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COMPILED BY: WELDEBREHAN KIROS*

*DEPARTMENT OF MANAGEMENT PROGRAM OF LOGISTICS
AND SUPPLY CHAIN MANAGEMENT
COLLEGE OF BUSINESS AND ECONOMICS
MEKELLE UNIVERSITY*

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Chapter One

Total Cost of Ownership (TCO)

Learning objectives

At the end of the chapter, students will be able to:

- ✓ Understand the concept of TCO
- ✓ Identify importance of TCO
- ✓ Know factors included in TCO study
- ✓ Differentiate TCO and NPV

1.1. Introduction

TCO is a financial estimate whose purpose is to help consumers and enterprise managers determine direct and indirect costs of a product or system. It is a management accounting concept that can be used in full cost accounting or even ecological economics where it includes social costs. For manufacturing, as TCO is typically compared with doing business overseas, it goes beyond the initial manufacturing cycle time and cost to make parts. TCO includes a variety of cost of doing business items, for example, ship and re-ship, opportunity costs, while it also considers incentives developed for an alternative approach. Incentives and other variables include tax credits, common language, expedited delivery, customer oriented supplier visits. Formally, total cost of ownership defined as the sum of all expenses and costs associated with the purchase and use of equipment, materials and services. To use a total cost approach, a firm must define and measure purchased items major cost components. Total cost of ownership requires a purchaser to identify and measure costs beyond the standard unit price, transportation and tooling when evaluating purchase proposals or supplier performance. Firms that accurately measure the total cost of ownership have the ability to identify variances from planned results and can take corrective action to reduce future problems.

- ✓ The total cost of ownership (TCO) concept extends beyond purchasing. TCO can be viewed as an extension of cost driven accounting system such as Activity Base Costing (ABC), which strives to allocate cost to appropriate drivers according to their value-added component.
- ✓ In this respect, TCO extended ABC to not only external sources of supply, but also to other value-adding activities both up and down-stream from the organization.
- ✓ Armed with better information about cost, such systems allow managers to make decisions regarding procurement strategy, market and pricing strategies and other industry trends. New and relevant performance measures, which provide true assessments of total cost, can be developed to permit an integrated approach to supply chain management.
- ✓ In order to develop a TCO model, purchasing managers must have a framework within which to work. While the TCO concept is relatively well known within industry, a cohesive decision support system for implementation is required. System can help change the way manager's thinks about measuring different attributes of supply chain activities and can help focus their attention on measures that reduce total cost and affect profits.
- ✓ A problem with total cost analysis is that firms do not have the systems to collect and interpret total cost data;
 - ✚ Lack of computerized system to collect TC data
 - ✚ Lack of accounting systems to capture cost data in the needed format

Total cost data must come from a number of different functions within a firm. Activities as diverse as finance, accounting, quality assurance, manufacturing, receiving, inspection and purchasing information it can be difficult to coordinate the collection of data from diverse organizations functions, particularly with a manual data collection system. Purchasing plays a critical role in total cost analysis. It is the logical function to manage a total cost system because of its close interaction with function inside and outside the firm, and its reliance on total cost data support the sourcing process.

1.2. The Importance of Total Cost Ownership (TCO)

* Total cost of ownership measurement is increasingly important as purchasing strives to select the lowest total cost source of supply (not the lowest price). TCO applies not only to items sourced from external suppliers but also to internally manufactured items. Companies implement total cost systems to realize very specific benefits.

* Select supply sources based on total cost considerations, including not only the evaluation of external suppliers but also comparisons to internal suppliers manufacturing capabilities. The total cost of ownership approach directly supports make-or-buy analysis. * Increase supplier performance by identifying areas of nonperformance along with responsibility for corrective action.

* Clearly define performance expectations and communicate those expectations to suppliers.

- Suppliers often complain that poor communication between firms is a leading reason for poor performance.

- Total cost systems should have a feedback mechanism that provides positive and negative supplier feedback. It also provides critical data for target pricing, and provides a long-term orientation by focusing on cost reduction over an extended horizon.

* Increase supplier accountability and control.

Total Cost of Ownership, or TCO, has become an extremely important metric often used by consumers and businesses to compare two similar products. TCO is a financial concept that combines the initial acquisition costs for a product with the operational costs of using the product over its expected life. For many classes of durable goods, a comparison of two products based solely on purchase price can lead to very inaccurate conclusions.

Over the past decade, the concept of TCO has grown in importance. The computer and automotive industries are two examples of industries where TCO commonly promoted.

Total cost requires purchasing to develop an awareness of most significant on price factors under the jurisdiction/without discrimination supplier contribute to total cost. Select preferred suppliers based on performance merit. The practice of developing partnerships with suppliers over an extended period requires comprehensive performance data. Total cost data allow a firm to rank suppliers and select only the best suppliers.

- ✓ Introduce measurement discipline throughout the organization by relying upon an equitable and consistent evaluation. Total cost measurement information can be used in a number of managerial activities. Provide the ability to quantify & communicate to supplier areas of non-performance to concentrate supplier performance improvement.
- ✓ TCO analysis draws from variety disciplines such as;
 - Finance -net present value (NPV) analysis
 - Accounting- product pricing & costing
 - Operations mgt - reliability and quality
 - Marketing-understanding and meeting customer wants.
 - IT- system integration and e-commerce
 - Logistics- materials movements
 - Economics- minimum average total unit cost of production.
- ✓ TCO practice to strategic optimization with the supply chain/ supply network
Supply chain involved the upstream & downstream flows of products, services, finance and information from source to customer.
- ✓ At this time TCO analysis;
 - The manufacturing of the product (VE/VA)
 - The manufacturing infrastructure requirement, i.e. the basic facilities,

service and installations needed for the optimal function of manufacturing operation.

- Whether to outsource or self-manufacture
- The abilities /location/ responsiveness/ potential of suppliers relative to the manufacturing operation
- The structure of foreign and domestic tariffs/duties/taxes
- Costs of transportation & time of delivery
- Inventory costs- damage, obsolescence

1.3. Factors Included in a Total Cost of Ownership Study

- ✓ System pricing,
- ✓ Service contract costs,
- ✓ Installation and training costs (if any),
- ✓ Energy costs,
- ✓ Ongoing management and maintenance costs, and
- ✓ Reliability costs.

Depending on the type of study, cash flow analyses can compare the true long-term costs of owning different systems or the cumulative costs associated with upgrading one system with another.

Activity1:

1. What factors should considered in TCO study?

1.4. Components of Total Costs

- 1) **Acquisition costs:** - are the initial costs associated with the purchase of materials, products and services. These are not long- term costs of ownership, but rather represent an immediate cash outflow. The acquisition costs including purchase price, planning costs, quality costs, and taxes and financing costs. Acquisition/Physical Hardware costs include the cost of equipment or property before taxes, but after commissions, discounts, purchasing incentives, and closing costs. Sometimes this will include one-time peripheral equipment or upgrades necessary to installation or utilization of the asset.

Purchase price- the price paid direct or indirect for materials to purchase.

Planning costs- the costs of developing requirements and specifications, initial processing and monitors quality costs- selecting and certifying a supplier to obtain the optimal level of quality and monitoring the results using.

Taxes- firms must address the impact of taxes both direct (duties, processing fee) and indirect (foreign taxes, tolls, facility fee) on the cost of procured materials and products.

Financing costs- a business of finance acquisition are using cash, debt financing lines of credit, capital leases & bonds.

- 2) **Ownership costs/Operating Costs:** -Operating costs include subscriptions or services needed to put the item into business use. This includes utility costs, direct operator labor, and initial training costs. The costs after the initial purchase, associated with the ongoing use of purchased product, material or item of equipment. Ownership costs are quantitative and qualitative. Quantitative costs

examples are energy usage, maintenance and repair. A qualitative cost is difficult to quantify when making purchase. E.g. ease of use (time saver), aesthetic (psychologically pleasing to the eye), ergonomic (maximize productivity reduce fatigue).

3) Post-ownership costs: - in the past, salvage value and disposals costs were the major inputs required when estimating post-ownership costs of capital purchases. These cost could be estimated a cash inflows (the sale of used plant & equipment) or outflows (demolition of an obsolete facility). The purchaser was an established market that provided data to help estimate reasonable futures values. Supply management address impact on long- term potential when performing TCO analysis regarding environment impact, unanticipated warranty and product liabilities & the negative marketing implications of low customer satisfaction. Environmental costs-unplanned expenditure of replacing their underground environmentally friendly like pollution & unsafe.

Activity2:

1. Take one company that purchased new equipment and calculate the acquisition cost of the equipment.

1.5 TCO, NPV (Net Present Value) and Estimated Costs

- ✓The difference between the present value of the future cash flows from an investment and the amount of investment. Present value of the expected cash flows computed by discounting them at the required rate of return.

- ✓ The Net Present Value (*NPV*) of an investment is the present value of the expected cash flows, less the cost of the investment.
- ✓ Net present value is the difference between the market value of a project and its cost.

How NPV Works

NPV will always appear as a dollar amount in one of three ways: greater than zero, zero, or less than zero. We have two examples below that illustrate an amount that is greater than zero and less than zero to give you the idea.

EXAMPLE A: Let's assume that the PV of all future cash flows is \$110,000. We would calculate NPV by subtracting \$100,000 (the initial investment) from \$110,000 (the PV of all future cash flows).

$$\text{NPV} = \$110,000 - 100,000 = \$10,000$$

EXAMPLE B: Let's assume that the PV of all future cash flows is \$90,000. We would calculate NPV by subtracting \$100,000 (the initial investment) from \$90,000 (the PV of all future cash flows).

$$\text{NPV} = \$90,000 - 100,000 = -\$10,000$$

What it means

When NPV is greater than zero it means that the discounted value of future cash flows is greater than your initial investment and you would be getting an even higher return than you desire.

When NPV is, zero it means that the discounted value of future cash flows equals your initial investment and you would be getting exactly the return you desire.

When NPV is, less than zero (a negative number) it means that the discounted value of

future cash flows is less than your initial investment and you would be getting a lower return than you desire.

Okay, let's interpret our two examples.

EXAMPLE A: With an NPV of \$10,000 (greater than zero), you would be getting a good deal for the property based on your desired yield because you have exceeded it.

EXAMPLE B: With an NPV of -\$10,000 (less than zero), you would be paying too much for the property based on your desired yield. You must either buy the property for less or lower your yield if you want to pursue this property.

Method of evaluating a potential investment is

- to analyze the present value of the initial expenditure (initial cash payment)
- Future revenue streams (cash receipts, reduction of expenses).
- future expenditure streams (cash payments elimination of revenues).

Analysis discount the positive and negative streams using an interest rate usually referred to as the opportunity cost of holding capital the minimum required rate of return a business expects to receive on its investment. The opportunity cost of capital linked to the riskiness of the investment and the firm's capital structure (weight average cost of capital). TCO and NPV analyses are very similar in philosophy. Both attempt to estimate and analyze the acquisition costs, operating costs and post- ownership costs in terms of value to received by the company. In addition, NPV analysis attempts to analyze revenues and other cash flows. TCO focuses on estimating and analyzing the ownership and post- ownership costs. An expense that has been forecast and which pertains to a given business purpose, product or project. An example of an estimated cost might be a forecast made for the expenses involved in servicing a product that is still under warranty after it has been sold to a consume.

Formula represents simplified TCO analysis:

$$TCO = A + PV \quad (T_i + O_i + M_i - S_n)$$

Where TCO - total cost of ownership

A - acquisition cost

PV - present value

T- Training cost in year i

O - Operating cost in year i

M - Maintenance cost in year i

S - Salvage value in year n

$$PV = \frac{FV}{(1 + r)^t}$$

Where PV-present Value

FV- Future value of inflows or outflows of cash

r- Discounted rate per period

t- Total number of periods

$$PV_{\text{annuity}} = CF \left[\frac{1}{r} - \frac{1}{r(1+r)^t} \right]$$

CF- periodic cash inflow or outflow (it must be the sum each period)

SUMMARY

- ✓ Total cost of ownership defined as the sum of all expenses and costs associated with the purchase and use of equipment, materials and services.
- ✓ The importance of total cost ownership are to select the lowest total cost

source of supply, to clearly define performance expectations, Increase supplier accountability and control.

- ✓ Some of the factors included in a total cost of ownership study are System pricing, Service contract costs, Installation and training costs (if any), Energy costs, ongoing management and maintenance costs, and Reliability costs.
- ✓ Total costs are composed of Acquisition costs, Ownership costs/Operating Costs and Post-ownership costs.
- ✓ Net present value is the difference between the market value of a project and its cost.
- ✓ TCO and NPV analyses are very similar in philosophy.

Exercises

1. What does TCO mean?
2. List and discuss the components of TCO.
3. What is NPV? How it works?
4. What is the similarity between TCO and NPV?
5. Mr. A purchase a machine of cost 120,000 birr to use for 6 years. He estimated 7,000 birr per year's cash outflows incur when using machine. At the end of periods, salvage value of machine is 7,500 birr. Required rate of return is 20%.
 - a) What is TCO?
 - b) If Mr. 'A' estimated 40,000 birr per years generated by using machine. What is NPV?

Chapter Two

The Procurement of Capital Equipment

Learning objectives

At the end of the chapter, students will be able to:

- ✓ Understand main features of capital equipment procurement.
- ✓ Recognize considerations in source selection of capital equipment.
- ✓ Be aware of procedure to follow in capital equipment procurement.
- ✓ Know the purchasing of used equipment.
- ✓ Have the concept of Leasing as a method of purchasing.

2.1. Introduction:

The purchase of capital equipment differs substantially from the purchase of production materials and supplies. Because of the specialized applications and complex nature of the equipment, development of specifications for this latter, i.e. capital equipment is usually requires a great deal of interaction b/n technical personnel in the buying and the selling firms.

For the same reasons, the effective life of the equipment frequently is determined by technological obsolescence factors.

2.2. Features of Capital Equipment Procurement

Capital equipment's are equipment's that have purchased and remains in the operation of a business for a long period (usually >10yrs). The purchase of capital equipment differs substantially from the purchase of production materials and supplies. The followings are some differences of capital equipment procurement.

- 1. Non-recurring purchase:** - the unique feature of capital equipment purchase is the lead-time requirement. The purchase of capital equipment typically occurs only once every three to five years or so.
- 2. Nature and size of expenditure:** - an expenditure of capital equipment is an investment. If the equipment is purchased wisely and operated efficiently, the capital equipment recovers its cost and generates profit for its owner. Because it exerts direct and indirect influences on the costs of production, the selection of major capital equipment is a matter of significant concern to top management.

