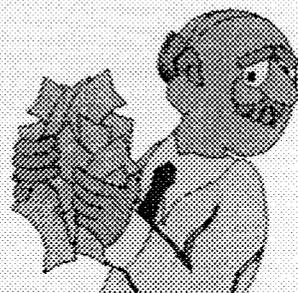
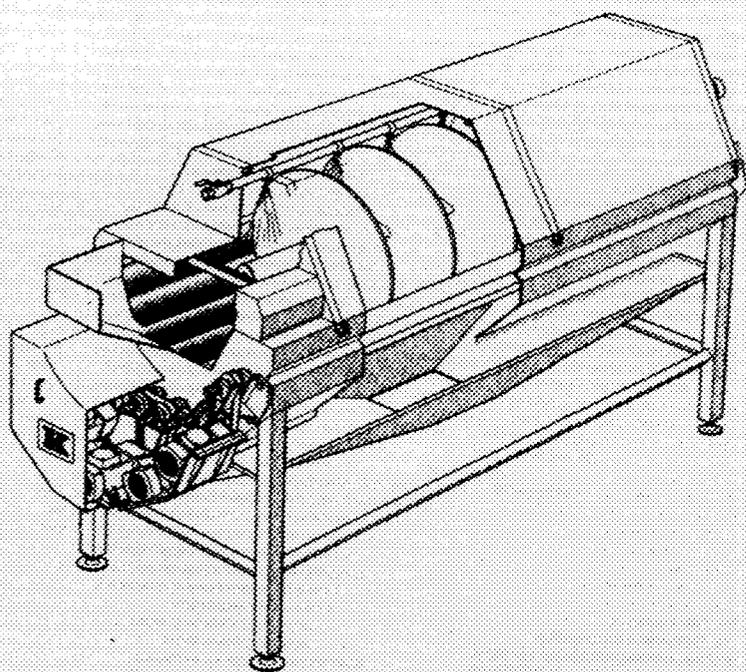


EQUIPMENT PURCHASING: TECHNICAL & ECONOMIC CONSIDERATIONS



Agriculture-Led Export Businesses (ALEB)

September 12, 2000

ALEB Offices, 5th Floor Training Room

Dokki, Cairo

Dr. Herbert Weinstein

Weinstein Consulting International

USAID Project No. 263-0264

iron, folic acid and vitamins from the B group, as well as monitoring and surveillance fortification programs for the public sector.

-Participated actively in CARMI activities - the regional effort in Central America. Objectives accomplished, include harmonization of regulations with the participation of the private sector, as well as monitoring and QA programs agreed to by the governments and industry of Central America countries.

- Sugar fortification with vitamin A in Zambia was accomplished. Contributions included defining and acquiring equipment as well as overall coordination for the timely delivery of technical assistance and support. Participated in the training of Zambian personnel - in sugar fortification and QC/QA procedures - in Guatemala.

MAR 1994 - OCT. 1996 INDEPENDENT CONSULTANT
LONG ISLAND UNIVERSITY - GRADUATE
MERCY COLLEGE - UNDERGRADUATE

Adjunct professor at the department(s) of business administration

1991-1994 ANDERSON CLAYTON DE MEXICO
(UNILEVER ORGANIZATION)

TECHNICAL DIRECTOR: Responsible for manufacturing, product development, quality control and quality assurance, engineering, technical aspects of acquisitions; and for the total Unilever organization, had responsibility for all aspects of environmental control. Managed more than 1000 people at one time.

-Increased productivity and reduced substantial costs, at the Clemente Jacques plant, by more than 20%.

- Prepared the Long Term Strategic Plan for all the Manufacturing facilities.

-Consolidated the product development efforts, launching two lines of new products: Probaditas and a new line of desserts.

-Obtained approval for Investments of more than ten million dollars to upgrade environmental control in most of Unilever plants in Mexico.

SEPT 1989 - JAN 1991 GRUPO QUAN (LARGEST ICE CREAM CO. IN MEXICO)

TECHNICAL DIRECTOR: Responsible for manufacturing, product development, quality control, quality assurance, engineering, logistics including distribution and purchasing.

