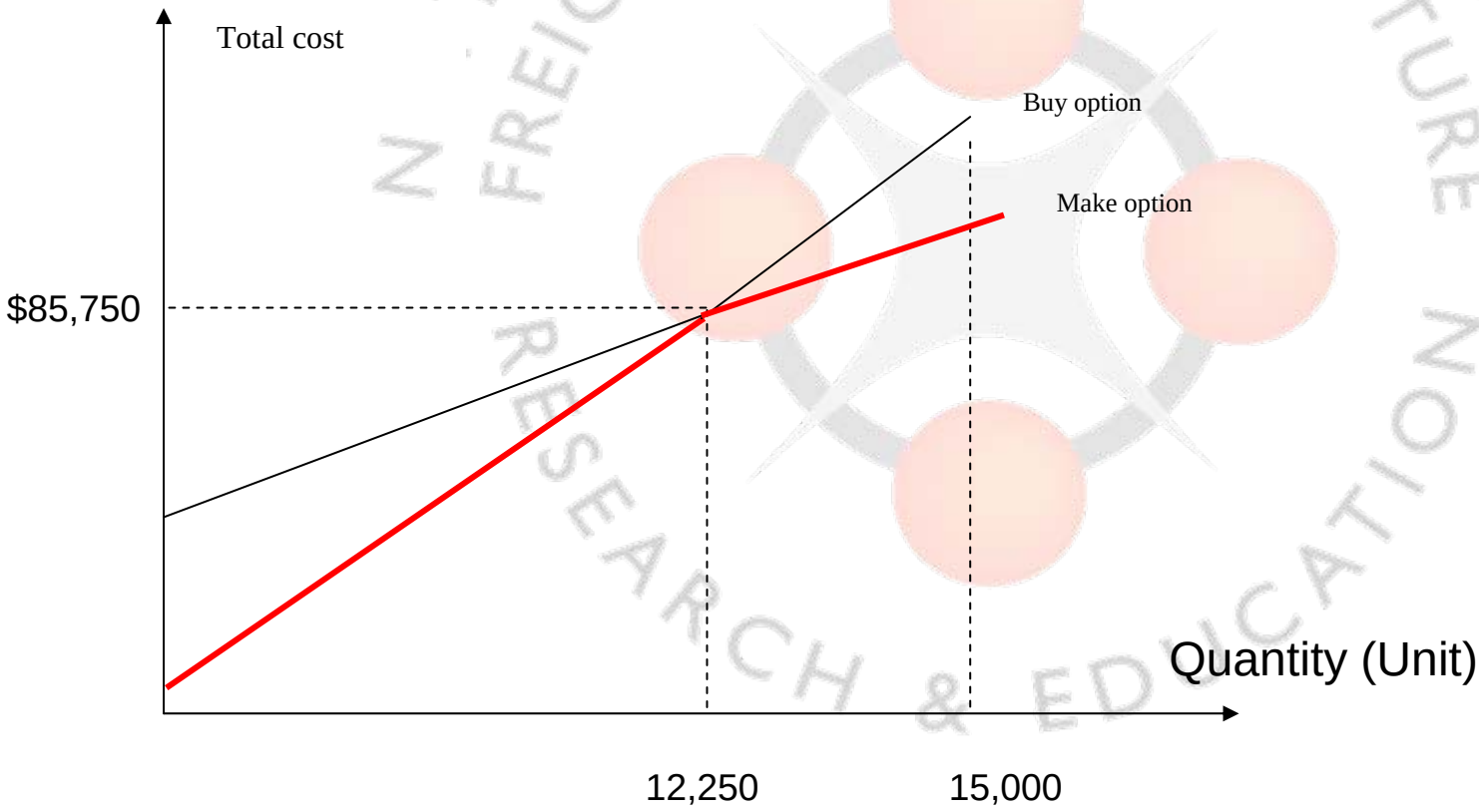
An Example

Consider a hypothetical situation in which a company has the option to make or buy a component part. Its annual requirement is 15,000 units. A supplier is able to supply a part at $7 per unit. The firm estimates that it costs $500 to prepare the contract with the supplier. To make the part, the firm must invest $25000 in equipment and the firm estimates that it costs $5 per unit to make the part.

Costs	make option	buy option
Fixed cost	$25,000	$500
Variable cost	$5	$7

Annual requirement = 15,000

Solution


Total cost
Buy option
Make option
$85,750
Quantity (Unit)
12,250
15,000

Results of Sourcing/Outsourcing

- More Business Exchanges
- Closer Relationship Between Businesses
- Expedited Globalization

Question: *Does this mean more reliance on transportation?*