2.3 Considerations in Source Selection of Capital Equipment

When purchasing capital equipment; selection of a supplier is governed largely by four general considerations. These are:

- 1. Operating characteristics of the equipment:** - this is by far the most influential factor in selecting the supplier for a particular production machine. Once the user and appropriate engineering personnel clearly establish the function the equipment is to perform, design and operating capability are paramount in selection.
- 2. Engineering features:** - closely related to the equipment operating characteristics are its engineering features. These features must be compatible with the buyer's existing equipment, process and plant layout. They must also be in accordance with standards established by the state and federal regulatory agencies such as the

occupational safety and health Administration (OSHA) and the environmental protection Agency (EPA). A few major engineering considerations are below.

- Specific process capability
- Physical size and mounting dimension
- Flexibility
- Power requirement
- Maintenance
- Safety feature: - does machine have unsafe feature?
- Pollution characteristics

3. Economic analysis: - an analysis of the major operating alternatives includes a comparative economic analysis of the potential new machine, and a comparison of each with the alternative of using the existing equipment now in operation. In all cases, the analysis of each machine must relate its total expected life cost to its total expected productivity.

4. Qualitative consideration: - certain qualitative factors concerning potential suppliers are important in marketing any purchase. Capital equipment purchases require different type of cooperative relationship b/n buyer and the seller. It is the important; that the seller is willing to work with buyer's technical personnel to ensure a good fit of equipment to operating need.

Activity1:

Mr. X is a purchasing expert of XYZ Company. Based on the need of the company he wants to purchase machine (capital equipment). So, discuss major considerations that he should be taken in to account.

2.4. Procedures for Purchasing Capital Equipment

1. Statement of Need/Specification of Requirement

1.1 The need to acquire equipment should wherever possible identified as early as possible and a Statement of Need (SON) / Specification of Requirement (SOR) prepared. Even when a need arises suddenly and funding sought from either Chest, the Research Councils or other grant funding organizations, a thoroughly prepared SON or SOR stands the best chance of securing the funding required.

1.2 A Statement of Need (SON) or Requirement (SOR) should set out:

- The benefits expected from the equipment.
- the total costs of ownership over the whole of its operational life, covering acquisition costs, running and disposal, and
- How the acquisition will promote the institution's objectives.

2.Specification of Requirement (SOR)

2.1 Good research depends on the right choice of equipment. A well-drafted specification of requirement not only sets the quality and performance standards for the equipment, but also provides the greatest scope for maximizing value for money.

2.2 A good specification should be *functional* e.g. describing the equipment in terms of its intended function and the required level of performance, rather than by a generic description or brand name. It should be concise, but sufficiently detailed to enable bidders to consider all costs, and also to offer alternative solutions. In particular, it should:

- state the criteria for acceptance of the equipment

- abide by international and national quality requirements
- include health and safety requirements
- if brand names are unavoidable, qualify these by adding “or equivalent”
- comply with UK, EU and international law

2.3 Specifications for leading-edge equipment may developed in conjunction with one or more suppliers and the focus of the requirements should be on research needs rather than what the supplier can offer. No commitment should made to any supplier prematurely, nor should a resulting specification so detailed as to eliminate any effective competition.

2.4 Specifications may be refined using such techniques of value analysis and value engineering (VA/VE). In value analysis, an existing product dissected and its components modified or omitted where this will reduce lifetime cost without compromising performance. Value engineering is a similar process applied to new equipment.

2.5 When considering VA/VE as part of defining a SON or SOR, it is recommended that a small team consisting of key stakeholders (internal and external) conduct a brainstorming session, identifying major cost elements and components parts of the equipment (examples below) to assess whether or not such component parts may be modified or omitted etc:

- What are its basic functions?
- Are they all necessary?
- Can they simplified?
- Can they performed in some other way?
- Are performance requirements and tolerances too stringent?
- Can standard methods and off-the-shelf equipment be used?

- Can operations be combined?
- Where can waste be reduced?
- What is the environmental impact, including costs of waste disposal?
- What are the staff cost implications in terms of numbers, expertise, etc?

2.6 Involvement of suppliers at this stage can help implement the results of the investigation by modifying their equipment to reduce cost or improve performance. In doing so they will hope to share in the cost savings and gain additional business, but care should be taken not to favor one supplier unduly, particularly if the purchase subject to the EC directives.

2.7 Consideration should also given to purchasing good second-hand equipment.

3. Aggregation of requirements

3.1 Aggregating similar requirements can substantially reduce purchase prices and costs relating to maintenance, delivery, ordering and payment processing. For specialized equipment, other departments and institutions should be approached to see if there is scope for a co-ordinate approach to suppliers.

3.2 For regular purchases of common items, a framework agreement should be set up. Purchases may be made from designated suppliers at competitive prices and favorable terms, which will cover all whole life costs:

- a fixed, or at least index-linked, purchase price
- on-site tests and pre-negotiation trials
- delivery, installation and commissioning
- maintenance cover and costs
- the price of consumables

- spare part cost and availability
- provision and updating of maintenance handbooks
- Training.

3.3 The use of existing framework agreements should be mandatory unless there are strong reasons for not using them. A spot price may seem cheaper, but other factors must be considered:

- time and cost of obtaining competitive bids and selecting the best value;
- less leverage over the supplier in case of dispute;
- handling additional invoices from different suppliers and making additional payments;
- reduced economies from scale;
- Undermines the current framework agreement and weakens the negotiating position.

4. Sharing equipment

4.1 Sharing may be possible when suitable equipment already exists in another department, or when new equipment can be made available to other departments, perhaps on a repayment basis. This arrangement can include the aggregation of requirements for maintenance, spare parts and consumables, thus reducing cost through better purchasing. The controlling department's responsibility extends to applying procedures and security measures to ensure that the equipment is protected and used in proper manner.

4.2 An alternative may be to provide usage time to others on new equipment, since:

- it may save other users having to purchase new equipment, or provide them with improved performance;

- There may be opportunities for rationalizing or improving the specification to the benefit of the principal User.

4.3 Equipment for shared use or hire may have to be more robust, and may have a shorter life expectancy, due to greater wear and tear. It may also need more security and safety features, which may add to the price but overall should provide better value for money.

5. Funding

5.1 Research Council grants, like funding council grants are a legal contract between the funding body and the organization where the award grant funds belong to the institution rather than the grant or budget holder, and must be accounted for in accordance with the institution's regulations.

5.2 Recent years have seen a significant shift in the sources of funds for research equipment:

- Research Councils provide almost 40% of total expenditure
- Funding councils provide just over 25%
- Charities provide almost 15%
- Private industry or business provides just under 10%
- EC, government departments and donations provide just over 10%

5.3 Funds for equipment for teaching and administration come mainly from the funding councils. Since funding councils no longer ring-fence funds for equipment, institutions will be able to vary equipment budgets substantially.

5.4 Estimates of purchase costs needed when seeking funding for new equipment. Provision should be made it possible for adjusting the final sum upwards or downwards, to cover the cost of the most economically advantageous offer. Funding may be required for future years to cover such costs as lease charges, consumables, overhauls or

upgrading. Any costs relating to building work, staffing, energy, waste disposal, and the eventual disposal of the equipment should also be included.

5.5 Leasing spreads the costs of ownership over a period of years. Costs are more clearly known at the outset and most of the risks of ownership remain with the lessee. It can ease maintenance problems, reduce staff costs, and ensure equipment is kept up-to-date, but this comes at a price and outright purchase will often be more cost-effective. Leasing should not use to augment departmental funds, as it is probably cheaper to borrow within the institution.

5.6 Researchers are likely to be in close contact with suppliers of leading edge products, but may need advice on how best to go about obtaining initial quotations without commitment. The Procurement Office can advise on how to elicit a competitive bid, including elements for delivery, training, consumables, servicing and trade-in of old equipment, in addition to the purchase price.

5.7 If a prospective supplier knows the budget figure, this may weaken the organization negotiating position, but it is still possible to improve on the original bid by competitive tendering and negotiation.

As funds for capital equipment are increasingly scarce, it is important to:

- seek authority from the grant body to use savings for additional equipment or services
- or return the savings to the grant body so that they can be used for other grants
- Use institutional funds for other essentials or return them to the center, in accordance with institutional rules.

6. Sourcing

6.1 The procurement of capital equipment ties up money for long periods of time, and the longer the period, the greater the uncertainty and risk involved. It must be done correctly the first time, as mistakes are not easily rectified.

6.2 Information on potential suppliers can be obtained from a wide range of sources such as suppliers, peer contact, trade directories, exhibitions, conferences and consultants. Approved suppliers will have met the institution's selection criteria and there may already be a purchase agreement in place. However, sticking to a small number of suppliers may not result in best value for money, for new suppliers may bring in new ideas and increase competition. A thorough market search may reveal opportunities to buy second-hand or ex-demonstration equipment.

6.3 If EC Public Procurement rules apply, care must be taken not to exclude any potential supplier who meets the criteria. Aggrieved suppliers are able to seek remedies through the courts.

6.4 A supplier's reliability should be assessed in such detail as is required by:

- the additional costs which would result from the supplier's failure to meet its obligations on quality, delivery, price, servicing, etc;
- the complexity of the order, and hence the likelihood of problems arising during execution of a contract;
- The value of the contract compared to the turnover of the supplier; it is risky for a supplier to rely too heavily on the business of one dominant customer.

6.5 Information for a full supplier evaluation may be gathered by means of a questionnaire sent to suppliers, or through a company ratings agency. Useful information will include:

- organizational structure
- financial standing

- any litigation in progress
- staff numbers and training
- production capacity
- experience & track record
- quality procedures
- areas of business
- membership of trade associations
- insurance and liability provisions
- health & safety and environmental record

6.6 Financial assessment involves calculating a few key accounting ratios. Falling profits, increasing debts or deteriorating liquidity are danger signals, together with late or qualified submission of accounts, major reductions in staff numbers, and frequent name changes. Size and financial strength should also be sufficient to handle any prospective order; if not, a Performance Bond or similar assurance may sought.

6.7 Import Duty is payable on goods from non- member countries. The rules for calculating the amount payable are complex, and it is best to seek advice from the agent. Import Duty Relief is available on goods solely designed and manufactured for scientific research, and which cannot be used for commercial purposes.

7. Public Procurement Directives

7.1 It is important to be able to justify the selection of a supplier by demonstrating that it offered the best value for money. This is best to achieved by inviting competitive tenders or quotations, even when one supplier is strongly preferred on technical grounds.

7.2 Purchases of goods and services above current organization's thresholds for the current threshold level are subject to the Public Supplies Directive, incorporated into law as The Public Supply Contracts Regulations. Where compliance is a requirement of the procurement process e.g. a condition of the funding body, failure to comply with the Regulations could have serious legal consequences and the penalties for non-compliance can be severe and will incurred by the department.

7.3 There may nevertheless be occasions when it is impractical to seek competitive bids. There may be only one suitable supplier of the product and / or no substitute available, or there may be a genuine emergency, though the EC Directives define these circumstances strictly.

7.4 A standard form, with the institution's Conditions of Purchase printed on the back, should be used for seeking written quotations. This makes the exercise simple and fast, as long as the specification is correctly drawn up.

7.5 Procedures for sealed bid tenders are designed not only to obtain the best value for money, but to protect the Buyer and the institution in the event of any subsequent dispute or legal action by a disgruntled bidder. All bidders must give an equal opportunity to win the contract, and identical invitations to tender must posted to them at the same time.

7.6 An invitation to tender (ITT) includes:

- a. Letter of Acknowledgement - for the bidder to return immediately, confirming receipt and indicating whether the company wishes to submit a tender.
- b. Tendering Instructions on how to submit a tender and what additional information is required e.g. copies of accounts, main customers, and alternative proposals.
- c. Conditions of Tender, covering:
 - the independence of each tender

- to whom enquiries should be addressed
 - the preparation of the tender
 - how long the tender will remain valid for acceptance
 - how the tender should be packaged, addressed and returned
 - how many copies are required
 - final date and time for submission
 - the institution's discretion to accept any part or all of any tender
 - the method of evaluation (eg short-listing, calls for presentations)
 - Award criteria.
- d. Form of Tender - letter to sign by the bidder enclosing the tender submission. The tender submission should be pro forma, including an outline format (showing prices, delivery dates, etc) to be completed by the bidder, rather than leaving the bidder to devise a format.
- e. Contract Documents - inform the bidder of the kind of contract which will be signed, including any special conditions in addition to the institution's standard Conditions of Purchase.

7.7 Receipt of tenders should be recorded, and the package kept secure and unopened until the deadline for submissions. Tenders should then be opened by a team of two or more, who should record the details on an Opening of Tenders Control Sheet and sign to confirm. The "First Copy" of tenders should be signed by at least two members of the team, and all pages containing prices or alterations made by the bidder should also be initialed.

7.8 Bids received after the deadline are normally invalid, and may be considered only if delayed due to unusual circumstances, and if the bidder has gained no advantage.

Otherwise, they should be returned unopened to the sender with a covering letter. The Control Sheet should record this action.

8. Negotiation

8.1 Tendering in accordance with Directives reduces the need to negotiate with suppliers. However, negotiations may take place before the issue of invitations to tender, and after the receipt of tenders, though not between these times.

The aim of negotiation is to improve the terms of the offer, while not putting other bidders at a disadvantage or restraining competition.

8.2 In negotiation, most suppliers will expect an honest and ethical approach. The relationship should be based on mutual trust and the principles of fair competitive bidding should be observed:

- Be truthful with suppliers, without disclosing all commercially sensitive information. Details of one supplier's prices, specifications or terms should not be revealed to another, but the careful disclosure of more general pricing information is acceptable.
- Negotiate with all suppliers who have a reasonable chance of winning the order. However, if negotiations result in a significant change to the conditions included in the original invitation to tender, the Directives require that all bidders be given the opportunity to re-tender.
- If possible, negotiate with decision makers; failing this, the supplier's representative should arrange for a rapid written response to questions raised in discussions.
- Meetings are often preferable to phone calls or correspondence because body language and reactions can provide valuable information. Minutes of meetings should be distributed to all participants for agreement, giving suppliers the opportunity to correct obvious mistakes.

- Confidential notes of internal discussions may recorded separately and distributed internally only.
- Let the supplier worry about making a profit on the sale. The supplier may choose only to cover fixed costs to break into a new market.
- Do not commit to the outcome of a negotiation unless authorized. Be aware of the advantage of taking the attitude “providing my superior agrees”.
- Do not let a supplier know they will get an order, particularly when seeking information or clarifying aspects of a bid.

8.3 Negotiations are likely to focus on any extra items to be included in the purchase, the elimination of unnecessary costs, and additional contractual safeguards. Rather than offer discounts, equipment suppliers are often more willing to offer extras such as:

- free spares
- free training
- free maintenance cover
- improved specification, or lower specification at a lower price
- ex-demonstrator or refurbished equipment
- more favorable payment terms

8.4 Maintenance is a key life-cycle cost. Even where carried out in-house at the expiry of the warranty period, savings can achieved by negotiating on such factors as training, manuals and spares; it is important also to take account of the cost of energy, components and consumables.