- Reorganized the Technical functions, streamlining and realigning responsibilities in order to reduce personnel and improve efficiency
- Launched the annual new product line on time.

1972 - OCT.1989 GENERAL FOODS CORPORATION. White Plains, NY

TECHNICAL VICE-PRESIDENT: General Foods de Mexico S.A. de C.V. 1985-1989

Responsible for manufacturing (two plants), logistics, purchasing, distribution, technical research, quality control, quality assurance and engineering. Directed all aspects of the coffee business, which included government relations in dealing with pricing, supply, etc. Managed 650 people.

- Reorganized and improved food plant productivity by 25% which included the elimination of 160 employees and positively impacted bottom line by \$280K in two years.
- Developed and Implemented new quality assurance and vendor certification programs which were adopted as models by the Mexican Government.
- Revamped and streamlined entire distribution system which resulted in a savings of \$140K.
- Improved coffee plant process and productivity by more than 2 yield points equivalent to \$200K in savings.
- Was responsible for the company's management in the absence of the General Manager.

**TECHNICAL DIRECTOR - Latin America & World Trade Division, 1981-1985
DIRECTOR OF TECHNICAL RESEARCH**

Responsible for providing technical leadership to the research and operations functions at subsidiaries in Brazil, Mexico, Venezuela, Puerto Rico and to joint venture operations and licensees world-wide. Coordinated product development activities and maintained surveillance of legislation affecting the food industry. Supervised a staff of eight.

- Identified and negotiated licensing agreements with parties to manufacture powder beverages in five Latin American countries.
- Successfully launched Tang as a new product in Portugal, Yugoslavia and Egypt.
- Obtained government approval for nutritional labeling of products for the first time.
- Developed Ice Cream Consortium concept which in through out the years has broadened the technological base of ice cream development at a reasonable cost to Kibon (GF Brazil). The Consortium continues to function (1998)

SENIOR DEVELOPMENT MANAGER - DESSERTS 1979 - 1981

Responsible for planning, development and implementation of the product development programs of new products, as well as maintenance of those already established, i.e Cool Whip, Certo, etc.

- Develop and launched Jell-O Pudding Pops

TECHNICAL DIRECTOR Kibon S.A., Sao Paulo, Brazil 1975-1979
Responsible for planning and execution of all technical activities including manufacturing processes, development, quality control, quality assurance, to insure maximum positive impact on production, distribution and purchasing.

- Developed continuous chewing gum manufacturing process and built a new facility from scratch in Bauru, S.P.
- Developed and installed an on-site capability of manufacturing cold water soluble fumaric acid which resulted in a significant cost improvement in powder beverages.

SENIOR DEVELOPMENT SPECIALIST GFI headquarters, Rye, NY 1974-1975
Provide technical assistance as manufacturing and product development consultant to operating subsidiaries in Latin America, licensees and joint venture operations.

TECHNICAL DIRECTOR General Foods de Mexico, Mexico City 1972-1974
Responsible for all aspects of technical operations for a multi-product manufacturing subsidiary which included manufacturing processes, quality control, quality assurance and the plant laboratories. Conducted research on new products, line extensions and operations. Responsible for fifty people.

- Developed and launched CONSOMATE soup as a new product..
- Reorganized total quality control/assurance program and developed weight control program which reduced giveaway from 5% to 1

1971-1972 CENTRO DE CONTROL TOTAL DE CALIDADES .SA. Mexico City, Mexico (PARTNER)
As a consultant managed product development and manufacturing techniques for the food industry. Work Included operations set-up for the canning industry, meat products, milk and dairy products as well as fruits and vegetables. Laboratory is on analytical facility.

1968 - 1971 CPC INT'L. Productos de Maiz, S.A. Mexico City, Mexico
TECHNICAL DIRECTOR

1966-1968 GRUPO AURRERA (now CIFRA GROUP) Mexico City, Mexico
NEW PROJECTS MANAGER
FOOD TECHNOLOGY MANAGER

CONSULTANTING
PROJECTS

Client information available upon request.

PUBLICATIONS Original and review articles: Food Additives; New Products Development Innovation in Foods; and many others of general

interest related to the food industry.

EDUCATION

M.Sc and Ph.D. Food Science and Technology
Massachusetts Institute of Technology
Chemical Engineering Degree
Universidad Nacional Autonoma de Mexico

LANGUAGES:

Fluent in Spanish, English and Portuguese. Working knowledge of French and German.

PROFESSIONAL AFFILIATIONS:

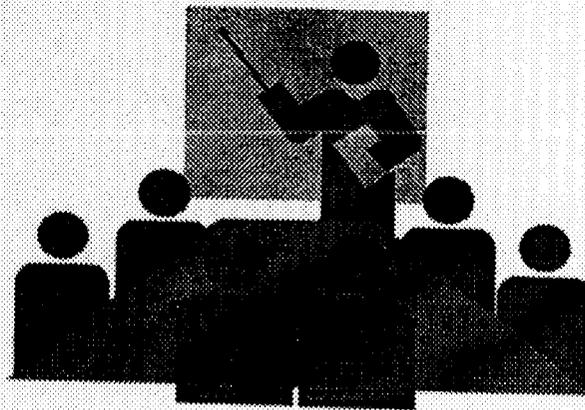
Institute of Food Technologists: Councilor and many committees; IFT Mexican section - ATAM -past Chair; Instituto de Ingenieros Quimicos, Mexico; Food and Drug Law Institute; Phi Tau Sigma. Colegio de Quimicos e Ingenieros Quimicos de Mexico.

PURCHASING EQUIPMENT: TECHNICAL & ECONOMIC CONSIDERATIONS

One of the best means for a food processor to upgrade operations is through the purchase of new, state-of-the-art equipment. New equipment and its associated technology can provide the processor with a competitive edge, reduce operating costs and result in the production of higher quality products. There are many issues that a food processor must consider when buying new equipment or technology. First and foremost, it must meet his needs. In other words, will the operator be able to produce products that meet established quality standards. The processor must also consider the cost of the system. This is a process that is much more complex than looking at the actual cost of the equipment, however. The processor needs to look at issues such as service provided by the equipment manufacturer, operational issues, maintenance and sanitary design. The purchase should

never be based on the capital cost of the equipment alone.

In this new one-half day workshop, Dr. Herbert Weinstein will discuss the technical considerations that a food processor should follow when purchasing new equipment. He will also *use "real world"* examples to demonstrate why an operator should follow certain routes when making purchases. Finally, Dr. Weinstein will provide insights into how a processor can calculate the return on investment or ROI on his new equipment. The workshop will show attendees that the best bargain is often the worst choice.



INSTRUCTOR

Dr. Herbert Weinstein

- ♦ *Dr. Weinstein has been an active member of the food processing industry for 35 years. He has been involved in product and process development, and has managed food processing plants in Mexico and in both Central & South America. Under his leadership, these operations increased operating efficiencies and improved overall profits. Today, he is an independent consultant currently working on projects in South Africa and throughout the United States.*

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♦ September 12, 2000 @ 14:00
In the ALEB Training Room, 12
Dokki Street, 5th Floor

REGISTRATION INFORMATION
EQUIPMENT PURCHASING

Name _____

Title _____

Company _____

Address _____

TEL _____

FAX _____

Email _____

ALEB staff encourages that attendees pre-register. They may also register on-site. Please let us know if you plan to attend so that we can plan appropriately.

There will be no registration fee for this program. Registrants will receive a course notebook and coffee break in the afternoon, plus a certificate of participation when they submit their course evaluation worksheets.

For further details, contact:

Agriculture Led Export Businesses (ALEB)
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Dokki, Cairo, EGYPT
TEL 202-348-0728/338-1445
FAX 202-348-0729