8.5 After tendering, contact with potential suppliers should be through the buyer only. Post-tender negotiation with successful or short-listed bidders should use only to clarify

and to improve value for money by exploring ways in which both parties can benefit from reduced overall costs. If such negotiations may considered to have materially altered the contract, or to have deprived another bidder of an equal opportunity to win the contract, then the tender process could be invalidated.

9. Evaluating Quotations and Tenders

9.1 Selection must see to done fairly, and written records should show how the decision was reached. The best bid offers the best combination of lifetime cost and quality, together with any other important factors such as delivery time or compatibility with current equipment.

9.2 Where the criteria for evaluating and awarding a contract is required to be stated in the tender documents these would normally be the most economically advantageous taking account of such factors as:

- purchase price
- other whole life costs (running costs, obsolescence, resale value or disposal cost etc.)
- delivery time
- quality
- aesthetic and functional characteristics
- technical merit
- compatibility
- after sales service and technical assistance

9.4 All costs and benefits that can give financial values should be included in a financial evaluation. If total estimated lifetime costs exceed £250,000, net present values should be calculated for each cost item.

9.5 Some of costs and benefits are difficult to quantify financially e.g. a machine might be quieter, or faster, or produce less toxic waste. Such non-financial factors can be quantified and combined in a single measure, weighted in respect of their relative technical and commercial importance.

9.6 Points to note include the following:

- ensure that the weightings are explicit and unbiased;
- do not give too much emphasis to the total scores as opposed to how they are made up;
- Use sensitivity analysis to test the ranking of tenders to alternative weightings.

9.7 Potential difficulties with weighting and scoring are that it sometimes requires a big input of technical expertise; it may be difficult for some members of the team to understand how the figures are constructed or it is generally inferior to monetary valuation of non-financial effects, so it may be more sensible to try to put financial values on these effects and use them in the financial evaluation

9.8 The weighting and scoring of non-financial effects can generate misleading figures. In theory, this should be used only where they have been shown to reflect some independent measure of the benefits to the user, or where expert opinion can inform objective measurements.

9.9 Financial evaluation, combined with the weighted scores for non-financial factors, will determine the most economically advantageous offer. The weighting given to each of these two sets of scores for combining them should be as objective as possible, so a number of experts should again be involved.

9.10 The complexity of the method selected will depend on the cost of the equipment and the relative importance of the different factors, and thus on the benefits of spending time on their appraisal. If the intention of the selection process is to draw up a short-list, this should be making clear before the selection process commences.

9.11 The team should agree which bidder is to be award the contract, or short-listed. When an outright winner has been agreed, a runner-up should also be selected in case problems arise at a late stage with the successful bidder.

9.12 All bidders should then be notified in writing as to the result of their bid. Unsuccessful bidders should also be informed why their bid failed, but confidentiality should continue to be maintained. It is usually best to send an encouraging, “unsuccessful” letter to the runner-up rather than alert them to their reserve status.

10. Contractual Matters

10.1 A contract, whether written, oral or implied, is a legally enforceable agreement willingly entered into by two or more parties. Clearly written contracts help reduce risk and protect the institution and the signatory. A standard purchase order form may sometimes be used for capital equipment, but more often, a specially drafted contract will be required. This should incorporate much of the information stated in the specification and the invitation to tender, and so much of the content will already have been agreed with the supplier.

10.2 The organization’s conditions of purchase are likely to be more favorable than a supplier’s conditions of sale. Payment in advance should be resisted, for the money will be at risk if the supplier goes into receivership, payment should only be made when the equipment is delivered and satisfactorily tested.

In addition, a supplier’s conditions of sale may transfer insurance risk in the equipment too early, perhaps before it leaves the supplier’s premises.

10.3 Additional conditions may concern:

- Packing, transport and delivery
- Completion date
- Acceptance testing

- Provision of maintenance and other handbooks
- Audit access
- Access to site or work
- Bond or Banker's Guarantee
- Publicity
- Employee conduct
- Loaned equipment
- Training and post-contract support (maintenance, spares)
- Procedure for amendments to the contract
- No poaching of staff

10.4 The contract or order must be signed on behalf of the institution by a person with the appropriate level of delegated purchasing authority. This commits the institution to taking delivery of, and paying for, the equipment.

Reference should be made to the tender submitted by the supplier, and prices and other information must be as in the tender, or as subsequently agreed in writing during post-tender negotiation. Attention should also be drawn on the front of the form to any additional, or changed, terms and conditions.

10.5 Two originals should be printed (one marked "Buyer's Copy" and the other "Supplier's Copy") and both sent first to the supplier for signature and then returned to the User Department for signature by the institution. The Supplier's Copy can then be returned to the supplier.

10.6 A letter to unsuccessful bidders may refer briefly to the main areas of weakness, such as price, delivery, or quality. Unsuccessful bidders may request a debriefing, but even if not, the institution may wish to offer a debriefing, to:

- be seen to be fair, honest and ethical;
- help suppliers to become more competitive;
- Give suppliers some return on the time and money spent on preparing the bid.

10.7 Debriefings should be planned and carried out by senior staff. The discussion should be informal and not allowed to develop into arguments over details of the assessment process. Direct comparisons should not be made with other tender responses as these are confidential, and commercial terms or innovative ideas put forward by one bidder should not be disclosed to another. However, the strengths and weaknesses may be discussed in more general terms, and advice given on how the supplier may improve the chances of winning a future contract. To conclude, suppliers may be asked for their views on the tendering process.

11. Progressing, Receiving and Accepting the Equipment

11.1 Pre-delivery milestones should be checked to avoid delays in delivery, inspection and installation:

- Checks such as inspection of work in progress, or audit access to costing, have been carried out
- For overseas suppliers, check import procedures as early as possible. Appoint an import agent, and ascertain whether import duty is payable.
- At least 2 weeks before delivery, ensure that the delivery site is ready, with enough space and floor loading and a power supply.
- Several days before delivery, check that the supplier will deliver on time and is aware of considerations such as:
 1. avoiding traffic in the early morning and late afternoon
 2. the need for any extra labor or special lifting equipment

3. access to the site and to the designated delivery point
 4. the need to contact a specific person at the time of delivery
- On delivery, check the consignment and sign the carrier's delivery docket. Any obvious damage to packaging or contents, or shortages, should be brought to the attention of the driver and noted on the docket. Whenever possible the docket should be signed by someone other than the Buyer or the person authorizing payment.
 - Within a few days, thoroughly check that the delivery is in good condition and complies with the specification and quantities in the contract. Any deficiencies must be reported to the supplier in writing immediately.
 - Ensure that other contract clauses relating to installation are complied. For more expensive or sophisticated equipment these may include:
 1. erection and installation by the supplier
 2. testing
 3. training of staff
 4. performance standards to be achieved before formal acceptance

11.2 When all contractual obligations have been met concerning quality, delivery, installation, acceptance testing, commissioning and initial training etc, payment should be authorised by someone with the appropriate level of delegated authority. Wherever possible this should be someone other than the Buyer or Budget Holder. Invoices should be checked to see that :

- the price and any other costs payable match the corresponding purchase order or contract
- any special contract clauses relating to delivery and installation have been met

- the person checking the equipment confirms that the quality and quantity are correct

12. Records

12.1 Records should be kept for at least 6 years after the start of a contract, or two years after its expiry, whichever is longer. Good records can help sell the equipment at the time of disposal, and will include:

- invitation to tender
- successful tender
- Tender Control Sheet
- Tenders/Quotations Record Sheet
- institution's original copy of the contract (or purchase order)
- Invoices and receipts.

2.5. Purchasing and Supplies Management Role in Capital Equipment Procurement

In the procurement of capital equipment, purchasing acts largely in a service capacity as a gatherer of information, a process coordinator, a purchasing consultant to management and finally a contract administrator.

i. Purchasing as a source of information: - through daily contact with both sales people and current trade literature, alert buyers pick up considerable information of value to operating department manager

Once a requisition has been initiated, of course, it is purchasing responsibility to locate competent suppliers and secure the information required by user in making a preliminary analysis.

- ii. Liaison service:** - during investigation of various manufacturer equipment, an operating manager frequently finds it is advantageous to discuss technical details with machine manufacturers' representative. A customary (sound) practice is for the appropriate buyer to act as a liaison in arranging meetings b/n potential suppliers and operating department.
- iii. Specification development and bids:** - specification for capital equipment developed by buying team. The buyer should make every effort to see that specification is written as functionally as possible. Most user hold biases for and against specific types of equipment.
- iv. Qualitative analysis:** - some suppliers are more qualified than other is. The reviewing team in deciding which machine to buy should consider the degree of qualification carefully. Purchasing normally gathers and analysis such information for the group
- v. Bid tabulation and economic analysis:** - when bids are received, the buyer tabulates them and makes any adjustments necessary so they can be interpreted on a comparable basis by the group responsible for the final recommendation.

Through his or her involvement in the preceding technical discussions, the buyers should also understand any technical problems involved in estimates for maintenance and operating costs.

- vi. Negotiation, contract preparation and administration:** - after approval of proposal for purchase of capital equipment by top management, the negotiating final price, delivery time, additional services and related terms of the contract. The purchase order or contract should written with particular care, specifying the responsibility of both parties for equipment performance and post-sale activities.

In the event that the purchase involves a lengthy manufacturing period, a special follow-up and expediting program should be developed. This may call for periodic plant visits and in-process inspection of the work. Responsibility for monitoring this activity often rests with the purchasing department.

2.6. Procurement of Used Equipment

By any means, the buyer is not restricted to purchasing new capital equipment. In fact, purchase of used capital equipment constitutes an important percentage of total machinery sales. Criteria to consider in making this determination include:

- A. consideration of the type, use, and life expectancy of new versus used equipment;
- B. comparing the purchase price of new and used equipment;
- C. comparing the price and general condition of used equipment among several vendors;
- D. consideration of the freight charges and FOB point;
- E. investigation of manufacturer or brand and availability of warranty, maintenance, and parts; and
- F. clarification of payment terms.

2.6.1 Reason to Purchase Used Equipment

A purchaser may consider buying used equipment for several reasons. These are:

- The cost of used equipment is substantially less than that of new.
- Analysis of payback or return on investment may well reveal that a piece of used equipment is a better buy than new equipment.
- A firm's financial case (position) may dictate the purchase of a lower-priced machine.

- Used equipment frequently is more readily available than new one.
- In some situations, availability may override all other considerations.
- The cost and common reason is that used equipment adequately satisfies the purchaser's need, in which case there is no point in buying new equipment.

2.6.2 Sources of Used Equipment's

Whatever the reason, a great deal of used equipment is available and commonly purchased from one of four sources below.

- 1. Used equipment dealers:** - these are typically specialize in certain kinds of equipment and sell two types of machine, i.e. "reconditioned" machine and "rebuilt" machine.
 - Reconditioned machine: - is carries minimal dealer warranty and sell for approximately 40 to 50 percent of the price of a similar new machine. The machine usually cleaned, painted, broken and severely worn parts have been replaced, and the machine have been tested under power.
 - A rebuilt machine: - is usually has been completely dismantled and built up from the base. All worn and broken parts has been replaced, wearing surfaces have been reground and realigned, the machine has been reassembled to hold original tolerances, and it has been tested under power.
- 2. Sale by owners:** - some owners prefer to sell their used equipment directly to the next user because they think they can realize higher price than by selling to a dealer.
- 3. Brokers:** - a broker is an intermediary who brings buyers and sellers together but generally does not take title to the equipment sold. Brokers sometimes liquidate large segments of the equipment's of a complete plant.
- 4. Auctions:** - auction sales represent still other sources of used equipment. Some actual functions of auction are traders, buying equipment's and selling from their

own inventory. More common, however, are the firms, which simply provide the auction sales service. Their commission is usually somewhat less than broker's does commission. Buying at auction is somewhat more risky than the other supply source b/c auctioned machines usually carry no warranty, and rarely is it possible to have the machine demonstrated.

2.6.3 Caution in Purchasing Used Equipment

- It is difficult to determine the true condition of a used machine and to estimate the type and length of service it will provide.
- In preparing a purchase order for used capital equipment, care must be taken to include all essential data.
- Generally, sellers do not provide service for used equipment after the purchase. All transportation, handling, installation and start-up costs, as well as risk, are usually borne by the purchaser.

2.7 Purchase of Leased Capital Equipment

In addition to the possibilities of purchasing new or used capital equipment to satisfy a firm's requirements, a buyer has a third alternative, i.e. leasing the equipment. In recent business leasing is become a big business.

2.7.1 Types of Leases

If one looks at leases in terms of the basic purposes for which they are used, most fall into one of two categories. These categories are-

- 1. Operating leases:** - as the name implies, is used by most firms as a vehicle to facilitate business operation. The focus typically is on operating convenience and flexibility. Most operating leases are short term, for a fixed period considerably less than the life of the equipment being leased.
- 2. Financial leases:-** in most cases, is used for a very different purpose, while operating equipment is obtained by means of a financial lease, the primary motivation for using this type of lease is to obtain financial leverage and related

longer term financial benefits. A financial lease, relatively speaking, is a long-term lease that usually covers a time just a bit shorter than the approximate life of leased equipment. Many financial leases are non-cancellable.

Activit4:

Assume that Mr. 'X' leases a car from 'Y' company and their agreement is Mr. 'X' will pay for monthly usage of the car for \$100. What type of lease is it? Discuss.

2.7.2 Factors Favoring Leasing

The firm accepts leasing as advantageous b/c of different factors. These factors are:

- 1. Operating and managerial convenience:** - here, the lessee has full use of the equipment and can concentrate on its regular business operations, without having to worry about maintenance, special service, and other administrative tasks associated with equipment ownership. In the case of complex equipment requiring highly specialized technical support, this can become a benefit of major importance.
- 2. Operating flexibility:** - with relatively short-term leases for selected pieces of operating equipment, a lessee is not locked into long- term commitments, b/c of large capital investment. It can maintain maximum flexibility in its operations to respond to changing business conditions and subsequent production requirements.
- 3. Obsolescence protection:** - leasing substantially reduces the risk of equipment obsolescence. In some business those uses the high technological equipment. Some machine may become technologically obsolete in a short period. Leasing creates opportunity to replace the old equipment by new technological equipment's.

- 4. Financial advantage:** - a major advantage of leasing expensive equipment stems from the fact that a leasing decision typically replaces a large capital outlay with much smaller, regularly timed payments. Viewing the lease strictly as a financing mechanism, generally it also provides a cash flow advantage over a conventional bank loan financing arrangement. Most equipment leases can be stretched over a longer payment period, thus reducing the relative size of the monthly payments.
- 5. Balance sheet structure:** - in an accounting sense leasing, as compared with a capital equipment purchase, permits the lessee to record the financial commitment in a statement footnote rather than as additional debt on the balance sheet. Consequently, the firm's debt structure as shown on the balance sheet appears to be more favorable than it really is.
- 6. Income tax consideration:** - if a lease fulfills the internal revenue service requirements for a "true lease" from an accounting point of view lease payments are recorded as an operating expense. Thus, as long as lease payment exceeds the value of allowable depreciation (if the asset were owned), an additional tax shield is provided for the lessee.

2.7.3 Demerit of leasing

- 1. Cost:** - the primary disadvantage of leasing is their costs "margins" are typically higher on leases than interest rates are on direct loans. In addition to covering financing charges, the lessee must also bear all the risks associated with ownership (including obsolescence and inflation risks).
- 2. Control:** - the lessor retains control of equipment. These laws of control often place restriction on the manner in which equipment is operated, it also requires that the lessee allow the lessor access to the equipment for inspection and maintenance.

SUMMARY

- ✓ Because of the specialized applications and complex nature of the equipment, development of specifications for this latter, i.e. capital equipment is usually requires a great deal of interaction b/n technical personnel in the buying and the selling firms.
- ✓ attributes of capital equipment procurement are non-recurring purchase and nature and size of expenditure.
- ✓ Major considerations in source selection of capital equipment are:
 - a. Operating characteristics of the equipment
 - b. Engineering features
 - c. Economic analysis
 - d. Qualitative consideration
- ✓ The following constitute procedures for purchasing capital equipment:
 - 1.** Statement of Need/Specification of Requirement
 - 2.** Specification of Requirement (SOR)
 - 3.** Aggregation of requirements
 - 4.** Sharing equipment
 - 5.** Funding
 - 6.** Sourcing
 - 7.** Public Procurement Directives
 - 8.** Negotiation
 - 9.** Evaluating Quotations and Tenders
 - 10.** Contractual Matters
 - 11.** Progressing, Receiving and Accepting the Equipment
 - 12.** Records
- ✓ the following are major roles of purchasing and supplies management in capital equipment procurement
 - a. purchasing as a source of information
 - b. liaison service
 - c. specification development and bids

- d. qualitative analysis
 - e. bid tabulation and economic analysis
 - f. negotiation, contract preparation and administration
- ✓ Sources of used equipment's are used equipment dealers, owners, Brokers and Auctions.
- ✓ We have two types of leases. These are Operating leases and financial leases.

Exercises

1. What are the main special features of capital equipment procurement?
2. Can we get other methods of getting a material other than purchasing? Explain.
3. List and discuss process used to procure capital equipment's?
4. Why we purchase used equipment's?
5. Discuss the two types of leases.
6. What role may purchasing have in capital equipment procurement?
7. Disclose factors that favor leasing.

Chapter Three

Purchasing of Services

Learning objectives

At the end, the end of the chapter students will be able to:

- ✓ Distinguish unique features of services;
- ✓ Compare and contrast goods and services purchasing;
- ✓ know the framework for analyzing services;
- ✓ grasp services purchasing cycle;
- ✓ understand pricing of service contractors;
- ✓ have a concept of service contract administration;

3.1. Introduction:

The effective acquisition of services represents a significant challenge. Thus far, the prime focus has been on the acquisition of products, raw materials, purchased parts equipment and MRO items. Normally in these purchases, it is recognized that service is a factor in evaluating the supplier. Almost invariably, however, the product emphasis is primary and the service dimension secondary in the overall purchase decision. One notable exception, of course has been the purchase of transportation, a common service purchase.

3.2. What Makes Services Different

- ❖ One of the most commonly mentioned special attributes of services deal with inability to store services. This attributes arises because many services are processes (which may or may not be associated with a product).
- ❖ The inability to store many services also creates quality assurance difficulties. It may not be possible to inspect a service before its delivery. In addition, by the time of delivery, it may be too late to do anything about it.

- ❖ The specification and measurement of quality in a service may present significant difficulties.
- ❖ Timing of the delivery has to coincide with the purchaser's specific need.

3.3. Comparisons: Service and Goods Purchasing

- ❖ We will include in our comparison not only pre-award (procurement) functions but post-award (administration) functions as well.
- ❖ Individuals making the transition from supply purchasing to service purchasing are often struck first with the differences between the supply and service industries. To begin with most supply vendors have been obliged to invest substantial sums for plant and equipment before commencing operations, whereas some service vendors can operate with little investment in facilities. One result of this situation is that most service businesses are small (according to Small Business Administration standards). Many can also qualify as small-disadvantaged (minority) or women-owned. Because of the large concentration of small and small-disadvantaged businesses among service providers, both public and private sector purchasing departments often try to further certain socio-economic goals by setting service purchases aside exclusively for small or small-disadvantaged businesses. The combination of a heavy concentration of small and small-disadvantaged businesses with socio-economic set asides has resulted in most organizations buying their services from smaller, less sophisticated firms. Such purchases often present more problems for the buyer.
- ❖ The depth of competition present in service purchasing also surprises new buyers, particularly if they have come from a Government or public sector supply purchasing background. Although many Government supply purchases are sole source or limited source because of their specialized requirements, most service purchases are heavily competitive.
- ❖ New service buyers may also be confounded by funding rules that differ from those they are accustomed to. Supply purchases are almost always fully funded and obligated. Service purchases, on the other hand, often span fiscal years.

Government agencies in particular attempt to relate work effort closely to fiscal year funding and hence generally fund only the work needed in the current fiscal year. Service buyers and vendors are normally very familiar with "Availability of Funds for the Next Fiscal Year" provisions which tell the service vendor he will have a contract for the next fiscal year only the necessary funds are appropriated.

- ❖ Another arena of differences between service purchasing and supply purchasing is the make-or-buy decision. Both private and public sector organizations tend to have highly formalized make-or-buy decision-making procedures for supplies. This is often not the case for service purchases. Although the Federal Government has a very formal system for analyzing in-house versus contract services, the services for which it hires contractors are often incremental services it cannot perform in-house because of funding or personnel ceiling limits. This creates situations where most of a service function is performed in-house, with an incremental piece of the function performed by contract. Federal Government employees may be sitting side-by-side with contractor employees performing the same task. When one of the factions earns more than the other, conflict and ill-will results. In contrast, most non-Federal public and private organizations do not have any program for analyzing in-house versus contract service operations and often undertake contract operations irrespective of the comparative economics of the two alternatives.
- ❖ Service purchasing also provides an interesting contrast with supply purchasing in the area of labor laws, especially in the Federal Government arena. In Federal supply purchasing, buyers must be familiar not only with the Fair Labor Standards Act but also with the Walsh-Healey Public Contracts Act. This latter act contains, in addition to requirements for working conditions, restrictions against dealing with vendors that are not either manufacturers or regular dealers. (This latter aspect of the law is probably a good business practice for all buyers to follow even though the law is applicable only to the Federal sector.) Walsh-Healey places both pre-award and post-award

requirements on the Federal Sector supply buyer. On a pre-award basis, the Federal Sector buyer must obtain certifications from vendors on their status as manufacturers or regular dealers (and deal with protests from other firms who allege the low bidder fails to qualify under this criterion). On both a pre-award and post-award basis, the Federal Sector buyer must process suspension and/or debarment actions against vendors which have been proven to have falsified their manufacturer or regular dealer status.

- ❖ In contrast, Federal Sector service buyers, must invoke the Service Contract Act and the Contract Work Hours and Safety Standards Act (the latter act is designed primarily for construction-related work) in addition to being familiar with the ubiquitous Fair Labor Standards Act. The Service Contract Act places a greater administrative burden on the Federal Sector buyer than does the Walsh-Healey Public Contracts Act. On a pre-award basis, the Federal Sector service buyer cannot award a covered service contract until that contract contains a contract and area-specific wage determination. The Department of Labor (DOL) in Washington, D.C. rarely issues such a determination before 90 days have elapsed from the date of initial request.

On a post-award basis, the Federal Sector service buyer is held to strict Service Contract Act requirements for a new wage determination if he/she intends to extend the contract. In addition, the Service Contract Act limits the elements of cost that can be adjusted on an extension to direct labor and related costs, excluding material, overhead, G&A, or profit increases. The Federal Sector service buyer must assist DOL in administration of the law on his/her contract and, if suspension or debarment action is warranted, initiate the action.

- ❖ The Federal Sector buyer of construction services has perhaps the greatest administrative burden of all in that he/she must administer the Davis-Bacon Act and its related acts for DOL. A great number of pre and post-award responsibilities and duties must be performed. A full discussion of these laws is

beyond the scope of this lesson. A lengthy explanation of the impact of this law is available at Appendix B.

- ❖ Descriptions of requirements also differ in supply and service purchases. In supply purchases, item usually of "off-the-shelf". The same specifications (with minor updates as necessary), can be used from purchase to purchase. The buyer rarely gets involved in the preparation of the specification. In service purchasing the specifications, called statements of work and including construction specifications and drawings, tend to be contract-specific and tailored to the circumstances. Moreover, statements of work generally require a technical/contracting team approach . Because they are contract-specific and developed under severe time constraints, statements of work tend to be less comprehensive and reflect less depth of understanding than supply specifications. This is particularly true where the organization has never performed the service in-house and has never contracted for similar services before. Some organizations take the easy way out of this dilemma by asking the service contractor to write the statement of work. They do so, of course, at their own peril.
- ❖ A related issue is that of the in-house estimate. Although it is a good business practice to prepare such estimates for all purchases, service purchases demand the preparation of detailed in-house estimates. They are often awarded on technical as well as cost considerations and are awarded after technical and/or cost negotiations. In many instances, a detailed in-house estimate (supplemented by an audit of records, if appropriate) is all that stands between the service contractor and the organization's bank vault. Construction contracts, although rarely negotiated, likewise depend heavily upon detailed estimates, not only as a basis for reviewing and verifying bid errors, but also as a means of establishing and verifying schedules of prices used in pricing contract changes and for making payments.
- ❖ Buyers of services generally find the process paper-laden. In addition to tailored statements of work, service purchases generally require written solicitations built around those statements of work. Tailored statements of

work must be accompanied by tailored schedules and other terms and conditions. Buyers of services rarely have the luxury (enjoyed by their supply buyer associates) of using time-saving oral solicitations to obtain quotations and proposals for their services. This administrative detail generally lengthens the lead-time for service purchases. In the author's experience the procurement lead time for services is about two or three times longer than that for supply purchases. Advance purchasing plans for services should not disregard this difference.

- ❖ Buyers of services must be adept in using various types of contracts, whereas the buyer of supplies can often spend his/her entire career awarding firm-fixed-price (lump-sum or fixed price line item) contracts. The indefiniteness of service requirements provides many circumstances where indefinite quantity-indefinite delivery, requirements, or time and material/labor hour contract types are necessary and appropriate.

The service contracting situation may, in fact require combination or composite contract types, with certain clearly defined contract services falling under a firm-fixed-price line item and other less clearly defined contract services falling under a requirements or time and materials line item(s). The application of firm-fixed-price contract type thinking to all service contracts is courting disaster that will manifest itself in problems with contract administration.

- ❖ Unlike the majority of supply contracts, most service purchases (other than construction) will consider technical approach and experience to be at least as important as low price. A&E firms are, in fact, selected solely on technical qualifications: contract is awarded based upon negotiation of a fair and reasonable price with the best technically qualified firm. Other service purchases generally select the successful firm based upon technical and cost proposal submittals, with lowest being price only one of the factors used in selection. Some organizations even assign price such a low weight that it has little effect on the selection results. In the public sector, these purchases are

considered negotiated procurements, and discussions will generally be held on both technical and price/cost matters.

- ❖ Unlike supply deliverables, which are usually of a tangible personal property nature, service purchase deliverables can take many forms. Good purchasing would call for packaging services into discrete deliverable work units in order to avoid the appearance of personal service contracting. Unless the purchased service is measured in discrete work units, contract administration personnel tend to deal with contractor personnel as if they were working directly for the buyer organization, thus creating the problems associated with personal service contracting.
- ❖ Examples of discrete work packages would include square feet of interior or external masonry wall painted; square meters/yards of lawn mowed; numbers of guard posts manned; etc. This type of work line item could be readily priced either as a lump sum or a fixed price line item. If unable to define requirements as discrete work packages, writers of statements of work should develop time and material or labor hour line items. The process involved uses estimated man hours against which loaded labor rates (including base hourly rate, benefits, overhead, G&A, and profit) can be developed and applied. Total dollar estimates for material usage (excluding labor, overhead, G&A, and profit) are normally added to the total labor estimate to derive a total cost estimate for the work. Unlike discrete work package deliverables, which are usually amenable to measurement and review for quality, the output of time and material/labor hour contracts is delivered as expended man-hours. It is considerably more difficult to measure the quality of man-hours than it is most discrete work items.
- ❖ Supply purchasing, (unless it is accomplished in a JIT environment), invariably involves a "one shot" ordering process. Service purchasing, conversely, often necessitates the use of requirements or other indefinite quantity contracts which rely heavily upon ordering "as needed". Most time and materials/labor hour contracts are also of this nature. Although most statement of work preparers attempt to develop lump sum requirements, the probability of their

being able to do so decreases as the complexity of the required services, size of the contract, and the period of time covered by the contract increases. Multiple ordering generally adds either to the administrative workload, and inability to develop lump sum requirements leads too complicated composite-type contracts or to multiple ordering.

- ❖ The frequency with which bonding is required is another difference between supply and service purchasing. Although bonding is rarely employed in supply purchases, construction contracts are usually bonded. Bonding of non-construction service contracts represents somewhat of an "in between" situation, with many buyers invoking bonding requirements on a business judgment basis.
- ❖ Inspection procedures also differ somewhat for supplies and services. Supplies of a non-critical nature are normally inspected at destination. Supplies of a critical nature will often warrant inspection at origin, before the items are shipped to the buyer's manufacturing facility. Services must always be inspected at the performance site. Suppliers that fail to deliver conforming items subject themselves to rejection or return of the items purchased. Service contractors which fail to perform timely or at the required level of quality are all-too-often paid for their shoddy workmanship. This does not mean that service contracts cannot be written so as to assure adequate quality. It is the challenge of every statement of work writer to interject clear, unambiguous standards of quality and methodologies for measuring conformance. Contracts written with effective quality requirements facilitate the buyer's ability to demand quality performance through either re-performance or reduction in payment for work not performed or below the requisite quality standard.
- ❖ Contract terms of performance often vary between supply and service purchases. Significantly sized supply purchases of a non-systems nature generally terminate upon successful delivery or (heaven forbid) default in delivery. Service purchases of significant size and scope, unless they are terminated for convenience or default, will generally either terminate at

project completion (often years in the future), or be extended at the option of the buyer.

Although utility service contracts will often have a ten year term, the standard term for many service contracts is one base year and four one year options. Use of service contract renewal options facilitates annual schedule price adjustments around either economic price adjustment escalators/deescalates or pre-priced additions to the work. In Government service contracting, the Fair Labor Standards Act and Service Contract Act limits annual adjustments in labor and labor-related cost changes indicated by a new Service Contract Act wage determination. Although renewal options are not unheard of in supply purchasing, their use is much more pervasive in service purchasing.