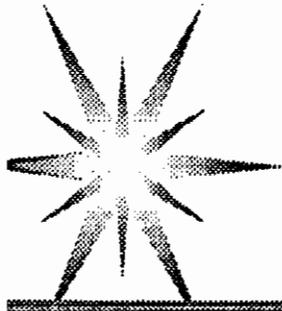
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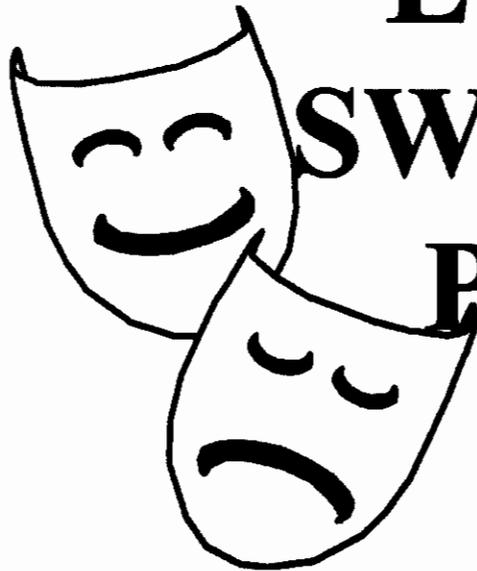
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BUSINESSES PROJECT (ALEB)
CAIRO, EGYPT**

USAID Contract No. 263-0264

- **September 12, 2000 at 14:00
in the ALEB Training Room
5th Floor, 12 Dokki Street**



**“THE BITTERNESS OF
POOR QUALITY LASTS
LONG AFTER THE
SWEETNESS OF LOW
PRICE IS GONE!”**



PURCHASING EQUIPMENT
*Technical and Economic
Considerations*

Herbert Weinstein, Ph. D.
Weinstein Consulting International
September 2008.

PURCHASING

- **DEFINITION:** (Webster's Dictionary)
- To obtain for money or by paying a price
 - To obtain at a cost as of suffering or sacrifice
 - To acquire by means other than inheritance or descent
 - The act of buying

What is the significance?

Buying/acquiring and paying for equipment
THE ONLY COST!

DIFFERENCE THAT SHOULD BE CONSIDERED:

- When we are to purchase a **NEW** installation ...
- When we are to purchase a new piece of equipment ...

NEW INSTALLATION

BASIC CONSIDERATION:

The equipment is **ONLY** a portion of the total investment, and as such it requires special assessment of its purchasing impact, as part of a larger - total - investment package.

EXAMPLE:

Chewing Gum Plant - Bauru, SP - Brazil

NEW INSTALLATION

NEW EQUIPMENT LINE:

Different needs arise when installing a **COMPLETE NEW LINE** in an existing facility.

- Space - Physical, including warehousing
- Services and Facilities - Energy, personnel, delivery, etc.

EXAMPLE:

Ketchup Line in a Margarine plant - Mexico City

NEW PLANT - OLD EQUIPMENT

In these cases, evaluating the "real costs" of a total investment might be influenced by "book value" and "transfer costs" of the assets.

Also, how does the company's accounting system calculate depreciation, needs consideration.

EXAMPLE: Pasta Plant - Tullatlan, Mexico

New Piece of Equipment

Basic Consideration:

- Replacement of existing piece
- New addition to the line

Replacement: This is usually of the same size/capacity, in order not to break the line's equilibrium; as such most technical considerations are known...

Yet sometimes "the parent company" has an extra piece that they say: "should be used",

This is a DIFFICULT SITUATION!!

EXAMPLE:

Freezing Tunnel

facilities all in place for tunnel freezing, when IQF became necessary ...

New Addition to the line:

-Beginning or End of the Line:

Usually in these situations adjustments are simpler and require mostly space and services (amount and delivery) considerations.

-Middle of the Line

Here a complete rebalancing of the line is required; specially for space and delivery of services under the new layout.

EXAMPLE: Larger blancher - Freezing plant, Mexico

WHY ARE WE MENTIONING ALL OF THESE SITUATIONS?

BECAUSE THEY ALL COST MONEY!

AND SHOULD BE CONSIDERED, IF WE WANT TO HAVE THE "REAL" FINAL COSTS WHEN ACQUIRING EQUIPMENT.

Many other costs impact on what a new piece of equipment will "really cost" in the long term consideration:

Some of them are:

- Depreciation
- Cost of maintenance - repairs
- Cost of utilities
- Scrap value/price

THESE ARE IMPORTANT BECAUSE THEY IMPACT THE COST OF THE PRODUCT PRODUCED.

WHAT IS DEPRECIATION:

Definition:

a decrease in value of property through wear, deterioration, or obsolescence; and b) the allowance made for this in book-keeping, accounting, etc.