- ❖ Final payment for supply purchases is invariably made after receipt, inspection, and testing of merchandise and receipt of an acceptable invoice. Although final payment in construction contracts is made upon project completion, service purchases generally call for monthly invoicing and payment through buyer choice (contract requirement). This is generally true whether the service is priced on a lump sum or indefinite quantity basis.
- ❖ The administration of service contracts is highly resource intensive. Service contracts are more likely to have a cost reimbursement compensation structure than supply contracts, which are invariably some type of fixed-price arrangement. Cost reimbursement contracts require significantly more administration than fixed-price contracts. Even fixed-price service contracts demand inspection and contract management surveillance at higher levels than supply contracts, however. The combination of the added labor law requirements, the multiple provisions needed to implement the various indefinite quantity contract types, the option pricing provisions, and the detailed quality assurance requirements that even fixed price service contracts require adds to service contract administration complexity.

3.4. What Service Purchasers Can Learn From Manufacturing Purchasers

- ❖ It is important to remember that purchasers in service industries buy from manufacturers and that manufacturing companies buy from service businesses (albeit often on a “decentralized basis” as explained above). Purchasers in all industries buy “goods” and as such must be familiar with the manufacturing processes that were used in production of those “goods”. Purchasers in all industries must be proficient with the “learning curve”, breakeven analysis/cost-volume-profit analysis, manufacturing cost accounting, value engineering, value analysis, and the whole panoply of things we learn in our basic purchasing courses. Most purchasing curricula (my own Federal procurement training included) concentrate on purchase of goods and supplies and then branch out into service purchasing, and that is an appropriate approach to learning the business of purchasing, for the reasons stated above.

3.5. Manufacturing Purchasing Practices and Procedures

Appropriate Purchasers In Service Industries

- ❖ As far as traditional manufacturing purchasing “practices” are concerned, the purchaser in service industries would be advised to put some of his suppliers of “goods” on a “just-in-time” delivery schedule. In addition, that service industry purchaser should liberally use blanket agreements/contracts for both goods and services and consider approaching some of his suppliers of goods to consider “consignment” of their goods to the service business. Office supplies and other G&A inventory items are excellent candidates for consignment whether the business is a manufacturer or service business.

Purchasers in service industries (as well as purchasers of services everywhere) should consider for adoption all the current world class purchasing practices no matter where they are used and rule them out only if they have been evaluated to promise a less than a favorable benefit to cost ratio.

Staying Current

- ❖ All purchasers need to stay current with developments in the field of purchasing. The best way is of course continuing education. Next Level Purchasing, the American Certification Institute, the American Purchasing Society, and the Institute of Supply Management all have excellent procurement courses designed to keep the purchaser current on developments. Another excellent way is to establish a professional reading program. A professional purchaser should read 3-5 new purchasing books per year in order to stay current.

Activity1;

Compare and contrast purchasing of goods and services.

3.6. Framework for Analyzing Services

It is important to recognize that not all services are the same. The variations between services affect the acquisition perspective. From an acquisition point of view, the following should be considered; value, repetitiveness, tangibility, direction, production nature of delivery, degree of customization, and the skills required for producing the service.

It is useful to recognize that, ultimately, the goal of effective acquisition of services is to obtain best value. In this sense, there is no difference between the acquisition of

services and goods. In addition, the best buy in services represents the appropriate trade-off quality, delivery, quantity, cost, continuity, flexibility and other relevant factors.

Value of the services

One very broad cut at services would be to classify them as high, medium, or low value. This could be done in the typical ABC/Pareto analysis. Obviously, from an economic value perspective greater acquisition attention should be spent on the high-value services. Value in this context is probably best expressed as a combination of money spent on the service in one shot, or over a specific period of time such as a year. It also should be recognized that some services might require a very careful acquisition process because of the potential impact they have on long-term strategic planning of the organization may have a very significant long-term impact.

Degree of repetitiveness

For the acquisition of repetitive services, it may be possible to develop an acquisition system and specialized expertise within the organization. For example, it could be appropriate to have specialized buying expertise in the acquisition of maintenance and security services. On the other hand, for unique service requirements, special assistance may have to be sought outside of the organization and the acquisition may be handled on a project basis.

Degree of tangibility

By definition, every service tends to have an intangible dimension. Even so, some services can be seen as more tangible than others can. For example, an architect will produce a drawing or design, which can be examined by others and which ultimately, will result in a physical structure. Although the structural features of the physical representation of the design can be evaluated and subject to a wide variety of responses. On the other hand, the advice from a consultant on a new marketing strategy may be intangible.

One way to deal with the acquisition of intangible services is to substitute qualifications for the people or equipment providing the service. For example, the number of personnel in the organization who have appropriate training in the particular discipline, and the capability of the various pieces of equipment, can be specified shade of time.

Direction of the service

Another aspect of service deals with whether or not it is directed at people. For example, food services are for people; maintenance services may be for buildings or equipments. When services are directed at people it is important to recognize the special needs of the persons who will be most affected by the service. The ultimate user likely will play a major role in both the specification of the service and the assessment of whether satisfactory quality has in fact, been delivered if services directed at people have an important intangible component. Assessment may require a period of exposure of both support personnel and purchaser personnel to each other to determine compatibility in baby- sitting. For example, is it the parent or the children or both who determine the selection.

Production of the service

People, equipment, or combination of both can produce service. Services of low labor intensive may have a high capital or asset component. Typical examples would include real state, equipment rentals, computer processing, transportation and communication services as well as custom processing of a machine intensive nature.

In the specification stage, understanding the underlying technology Roark asset base is important. During the acquisition stage, potential suppliers can be accessedbased on their asset capacity and availability as well as the state of their technology. Quality monitoring and evaluation may be process oriented, with emphasis on the performance of the underlying capital asset.

Services with higher labor intensity included activities like hand harvesting, installation and maintenance, education, health support and security as well as the full range of professional activities like consulting, engineering, accounting, medical and

architectural services. Here the quality of the “people component” is the primary concern.

Services involving largely lower to medium skilled people may focus more on cost minimization and efficiency. Services requiring highly skilled individuals may require the purchaser to distinguish between levels of professional skill and may require extensive ongoing communication between requisitioner and purchaser through all phases of the acquisition process.

Nature of the demand

The demand for particular service may be continuous, periodic, or discrete. The typical example of continuous service may be insurance or 24-hour around the clock security service. A discrete or one-time service may be the acquisition of an interior decorator to suggest a new color scheme for an office complex. The continuous service may permit the opportunity to monitor progress and to make alteration as information about the quality of service becomes evident. For discrete services, the monitoring capability may have to be shifted to the various stages in the delivery production, if this is possible. The real problem here may be that by the time the service is delivered, it is too late to make significant changes. Periodic service may be regular, such as once a week or once a month as regular inspections, or it may vary with needs as in repair services.

The nature of service delivery

The place and nature of service delivery may have significant acquisition repercussions. For example, if the delivery of the service occurs on the premises of the purchaser, the contract agreement may have to be addressing a number of provisions.

For example in construction or installment services, questions of security, access, nature of dress, hours of work, applicability of various codes for health and safety, what working days and hours are applicable, and what equipment and materials are to be provided by whom, are all issues that need to be addressed as part of the contract.

On the other hand, when the service is provided on the supplier's premises or elsewhere, many of those concerns may not arise, provided the service be not directed at personnel of the purchaser.

Degree of customization

It makes a substantial difference whether a service is standardized or is customized specifically for the purchaser. The lower the consumer contact, the more standard the service becomes, and the lower the importance of intangibility. Specification of these kinds of services is probably easier because of the standardization and the common nature of the purchase. With many purchasers in the market, standard specifications are probably available. If there are many suppliers, it may be possible to use competitive bidding techniques, expect quantity discounts, and use a standard type of supplier evaluation.

With highly customized services, the specification process may become much more difficult and the options more difficult to understand. The involvement of the end customers in this specification process becomes more important. The possibilities of trade-offs in this various make or buy sub- options need to be explored before final specification can be agreed to. The acquisition process itself may be less definite as various suppliers may offer substantially different options. Evaluation of supplier performance may have to recognize the purchaser's share of responsibility for quality at the point of delivery.

The skills required for producing the service

The production of a service may require a full range of skills from unskilled on the one extreme to highly skilled on the other. In services requiring relatively unskilled labor such as grass cutting and other simple maintenance tasks, price emphasis is likely to be high ease of entry to (and exit from) the service may also be high. On the other extreme, the acquisition of highly skilled services may focus far more on qualifications of the skilled persons, concern over the specific persons who will be performing this service, and recommendations, from other skilled persons and users. Frequently, in

highly professional services the cost of the professional service may be lower when it is compared to the benefit expected. For example, a good design may increase sales substantially; and a good consulting recommendation may turn a whole organization around. It is often very difficult to deal with estimated costs for the job versus the estimated benefits.

Activity2:

1. Describe the outline of service purchasing using your own understanding.

3.7. Services Purchasing Cycle

For purchasing, the activities of buying services still involve requesting competitive bids, analyzing quotations, placing purchase orders and following up. It is important, however, that purchasers impress upon users the need to communicate the scope of the service. The major steps in the contracting process are:

1. Statement of work
2. Solicitation of bids
3. Selecting service contractor
4. Follow-up and measurement

1. Statement of work

The statement of work is the key to service contract, as the specification in to the product contract. A good statement of work will outline the specific services the contractor is expected to perform. It should indicate type, level, and quality of service.

While complete descriptions are necessary, over specifying will result in increased costs and limit competition.

Where possible, all jobs should be performance oriented. Performance based statements of work describe the duty, the method, and the frequency, thereby allowing the contractor the maximum flexibility in selecting methodologies. Design based statements of work state more specifically, the desired results and how the job will be accomplished. This approach can lead to higher costs, less competition and higher administrative costs to ensure that contractor is following directions. The statement of work is also impact the administration of the contract. It defines the scope of the effort, is what the contractor does and what the buyer receives. The manner in which the scope is defined governs the amount of direction that the buyer can give during the contract's life.

Planning the statement of work

A statement of work frequently is described as a document that details a strategy for contractor and buyer accomplishment of the objectives of a project. However, before any strategy can be developed, certain basic questions must be answered and understood.

- ✓ What are the objectives of the project?
- ✓ Where did the objectives come from, who organized them, and why were they originated?
- ✓ What is the status, including resource and schedule constraints, of the effort?

The planning phase of s.o.w. preparation is aimed at a thorough investigation of the why and what of the project. The following checklist will assist the program manager and the buyer in this determination.

- Identify all resources, schedule, and compensation constraints for the project.
- Identify all buyer and contractor participation needed for the project and define the extent and nature of their responsibilities. All buyer support,

such as buyer furnished equipment, materials, facilities, approvals and so forth, should be specifically stated.

- Identify contractor delivery requirements at specified points in time; include details about the type and quantity of any deliverables.
- Identify specific technical data requirements such as plans, specifications, and reports and so on.

Writing the statement of work

Because of a thorough planning effort, the individuals writing the statement of work have determined the tasks and details that need to be included.

Writing a quality statement of work is not an easy task. The statement of work must maintain a delicate balance b/n protecting the buyer's interests and encouraging the suppliers (contractor's) creativity during both proposal preparation and contract performance.

The following issues deserve special attention on a case-by-case basis. Required provisions may be in either the statement of work or special terms and conditions included by the buyer in the request for proposal and the resulting contract.

- ❖ A performance plan: - the contractor must be required to develop a non-subjective, quantifiable blueprint for providing the services. Staffing, equipment, and supplies should all be identified. After developing the blueprint, all required processes must be identified by the contractor.
- ❖ Quality monitoring system: - the contractor should be required to establish fail-safe measures to minimize quality problems.
- ❖ Personnel plan: - the contractor is required to develop and maintain recruiting and training programs acceptable to the buyer.
- ❖ Performance and payment bonds: - the contractor must provide performance and payment bonds equal to x percent of the value of the contractor amount.

2. Solicitation of bids

Finding service supplier is done in the same way as finding other suppliers. Trade directories can prove quite helpful. A key item that should be compiled prior to or during the bid cycle is a list of employee qualification. This information is particularly important when the work will require advanced skills. Other issues to be included in the solicitation are work schedule, emergency, response period, length of contract and special terms such as liability insurance, workmen's insurance, wage provisions, and liquidated damage provisions.

3. Select services contractors.

Selecting the "right" sources is much more of an art when purchasing services than when purchasing materials. Based on the complexity of many service procurements and the unexpected problems that tend to arise, it normally is prudent practice to select only established reputable firms.

When a large number of potential contractors are available, the buyer and the customer normally reduce this list to three to five firms. The purchasing/customer team interviews prospective contractors, management, talks with previous customers and checks out employees through random interviews. The buyer then invites proposals from only the potential suppliers with which the buying firm would be comfortable doing business.

During the evaluation process, emphasis should be placed on the total cost and total benefits to the buying organization. In addition to the traditional concerns about a prospective contractor's financial strength, management capability, experience and reputation, the area of technical capabilities requires special analysis.

4. Follow-up and measurement

Making sure that the selected supplier meets the agreed -upon requirements is the final phase of service purchasing.

3.8. Pricing of Service Contractors

Establishing a fair price is often difficult for survive purchasers. Often there is no baseline for comparison; as more services is performed, however, records can be developed as bases for evaluation. Some of the price analysis techniques include:

- ❖ Comparison to a previous price
- ❖ Comparison to a standard
- ❖ In house estimates
- ❖ Comparison to other quotas
- ❖ Work measurement studies

Purchasers will often negotiate with service contractors prior to contract award. The negotiation provides flexibility in permitting:

1. Innovative ideas
2. Use of flexible contract arrangement
3. Evaluation of factors other than price and
4. Examinations of contractors' costs

Activity3:

1. Consider one Barber house around you and see how the Barber house prices the service. What do you think is its weakness?

3.9. Construction Services

The purchase of new facilities is a commitment for the future. Quality, productivity of the new plant, the time required to affect the purchase, and cost all must be considered.

Aesthetic requirements, time requirements, and the availability of highly qualified designer and builders all will tend to influence the selection of a purchase method.

There are five common methods of purchasing construction, however, it is unlikely that any one of the five methods will consistently be the proper choice for all building requirement.

1. Conventional method

This is the most frequently employed approach to buying building construction in USA. With this approach, architects and engineers without the involvement of a builder perform design of the required facility. Design of the facility is completed before potential contractors are requested to submit bids. Two separate organizations are responsible:

- One for the design work and
- One for the construction phase of the project

2. Design and build, Firm agreed price method

This approach could be described as construction with gratuitous design. The owner determines the basic facility requirements, such as size, temperature, electrical, and so on. These requirements become the basis of a performance specification. This specification is furnished to carefully prequalified builders, who, with their prospective sub contractors, prepare a bid package consisting of a design and price proposal. The purchasing firm awards a firm agreed price contract for construction to the builder whose bid is most attractive.

3. Design and build, cost- reimbursable method

With this method, only one contract is awarded for both design and construction. Design is accomplished by architects and engineers employed by the general contractor. Thus, the builder has ample opportunity to influence the design of the required facility; with this approach; construction of work element (excavation, structural work, and so on) proceeds when the design of the element has been completed. This approach is particularly useful when a structure is required with in

a very short time period and the design and build, firm agreed price method is not applicable.

3. Building team

Within this approach, the owner retains both designer and builder concurrently. In contrast to the conventional method, the builder is retained during the design phase and is expected to contribute information on costs, procedures, and time requirements to the designer. As the A-E completes the plans and specifications for a work element, the builder either accomplishes the work with its own crews or obtains prices from several specialists and awards the work to the qualified sub contractor making the best offer (price, time and quality considered). As with the other methods, the general contractor over sees and integrates the efforts of the subcontractors.

4. The owner as a contractor

With this method, the owner contrasts directly for the various work elements and performs the functions of integrating and a general contractor would otherwise accomplish controlling that. Since purchase orders and contracts are awarded on a work element basis, it is possible for construction to proceed prior to completion of the total design phase.

Generally, professional buyers know that selection of the most appropriate method of purchasing plant facilities can significantly reduce the cost and time required to purchase new facilities. The early involvement in such projects is a key to saving both time and money.

3.10. Service Contract Administration

The four key to successful service contract administration are:

- A sound statement of work
- Selection of the “right” source
- A fair and reasonable price and

➤ Aggressive management of the contract

The administration of many service contracts can be a very challenging responsibility. The buyer needs to monitor and have a realistic degree of control over the supplier's performance. Crucial to success in this area is the timely availability of accurate data, including the contractor's plan for performance and contractor's actual progress. The buyer must proactively manage the relationship to ensure success.

Summary

- ✓ Some of the unique attributes of services are; inability to store services, quality assurance difficulties, production and delivery is performed at the same time.
- ✓ There are frameworks for analyzing services. To list them Value of the services, Degree of repetitiveness, Degree of tangibility, Direction of the service, Production of the service, Nature of the demand, the nature of service delivery and Degree of customization.
- ✓ These constitute services purchasing cycle.
 - 1.Statement of work
 - 2.Solicitation of bids
 - 3.Selecting service contractor
 - 4.Follow-up and measurement
- ✓ Some of the price analysis techniques include:
 - a. Comparison to a previous price
 - b. Comparison to a standard
 - c. In house estimates
 - d. Comparison to other quotas
 - e. Work measurement studies
- ✓ There are five common methods of purchasing construction.
 - 1. Conventional method**

2. Design and build, Firm agreed price method
3. Design and build, cost- reimbursable method
4. The owner as a contractor
5. Building team

Exercises

1. What are services?
2. List and describe service-purchasing cycle.
3. What techniques should we use to analyze services?
4. Discuss methods that can be used to purchase construction services.

Chapter Four

Make or Buy Decision

Learning objectives

At the end of the chapter, students will be able to:

- ✓ Differentiate outsourcing and in sourcing;
- ✓ Know factors that enforce companies to outsource and in source;
- ✓ Process to pass through to reach on make or buy decision;
- ✓ Strategic and tactical issues under make/buy decision;

4.1 Introduction:

Outsourcing is a strategic decision to give a task or activity to an independent contractor who determines how best to do the task or activity. The firm and the independent contractor become partners and may establish a long-term relationship. When a firm considers which components or subsystems it should make and which it should buy, it should analyze the issue at two levels; i.e. strategic and operational or tactical level. The strategic, obviously, is the more important of the two as far as the future of the firm is concerned. Therefore, this initial analysis has a forward looking, futuristic aura about it. The make-or-buy decision is the act of making a strategic choice between producing an item internally (in-house) or buying it externally (from an outside supplier). The buy side of the decision also is referred to as outsourcing. Make-or-buy decisions usually arise when a firm that has developed a product or part significantly modified a product or parts having trouble with current suppliers, or has diminishing capacity or changing demand.

Make-or-buy analysis is conducted at the strategic and operational level. Obviously, the strategic level is the more long-range of the two. Variables considered at the strategic level include analysis of the future, as well as the current environment. Issues like government regulation, competing firms, and market trends all have a strategic impact on the make-or-buy decision. Of course, firms should make items that reinforce or are in-line with their core competencies. These are areas in which the firm is strongest and which give the firm a competitive advantage.

The increased existence of firms that utilize the concept of lean manufacturing has prompted an increase in outsourcing. Manufacturers are tending to purchase subassemblies rather than piece parts, and are outsourcing activities ranging from logistics to administrative services. It prescribes that a firm outsource all items that do not fit one of the following three categories: (1) the item is critical to the success of the product, including customer perception of important product attributes; (2) the item requires specialized design and manufacturing skills or equipment, and the number of capable and reliable suppliers is extremely limited; and (3) the item fits well within the firm's core competencies, or within those the firm must develop to fulfill future plans.

Items that fit under one of these three categories are considered strategic in nature and should be produced internally if at all possible.

Make-or-buy decisions also occur at the operational level. Analysis, scholars suggest these considerations that favor making a part in-house:

- Cost considerations (less expensive to make the part)
- Desire to integrate plant operations
- Productive use of excess plant capacity to help absorb fixed overhead (using existing idle capacity)
- Need to exert direct control over production and/or quality
- Better quality control
- Design secrecy is required to protect proprietary technology
- Unreliable suppliers
- No competent suppliers
- Desire to maintain a stable workforce (in periods of declining sales)
- Quantity too small to interest a supplier
- Control of lead time, transportation, and warehousing costs
- Greater assurance of continual supply
- Provision of a second source
- Political, social or environmental reasons (union pressure)
- Emotion (e.g., pride)

Factors that may influence firms to buy a part externally include:

- Lack of expertise
- Suppliers' research and specialized know-how exceeds that of the buyer
- cost considerations (less expensive to buy the item)
- Small-volume requirements
- Limited production facilities or insufficient capacity
- Desire to maintain a multiple-source policy
- Indirect managerial control considerations
- Procurement and inventory considerations
- Brand preference
- Item not essential to the firm's strategy

The two most important factors to consider in a make-or-buy decision are cost and the availability of production capacity. Burt, Dobler, and Starling warn that "no other factor is subject to more varied interpretation and to greater misunderstanding" Cost considerations should include all relevant costs and be long-term in nature. Obviously, the buying firm will compare production and purchase costs.

Burt, Dobler, and Starling provide the major elements included in this comparison. Elements of the "make" analysis include:

- Incremental inventory-carrying costs
- Direct labor costs
- Incremental factory overhead costs
- Delivered purchased material costs
- Incremental managerial costs

- Any follow-on costs stemming from quality and related problems
- Incremental purchasing costs
- Incremental capital costs

Cost considerations for the "buy" analysis include:

- Purchase price of the part
- Transportation costs
- Receiving and inspection costs
- Incremental purchasing costs
- Any follow-on costs related to quality or service

One will note that six of the costs to consider are incremental. By definition, incremental costs would not be incurred if the part were purchased from an outside source. If a firm does not currently have the capacity to make the part, incremental costs will include variable costs plus the full portion of fixed overhead allocable to the part's manufacture.

If the firm has excess capacity that can be used to produce the part in question, only the variable overhead caused by production of the parts are considered incremental. That is, fixed costs, under conditions of sufficient idle capacity, are not incremental and should not be considered as part of the cost to make the part.

4.2. Four Numbers You Should Know:

When you are supposed to make-or-buy decision, there are four numbers you need to be aware of. Your decision will be based on the values of these four numbers. Let's have a look at the numbers now. They are quite self-explanatory.

1. The volume
2. The fixed cost of making
3. Per-unit direct cost when making
4. Per-unit cost when buying

Now two formulas use the above numbers. They are 'Cost to Buy' and 'Cost to Make'. The higher value loses and the decision maker can go ahead with the less costly solution.

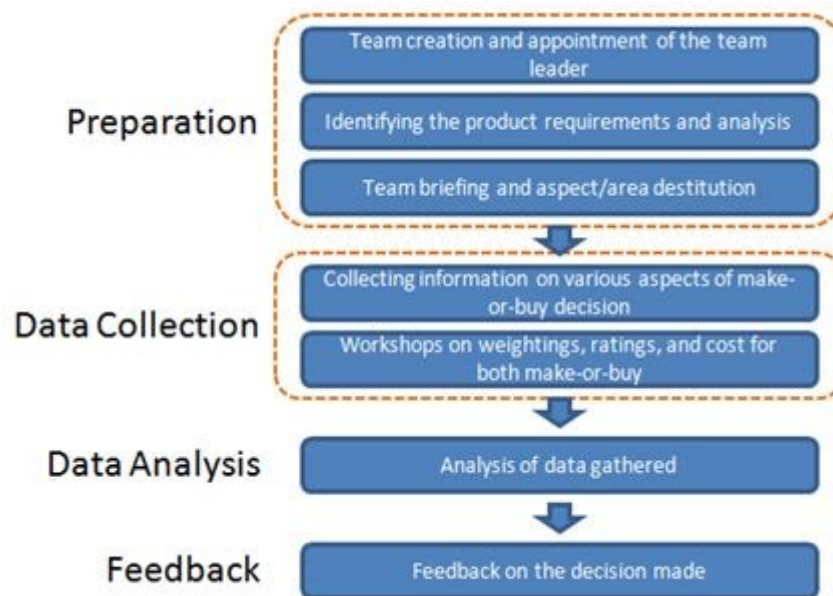
Cost to Buy (CTB) = Volume x Per-unit cost when buying

Cost to Make (CTM) = Fixed costs + (Per-unit direct cost x volume)

4.3. The Process of Make or Buy Decision

The make or buy decision can be in many scales. If the decision is small in nature and has less impact on the business, then even one person can make the decision. The person can consider the pros and cons between making and buying and finally arrive at a decision.

When it comes to larger and high impact decisions, usually organizations follow a standard method to arrive at a decision. This method can be divided into four main stages as below.



4.4 Advantages of Outsourcing

- Better quality people and knowledge may be applied to an activity or task by the outsourcing firm.
- Reduction in administrative costs may be possible when certain tasks are outsourced.

Outsourcing certain activities and employees that do not fit with company culture may be used to preserve a strong culture or employee morale.

- Outsourcing may lead to loss of control of certain activities which may be a problem on time sensitive projects for example.
- Outsourcing an activity may result in loss of the opportunity to gain knowledge and information that may have general application to other key processes and activities.

4.5. Strategic Issue under Make or Buy Decision

The starting point most firms use in conducting the strategic analysis is to identify the major strengths of the firm and then build on them, what is it we really do well- better than most firms? Do our strengths lie in certain design skills, unique production skills and equipment, different types of people skills? A thorough investigation of these types of questions is what many people today call identifying the firm's existing core competencies.

The next step in the process is to look at the current and expected future environment in which the firm operates; i.e. the competition, the governmental regulatory climate, the changing characteristics of sales and supply markets, and so on. In considering what to make and what to buy, then, the decision should cultivate and exploit the firm's competencies.

The items that should be made in house are those that require capabilities that are closely linked with the core competencies and are mutually reinforcing as opposed to those that can be separated. This fundamental strategic consideration guides the original make or buys decisions that ultimately shape the character of the firm.

If the analysis to this point indicates that "make" decision is desirable from a strategic point of view, before the decision is made several additional factors must be analyzed. These practical considerations focus on a comparison of the firm's present situation with that of potential suppliers with respect to the matters of design, manufacturing, and quality capabilities.

4.6. Tactical Issus of Make or Buy Decision

After the strategic "make" and outsourcing decisions are finalized, and as operation progress, a number of situations inevitably arise that require additional make or buy analyses at something less than a strategic level.

- Unsatisfactory supplier performance in the case of some outsourced items,
- changing sales demands,
- restricted manufacturing capacityand

- the modification of an existing product are just a few the operating factors that generate these needs.

As a rule, from a “make” prospective these tactical make or buy situations involves items for which the firm already possesses most of the necessary production resources.

Although the decision requiring a nominal expenditure of funds does not require direct top- management participation, it does require coordinated study by several operating departments, i.e. perhaps using a team approach.

4.7. Administration of Make or Buy Decision

It is not difficult to find otherwise well-managed firms in which many tactical make or buy decisions are inadvertently delegated to an operating person in inventory control or production control. It should now be apparent that this is a poor practice b/c:

- First ,such person normally does not have adequate information with which to make an intelligent decision for a companywide point of view.
- Second, even if adequate information were available this type of person typically lacks the breadth of experience to evaluate fully the significance of the information and the resultant decision.

In most cases, make or buy decisions should be made, or at least reviewed, at a managerial level. The decision maker must be able view such problems with a broad companywide perspective. Many progressive firms use a team or committee approach to analyze make or buy alternatives. The important point to keep in mind is that all departments that can contribute to the decision, or that affected by it, should have some voice in making it. A team or committee accomplishes this directly.

In addition to providing and operational framework within which make or buy alternatives are investigated, a review system is necessary. The system should provide:

1. The entry of project into the study system
2. Maintenance of essential records and
3. A periodic audit of important decisions

Chapter 5

Procurement of works

5.1 unique nature of procurement of works

Works are construction services carried out by a contractor in accordance with technical specifications over time. The contractor uses labour, materials and equipment to construct infrastructure such as buildings, roads, railways and other works. To guarantee that the construction is carried out in accordance with the specifications the construction of works is supervised by an independent consulting firm or staff from the technical department of the executing agency. Works also include other activities such as demolition

Works contracting is the largest, most complex, and most visible procurement activity in the public sector of most countries. It is important that government departments engaged in works contracting organise the activity in careful detail and apply internationally recognised best practice in contractor selection and

contract administration. Due to the complexity of works contracting, it is often advisable for a PE to engage an engineering consultant for purposes of design and/or construction supervision

Expected construction period and time in weeks or months, or where alternative time schedules are permitted, the range of acceptable construction periods, should be defined. In addition, information should be provided on the topography, geotechnical conditions, access to site, transportation and communication facilities, project layout, services to be provided by the procuring entity, method of measurement and payment of completed works.

The unique nature of works requires that detailed design specifications be provided and a complete description and specification of all goods, materials and works to be included in the delivery, including detailed drawings and the requirement that the supplier possesses the necessary qualifications with respect to capacity and experience and financial strength necessary to carry out the type of job requested.

5.2 Statements of requirements

Requirement definition involves defining and describing what is needed and will be procured, collecting information, identifying appropriate solutions and specifying these in specifications for goods and equipment, terms of reference (TOR) for services, or statement of works (SOW) for works. Specifications, TOR and SOW constitute the technical basis for the solicitation and the evaluation of offers to determine if they satisfy the requirements as stipulated in the solicitation documents. They become the “heart” around which the eventual contract is written and later administered.

They have an effect on the procurement that lasts its entire lifetime from planning, through bid evaluation, award and contract performance up to completion and post-contract evaluations. A clear and appropriate definition and description of the need is of utmost importance.

Purpose

Requirements should be defined with the aim of opening up competition, i.e. no use of brand names or other unnecessary restrictions. Requirement definition should identify the exact need (technical and quality), aiming at avoiding over-specifications (as this may increase the cost) or under-specifications (where needs will not be met), as well as the “when” it is needed (timing), in order to avoid progress delays or losses for example due to extra storage and handling charges if delivered earlier than required.

Defining the requirement starts when a need is identified and is an integral part of the individual planning activities. A systematic and team approach between programme/project and procurement officers is recommended to develop a generic technical description. Early involvement of the procurement officer can add value due to experience with similar types of requirements. At the conclusion of this process, the requisitioner should review the finished description to ensure that it responds to the need identified. The final requirement definition should then be submitted including funds certification as part of a requisition to the procurement function.

The statement of works (SOW) including design/drawings, bill of quantities (BoQ) and technical specifications, should describe the works in sufficient detail to identify the location, nature and any complexities involved. The term “works” generally includes all types of civil, mechanical, electrical or other engineering/installation services (other than consulting services) as well as the supply of construction materials and equipment included therein.

It is common practice to use the services of a consulting engineer to help in the completion of technical specifications for large and/or complex works. In cases where an external consulting engineer is used, this person/company could also be asked to prepare the details of the solicitation documents. However, in the following some general tips and things to remember for preparation of the SOW/BoQ/technical specifications is provided. In cases where a consulting engineer is used, these general tips can be used to check/follow-up on the work of the engineer.

a. Content of statement of works (SOW)

The statement of works (SOW) provides background and detailed information for the construction works.

b. Bill of quantities

The bill of quantities (BoQ) is the list of all main components of the project (buildings, roads, sidewalks, lighting, equipment, etc) including estimated quantities for each line item (soil movements/ excavations, structures, roofing, floors, sanitation, etc) and information on the way it will be paid (e.g. lump sum or unit price). The preparation of the BoQ is the most difficult part because it should be complete and exhaustive especially in contracts based on unit prices. Even though less detail or fewer items are needed in lump sum contracts, such contracts require good technical specifications and careful supervision.

c. Technical specifications

In addition to the BoQ, technical specifications need to be developed. These describe in detail the specification for each construction item e.g. type of cement mix, type of iron rods, bricks, etc. The technical specifications should follow the order of the main components as described in the BoQ for easy reference. The following items should be defined:

- Lab methods for “quality control” of each item, when relevant.
- Rules to accept or reject materials or works.
- Methods for measurement and payment of each item. (What works, materials, etc, are included in each item and the criteria to measure them).
- Environmental conservation policies and responsibility of supplier to adhere.
- Quality assurance programme.

5.3 Bidder Qualification Procedures(suppliers’ prequalification)

A. Bidder Qualification and Disqualification

Bidders must demonstrate that they are qualified to participate in the procurement opportunity, in terms of their technical capacity, financial stability, record of performance and other factors. The qualification criteria should be drawn with a view to encouraging the participation of new companies who may have difficulty

meeting normal standards for financial stability and record of performance.. Where pre-qualification is not utilised, the qualification of bidders will be evaluated (along with the responsiveness of their bids) at the time of bid submission. Bidders who do not meet the qualification standards set forth in the bidding documents will be disqualified from participation in the procurement.

Disqualification of contractors and suppliers who lack competence, integrity or who commit procurement fraud, bribery or other acts of corruption. Disqualification of corrupt suppliers established through formal suspension and debarment procedures rather than through informal blacklisting - to promote transparency.

B. Pre-Qualification

Is An assessment made by the Employer before inviting bids, of the appropriate level of experience and capacity of potential bidders expressing interest in undertaking a particular contract, before inviting them to bid Sometimes it is appropriate for the procuring entity to use pre-qualification procedures, especially for large and complex procurements. The procurement record should indicate the reasons why it was determined to use pre-qualification procedures. Where pre-qualification is not used, the bidder submitting the best-ranked bid will be evaluated at the time of deciding upon the award (post-qualification).

The invitation to pre-qualify announces the procurement and provides applicants with sufficient information to determine their interest in the procurement for which the pre-qualification procedure is being conducted. Included with the invitation are instructions to inform contractors of the rules and procedures the PE will follow in conducting the pre-qualification.

The Pre-Qualification - Objectives are;

- To assure purchaser/owner that bidder has technical and financial background and experience to perform the contract;
- To prevent unqualified bidders from incurring expensive bid preparation costs;
- To assure leading contractors that only qualified firms will submit bids; and
- To reveal to the purchaser the amount of interest in the contracting industry in the particular project or procurement.

C. Pre-Bid conferences

Pre-bid conferences are used to clarify the procurement requirements and contract terms and conditions. They give contractors the opportunity to raise questions, and obtain answers, regarding specific aspects of the procurement, especially in major or complex projects, and to ascertain which other contractors are potentially interested in submitting bids. Where joint ventures are allowed, bidders may combine and strengthen their qualifications to participate, based on the information gained in the pre-bid conference.

It is important that the procurement personnel presiding over the pre-bid conference be thoroughly familiar with all aspects of the procurement so that they may give accurate and comprehensive information in response to questions from bidders. Careful minutes of the conference should be recorded and disseminated to all those in attendance, and also to those who have expressed interest in the procurement or are otherwise pre-qualified but who were unable to attend the conference.

D. Post-Qualification

Post-qualification is the method applied to ensure that proposed successful bidder is qualified to perform the contract, with reference to all of the criteria for qualification set forth in the bidding documents. This method should be distinguished from “confirmation of pre-qualification”, in which the procuring entity requests and obtains confirmation from the bidder that all the contractor financial and business information on which pre-qualification was based remains essentially unchanged and that its financial and management strength has not deteriorated since the time of pre-qualification. Post-qualification important to assure bidders’ financial integrity and responsibility has not deteriorated during period of bid Evaluation.

E. Contractor Fraud

Throughout the conduct of procurement proceedings it is essential that procurement officers be alert to contractor fraud, including the falsification of qualification information. It is not enough to be positive in the promotion of procurement integrity in the contractor community. There will always be some contractors determined to take advantage in slackness and lack of discipline on the part of government officials. They will seek to gain favor by illicit means or seek to

deviate from standard procedures to advance their interests. To counter this, it is important that procurement officers be thoroughly trained in the responsibilities of their assignments and alert to any efforts of contractors to undermine public integrity, in particular by submitting falsified eligibility and qualification information.

F. Suspension and Debarment Procedures

There should be procedures, carefully drafted, to protect public procurement integrity through the disqualification of contractors found guilty of bribery, fraud, or other misconduct. Usually these procedures are called “suspension and debarment” procedures because they are administrative procedures designed to disqualify fraudulent and corrupt contractors from eligibility for government procurement for a specific period. They are established on a formal basis, to advance transparency and replace the kind of informal “blacklisting” of firms which may otherwise occur. Informal “blacklisting” provides no basis for accountability for procurement officers using such a system perhaps unfairly to favor one contractor over another.

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G. Contractor Performance Evaluation

As stated above, there may be contractors who have no problems of misconduct or lack of integrity, but who are nonetheless poor performers. Their difficulties may arise from financial or other resource constraints, including inadequate staffing,

management, strategy or effort to meet the requirements of the procurements they have undertaken. The government departments need to evaluate contractor performance in order to identify those contractors, with a view to discounting their performance during bid evaluation or to identifying special steps the government might take to encourage or improve their performance if they are nonetheless selected for future government work.

5.4 standard procedures for procurement of works (the case of Ethiopia)

The basic method for preparing a bidding document is the same irrespective of which document is selected. Each document has a number of sections that are to be used un-amended and each has sections and data sheets where the project and procurement specific details are inserted. The bidding document is the most important document in the procurement process. It translates requirements into specifications and contractual conditions. It should contain all the information necessary for a prospective bidder or consultant to prepare its bid. The content, detail and complexity of the bidding documents will vary with the size and nature of whatever is being procured and according to the procurement method selected. There may also be some differences to the extent that the contractor is called upon to perform on a design-and-build basis.

These standard bidding documents are based on the corresponding Master Procurement Documents prepared by the multilateral development banks and international financing institutions. These documents are reviewed and revised from time to time. Participants may be interested in viewing standard bidding documents and contract forms for construction contracting prepared by construction industry representatives.

Instructions to Bidders

The ITBs are intended to provide the information necessary for bidders to prepare responsive bids, in accordance with the requirements of the project, including information on submission, opening, evaluation and comparison of bids and award of the contract. At a minimum they should include the following information:

- *A general description of the works to be constructed;*
- *A description of the government policies regarding fraud, corruption, coercion and collusion;*
- *The scope of bids, e.g. if bidding, evaluation and contracting is to be on a per-lot or per-package basis;*
- *The procedures for submission;*
- *Dates time and venues for submission and opening;*
- *The number of original and copies required;*
- *The validity period;*
- *The procedures for contract formation;*
- *Qualification requirements of bidders*
- *The method and criteria for evaluation;*
- *The venue, time and date of the pre-bid or proposal conference;*
- *Instructions for completing forms;*
- *Acceptable currencies and methods of conversion;*
- *Documentation required in establishing eligibility of works;*
- *Procedures for clarifying and amending the bidding documents;*
- *Instructions for the sealing and marking of bids;*
- *Details of bid modification;*
- *The bid opening procedures;*
- *The right to vary quantities; and*
- *Conditions for contract effectiveness.*

General Conditions of Contract

Attached to all of the standard bidding documents is a set of general conditions of contract to be used without modification for all contracts for works. The benefits of employing one single standard set of general conditions are set out below:

1. Procurement staff will gain a firm understanding of the contract conditions.
2. Contracted parties will become used to accepting standard conditions and not seek opportunities to amend contract conditions thus weakening

the contract

3. Bidding documents will be easier to compile, as a significant portion will remain the same for each and every exercise.
4. The PE will be able to ensure that it has the appropriate level of contractual safeguards for each and every contract that it enters into.
5. A greater degree of consistency will be introduced into the public procurement operation.
6. In some cases small-scale contractors are not able to pre-finance large contracts. In those cases the PE may accept bids for labour only and the contract will state that the PE will provide the materials.

Sub-Contractors

In many cases works are carried out by Joint Ventures or by a main contractor who uses subcontractors to carry out specific components of the Works. The main contractor shall not subcontract the whole of the Works. The main contractor shall be responsible for the acts or defaults of any subcontractor, his agents or employees, as if they were the acts or defaults of the contractor. Unless otherwise stated in the Particular Conditions of Contract:

- The contractor shall not be required to obtain prior consent of the Engineer to suppliers solely of materials, or to a subcontract for which the subcontractor is named in the Contract;
- The prior consent of the Engineer shall be obtained to other proposed subcontractors;
- The contractor shall give the Engineer not less than 28 days' notice of the intended date of the commencement of each Subcontractor's work, and of the commencement of such work on the Site; and
- Each subcontract shall include provisions which would entitle the Employer to require the subcontract to be assigned to the Employer.

If a Subcontractor's obligations extend beyond the expiry date of the relevant Defects Notification Period and the Engineer, prior to this date, instructs the Contractor to assign the benefit of such obligations to the Employer, then the Contractor shall do so. Unless otherwise stated in the assignment, the Contractor

shall have no liability to the Employer for the work carried out by the Subcontractor after the assignment takes effect.

Special Conditions of Contract

Each procurement exercise is a unique one and requires specific terms and conditions that will only apply to one contract. There is therefore a clear need for a method of introducing specific clauses into the documents under Special Conditions of Contract.

The Bidding Process

Bidding documents for international competitive bidding (ICB) and national competitive bidding (NCB) are normally sold to prospective bidders to offset the costs of production. For international procurement of works the absolute minimum period for preparation and submission of bids should be six weeks – and longer if the assignment is particularly complex. Six weeks may seem a long time especially when a project is working to tight deadlines. In reality it is not: approximately two weeks have to be allowed for international couriers; in the case of works contractors and consulting firms, both will need to visit the host country to assess and address the local components of their bid. The minimum for shopping should be one week when advertisement is not required and 6 days when advertisement is required; and 30 days for NCB.

What should be done when a bid or proposal is received? The first step, if the document is delivered by hand is to issue a simple receipt describing the package and from whom it has been received (international courier companies will simply ask the recipient to sign their receipt). Once a bid is received the PE has a duty to ensure that it is kept in a safe and secure location where bids cannot be tampered with.

Bid Opening Procedures

Public bid opening is a bedrock of transparency in the bidding process. It is through public opening that the bidders can see that the government and PE is following its obligation to ensure the maximum of free and fair competition in procurement. Bid openings should always be public, with only representatives of the bidders who wish to attend being allowed to do so. At exactly the time scheduled for the deadline for submission of bids, the chairman of the bid opening should declare the expiry of the deadline for submission of bids and that no further bids will be

accepted or considered. From this moment on no new bids can be accepted for any reason whatsoever. Late bids will not be accepted but will be returned unopened to the bidder.

Bid Examination and Evaluation

The evaluation process should begin with a preliminary examination immediately after bid opening. The purpose of preliminary examination is to identify and reject bids and proposals that are incomplete, invalid or substantially non-responsive to the documents and therefore are not to be considered further. Detailed bid evaluation is carried out of the responsive bids.

Contract Award, Works

The PE will award the contract to the bidder whose bid has been determined to be:

- Substantially responsive;
- Lowest evaluated responsive bid, provided;
- The bidder is qualified to perform the contract.

Negotiation(Works)

In general terms there are no grounds for negotiation in the procurement of works. Price negotiations with bidders on a competitive bid are not allowed. When procurement is undertaken on the basis of direct contracting, (DC) the PE will determine the prevailing market rate for the works based on evidence of; the price previously paid; the price paid for similar works; or the cost of the same works supplied to a different employer. The PE will only hold negotiations on price under direct contracting when the evidence suggests that the price quoted is not in line with the prevailing market rate.

Notification of Award/Letter of Acceptance

The award must be notified to the successful bidder prior to the expiry of the period of bid validity.

Preparation of the Contract;

The contract form included in the bidding documents is always the basis of the actual contract as it is the basis on which bidders prepared their bids. Three copies of the contract should be prepared. Each contract should be signed by either the PE Manager or the PE Director, the approval of the evaluation report by the

Procurement Review Committee empowers these individuals to sign the contract on behalf of the PE. There is no requirement to seek additional approvals from any organisation or individual once the evaluation report has been approved.

Performance Security;

Procurement by both ICB and NCB methods requires contractors to provide performance securities in the form and amount set out in the bidding documents.

Contract Effectiveness;

Although the contract form may have been signed by both parties, the legal effectiveness of the contract may be dependent on one or more of the following conditions:

- Receipt of the Performance Security;
- Receipt of an Advance Payment Security; or
- Receipt by the Contractor of the Advance Payment.

Supervision of Works

Supervision and administration of works contracts is often complex due to factors which could not be foreseen at the start of the work. This requires the appointment of PE managers as stipulated in the contract documents to manage the PE site and day to day activities of the contractor. This individual may be the PE technical officer but also may be specialised consultants recruited for this purpose. The PE must ensure that it is kept informed of progress and problems which may arise through routine reports.

Payment for Works

Payment for works contracts will normally be made against payment certificates approved by the PE manager as named in the contract. For all works contracts materials delivered to the site but not yet used will be excluded from the measurement approved and the value of payment certificates.

Price Adjustment

In many cases works are carried out over several years and it becomes necessary to adjust prices because of price increases for labour and materials. The amounts payable to the contractor shall be adjusted for rises or falls in the cost of labour, goods and other inputs to the works, by the addition or deduction of the amounts determined

by the formulae below. To the extent that full compensation for any rise or fall in costs is not covered, the original Contract Amount shall be deemed to have included amounts to cover the contingency of other rises and falls in costs.

Termination of Works Contracts

The Employer or the contractor may terminate a Contract if the other party causes a fundamental breach of the Contract. Fundamental breaches of Contract shall include, but shall not be limited to the following:

- The contractor stops work for 28 days when no stoppage of work is shown on the current Program and the stoppage has not been authorized by the Employer;
- The Employer instructs the contractor to delay the progress of the Works, and the instruction is not withdrawn within 28 days;
- The Employer or the Contractor is made bankrupt or goes into liquidation other than for a reconstruction or amalgamation;
- A certified payment is not paid by the Employer to the Contractor within 84 days of the date of the certificate;
- The Employer gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the contractor fails to correct it within a reasonable period of time;
- The contractor does not maintain a Security, which is required;
- The contractor has delayed the completion of the Works by the number of days for which the maximum amount of liquidated damages can be paid, as defined in the contract; or if the contractor, in the judgment of the Employer, has engaged in corrupt or fraudulent practices in competing for or in executing the Contract. When either party to the Contract gives notice of a breach of Contract to the Employer, the Employer shall decide whether the breach is fundamental or not; and
- The Employer may terminate the Contract for convenience.

If the Contract is terminated, the contractor shall stop work immediately, make the Site safe and secure, and leave the Site as soon as reasonably possible.

Force Majeure

Force Majeure literally means "greater force". These clauses excuse a party from liability if some unforeseen event beyond the control of that party prevents it from

performing its obligations under the contract. Typically, force majeure clauses cover natural disasters or other "Acts of God", war, or the failure of third parties - such as suppliers and subcontractors-to perform their obligations to the contracting party. It is important to remember that force majeure clauses are intended to excuse a party only if the failure to perform could not be avoided by the exercise of due care by that party. As is common practice, force majeure clauses excuse a party from performing its obligations if the failure is caused by subcontractors, suppliers and/or carriers. To make sure that the parties know exactly what is and is not a legitimate excuse for failure, it would be better to specifically set forth the circumstances that excuse a failure of performance, rather than rely on a general force majeure clause. Force majeure clauses are usually applicable to performance failures caused by:

- Natural disasters (earthquakes, hurricanes, floods);
- Wars, riots or other major upheaval; and
- Performance failures of parties outside the control of the contracting party (e.g., labor actions by employees).

Many force majeure clauses apply equally to both sides, excusing either party from its obligations in the event of a triggering event; however, few clauses excuse the failure to pay money.

Variations

The contractor shall execute and be bound by each Variation, unless the contractor promptly gives notice to the Engineer stating (with supporting particulars) that (i) the contractor cannot readily obtain the Goods required for the Variation, or (ii) such Variation triggers a substantial change in the sequence or progress of the Works. Upon receiving this notice, the Engineer shall cancel, confirm or vary the instruction. Each Variation may include:

- Changes to the quantities of any item of work included in the Contract (however, such Changes do not necessarily constitute a Variation);
- Changes to the quality and other characteristics of any item of work;
- Changes to the levels, positions and/or dimensions of any part of the Works;
- Omission of any work unless it is to be carried out by others;

- Any additional work, Plant, Materials or services necessary for the Permanent Works, including any associated Tests on Completion, boreholes and other testing and exploratory work; or
- Changes to the sequence or timing of the execution of the Works.

The Contractor shall not make any alteration and/or modification of the Permanent Works, unless and until the Engineer instructs or approves a Variation.

Chapter Six

Supplier Relationship Management: Concepts and Principles

6.1 Supplier Relationship Management (SRM) concepts

Supplier relationship management is the systematic, enterprise-wide assessment of suppliers' assets and capabilities with respect to overall business strategy, determination of what activities to engage in with different suppliers, and planning and execution of all interactions with suppliers, in a coordinated fashion across the relationship life cycle, to maximize the value realized through those interactions.

"Supplier relationship management is the process that defines how a company interacts with its suppliers. As the name suggests, this is a mirror image of customer relationship management (CRM). Just as a company needs to develop relationships with its customers, it also needs to foster relationships with its suppliers. The desired outcome is a win-win relationship where both parties benefit."

"SRM is understood as the sourcing policy-based design of strategic and operational procurement processes as well as the configuration of the supplier management."

"Purchasing and Supply Management is defined as a strategic, enterprise-wide, long-term, multi-functional, dynamic approach to selecting suppliers of goods and services and managing them and the whole value network from raw materials to final customer use and disposal to continually reduce total ownership costs, manage risks, and improve performance (quality, responsiveness, reliability, and flexibility)."

The focus of SRM is to develop two-way, mutually beneficial relationships with strategic supply partners to deliver greater levels of innovation and competitive advantage than could be achieved by operating independently or through a traditional, transactional purchasing arrangement.

In many fundamental ways, SRM is analogous to customer relationship management. Just as companies have multiple interactions over time with their customers, so too do they interact with suppliers - negotiating contracts, purchasing, managing logistics and delivery, collaborating on product design, etc. The starting point for defining SRM is a recognition that these various interactions with suppliers are not discrete and independent - instead they are accurately and usefully thought of as comprising a

relationship, one which can and should be managed in a coordinated fashion across functional and business unit touch-points, and throughout the relationship lifecycle.

6.2 Why Supplier Relationship Management

Supplier relationship management (SRM) is about integrating the right technology, processes, resources, and tools needed to align your organization with your suppliers to create stronger and more loyal relationships. It allows for greater focus on what is critically important to your business.

But, for some reason, it's not as well understood or formally adopted, as it should be. With a greater focus on customer relationship management, higher sales, and greater profits, many organizations forget how important their relationships with their suppliers truly are. They do not see suppliers as being strategically critical to success, and unfortunately, neglect supplier relationship management at their own peril.

The fact is supplier relationship management is one area of business that needs to become a top priority. It can have significant positive effects. Adopting a strategic approach with both key suppliers and smaller vendors can lead to enormous, long-term benefits. Here are just a few of them.

Reduce Spend

If you looked at the numbers, you'd probably realize that your organization actually spends more with suppliers than on other internal costs. When your spend in any category is that significant, you need to be working to reduce it. Supplier relationship management can help. Having great relationships with your suppliers can save your company money. You might be able to take advantage of attractive deals, incentives, and discounts offered by happy and loyal vendors; great pricing can give you an edge over your competition. Plus, the more well run your relationships are, the less likely that you'll have to spend money on the unexpected costs that come with delays and mistakes in production.

Increased Efficiencies

Effective supplier relationship management can increase efficiencies, which is critical in today's fast-paced and competitive marketplace. With automation, you can eliminate much of the unproductive administrative effort needed to manage suppliers, reduce the

risk of errors, increase communication, increase control, allow for categorization, ensure tasks are performed in a consistent manner, resolve issues promptly, and increase visibility that will facilitate sourcing and other aspects of the process. The higher your organizational efficiency, the better you can run your business—it's that simple.

Loyalty

It isn't easy to find good suppliers. Once you are doing business with them, the last thing you want is to lose them and have to source new suppliers who might not be as pleasant to work with, as cost-effective, or as efficient. By properly managing and strengthening your relationships with the suppliers that you want to keep on a long-term basis, you can keep them happy and on board. Your suppliers play a major role in your business, whether you realize it or not, and it's crucial that you do what you can to keep the good ones around. Think of them as more than just companies that supply goods or services—think of them as allies that can influence your success.

Improved Value

The ultimate goal of procurement is to receive the best value for your dollar from suppliers. Through structured, strong supplier relationship management, that's exactly what you will get. The intelligence you will receive through automation in particular will allow you to gain insights that will allow you to make the best decisions that will provide the greatest value. You will get greater visibility into supplier performance, including risks, behavioral patterns, and service levels, so you can see potential issues before they arise in order to promptly rectify them. You'll also be able to see new mutually beneficial opportunities as they show themselves.

Additionally, having good relationships with your suppliers means that they might just prioritize you. They'll go to bat for you, make exceptions for you, and work their hardest to meet your quote, deliver your goods in a timely manner, provide the top quality that you need, and provide the support that you require.

6.3 Factors in SRM

In today's global economy there are so many factors to consider when choosing and managing a supplier, that it can quickly become overwhelming. Thankfully, there's new

technology out there that helps to automate and simplify the process, making it easy for you to make fast, informed decisions about your suppliers. And the results are impressive: companies focused on SRM lead their peers five to one in terms of value derived from their supply base.

Here are five secrets about SRM you need to know now to start cultivating meaningful supplier relationships:

1. The focus is on the relationship. In today's world, managing the supply base is about strengthening relationships that can make or break your business. Earning your suppliers' trust with honest communication, listening to their concerns and involving them in your processes ultimately make them a vested partner in your business.

2. Expectations are changing. Procurement is expected to know where they are vulnerable and bolster their teams for success. Teams that put a greater emphasis on qualitative and quantitative supplier data analysis will be able to quickly and succinctly identify weak spots, risks and opportunities in the global supply chain - improving the strategies and plans needed to manage the suppliers, and ultimately both businesses, for continued success.

3. it's mutually beneficial. If you are aligned with your suppliers and treat them as partners, both businesses will experience higher success rates, decreased risks and enhanced collaboration and innovation. Studies have found the top procurement teams that have successfully aligned with their key suppliers have improved supplier capabilities of innovation, quality, reliability and costs/price reductions and agility to reduce risk factors. Greater value can be achieved for both businesses, something that would be difficult to achieve if operating independently.

4. It delivers big opportunities. Successful SRM yields a faster time to market, transactional efficiency, competitiveness, risk management, and large financial gains - all of which not only contribute to your bottom line, but also allow you to deliver a quality and cutting edge product, putting you ahead of the market.

5. Technology can simplify the process. The key to effective SRM is having a system in place that makes it easy to view your suppliers and analyze all of the risk factors. Using SRM technology provides you with full and unparalleled visibility into your supplier base, giving you a detailed picture of what is impacting your supply chain and making it easy to mitigate the risk.

6.4 Components of Supplier Relationship Management

How well do you know your suppliers? Besides your contracts, contacts, locations and perhaps their latest performance, what else do you know about your suppliers? The answer to these questions, are critical to your business because without the right information your organization is at risk of meeting objectives.

Here we look at five critical components of supplier relationship management (SRM).

1. Getting to Know You

Once the sourcing process is complete, the contracts are signed and the suppliers are on board to deliver the products and services you require, the relationship must be consistently managed. Many companies think managing the relationship is nothing more than monitoring the transactions, quarterly business reviews and audits as needed. Unfortunately this over-arching passive approach only gives you points for a process, not relationship management.

You need to know your suppliers. You courted, dated and have a marriage but how much do you really know about your supplier? Do you know all of their products and services? Do you know their current direction and plans for the next five years? Do you know their financial situation beyond meeting their payment terms? Are they investing in new businesses or innovative techniques, buying others or just meeting payroll? Are they compliant with local laws and regulations that pertain to your industry? Do they have labor issues - human slavery, child labor or union contract issues? This is just a smattering of questions but all of these are pertinent to really know your supplier.

2. Tools of the Trade

As you get to know your supplier it is time to apply this knowledge using some basic tools. Segmenting your suppliers is critical to your supplier relationship management structure and process. A simple segmentation, as noted below, can quickly categorize your suppliers into Strategic, Commodity, Transactional and Critical Risk suppliers.



Supplier performance and scorecards are critical tools to look at your supplier's performance over time and at a point in time. Setting performance criteria thresholds from delivery to quality to innovation to savings are important aspects of the supplier scorecard. In conjunction with the scorecard are audits that you may require if you want to add more business to a supplier on a new product. And just to be clear that both your company and the suppliers are on the same page, a periodic supplier review maintains communication between both teams. Many companies call these quarterly business reviews.

Technology, while listed last under the tools section, is the first tool strategic procurement teams utilize. Strategic procurement teams recognize that supplier relationship management is easier, more efficient and effective when Supplier Relationship Management (SRM) technology is used. The right SRM technology can handle your segmentation, scorecards, compliance, store your information and provide details that can be lost when done manually or when using too many disparate systems. The right technology system provides value on all levels including the supplier's lifecycle and the management of it.



3. Governance & Compliance

Once you have your supplier segmentation complete you need to set up a governance structure. Think in terms of the business processes and the decision making at each step in the process. Risk is a great avenue to use when laying out your governance structure. Let's say you have a strategic supplier who has a few weeks of low performance and they are calling, asking to be paid right away. Warning bells go off. What do you do? You might send out a team to discuss the supplier's performance, look at the production and meet with their top management to find out why their overall performance and finances is questionable. All of this can be built into your SRM process. Below is a guidance and escalation model.



4. Value

Now that you know your suppliers, utilize the right tools with the appropriate governance and compliance aspects, you are now ready to step into a real strategic procurement role. The next step is the enabler to mutually beneficial, innovative and collaborative supplier relationships. It is value. What is the value you desire from your supplier and what does he desire from you?

Value comes in many shapes and sizes. For most businesses, supplier value is calculated in cost savings, plus cost control and increases in revenue. Cost control and increases in revenue can be defined further into their components that bring the value:

Reduced Costs	Increased Revenues
Process efficiencies	Product innovation
Total cost reductions	Speed to market
Reduced inventory & carrying costs	New market access
Price reductions	Supplier investment

The point is that for every action taken there is an impact to the value of the business for both the supplier and buyer. It is a discussion on their mutual objectives, a building of ideas that can make a difference, with implementation of the ideas and tracking the value derived a benefit for both parties.

5. Measurement

The last area to consider is measurement. How do you measure your supplier's performance? Yes, a scorecard is a great place to start but make sure you look at the innovation and collaboration aspects of the relationship, including risk sharing, supply assurance, quality and service levels and complexity reduction. All in all you want to measure what is important but also set the baseline of measurement so each party gains

from the relationship. Without a mutually beneficial relationship, the enabling relationship factors of trust, respect, understanding and communication factors will be uneven, yielding a less than desirable supplier relationship.

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