Please note that "the allowance" can be regulated by government, as well as by company policy.

The "ALLOWANCE" is also strongly influenced by the longevity or life of the equipment.

Legislation usually dictates the "life expectancy" of assets, but within certain rules, the company uses criteria to assess such "life time".

Examples:
 computers
 used equipment
 others

BECAUSE: DEPRECIATION...

We need to ask this question?

HOW MUCH TIME IS THE (NEW or OLD) EQUIPMENT GOING TO LAST?

HOW EFFICIENTLY WILL IT FUNCTION WHILE IT LASTS?

KELVIN'S LAW

In industrial engineering, the following formula is used to calculate the ECONOMIC USEFUL LIFE of a piece of equipment:

$$T = K + IN + C + NR$$

where:

- T – total annual cost
- K – fixed annual charges (the rest ...)
- I – investment (IN also known as depreciation)
- N – Life span (years)
- C – constant annual cost of operation
- NR – annual costs for repairs and maintenance

1d

If we use the derivate $dT/dN = 0$ to find the MINIMUM USEFUL LIFE SPAN, then

$N = \text{square root of } I/R$

Example:

A production line has an initial cost of \$ 350 000 and the INCREASE in annual repair and maintenance cost is \$ 1 833, thus

$N = \text{Sq. root } 350\ 000/1\ 833 = 13.85 \text{ years}$

If we use the derivate $dT/dN = 0$ to find the MINIMUM USEFUL LIFE SPAN, then

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Example:

A production line has an initial cost of \$ 350 000 and the INCREASE in annual repair and maintenance cost is \$ 1 833, thus

$N = \sqrt{350\ 000/1\ 833} = 13.85 \text{ years}$

Cost of Maintenance and Repairs

These costs have to be considered, but how do we estimate what they are:

Experience

- from previous ownership of such equipment
- other users
- supplier (manufacturers)
- guarantees (warrantees-written)

Consider INVENTORY COST of spare parts ...

15

EXAMPLES:

- Fermentator tanks for vinegar maintenance and microorganism source
- Water pollution control system screens and filters wrongly designed, increased cost of replacement

**WE ARE READY TO BUY THE EQUIPMENT
IT MAY BE A WHOLE NEW PLANT, A
LINE OR JUST ONE PIECE, BUT ...**

**HOW DO WE KNOW HOW GOOD IS OUR
INVESTMENT?**

**W
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Utilities

Experience is useful, but the Supplier (Manufacturer) of the equipment should SPECIFY this need!

Specifications of equipment that do not show these needs are not adequate and should not be accepted.

A supplier should be able to guarantee the operational ranges of equipment they sell or supply.

The usage of utilities in a monthly/yearly basis can be used as a parameter to judge proper performance of the equipment

Other Costs

Such as in-plant installation of the equipment (including personnel, travel and living expenses, etc.) even though they are usually a one time event, sometimes can be used to gage the support of the supplier and even to be the deciding factor when the rest of the parameters are the same.

Transportation costs should be negotiated from the very beginning – if at all possible make them be FOB your location.

Scrap Value or Price

Even though this should be a minor factor in the decision making process, it is wise to be aware of the possibilities that you have at the end of the usage period of the equipment.

- Is it one of a kind? – no further use
- Can it be refurbished?
- Can it be used in a different process once modified?
- Can it be used for spare parts?
- Etc., Etc.

We have seen some of the **FACTORS** that influence our "manufacturing recurrent costs" that should be considered when analyzing how much are we really going to pay for a piece of equipment ...

BUT, how do we judge supplier prices?

GUIDELINES FOR EVALUATING SUPPLIER PRICES

- VALUE ANALYSIS**
- PURCHASE ANALYSIS**
- PRICE ANALYSIS**
- COST ANALYSIS**

VALUE ANALYSIS

Applied at the design or engineering stage to evaluate the services that must be rendered by the equipment.

Determine the lowest overall cost that can be paid to obtain the "quality and functionality of design".

Cadillac vs. Volkswagen

PURCHASE ANALYSIS

Determines the reasonable "real" market price for the equipment that delivers what has been designed and specified.

Referred as the "target price"; assists the buyer in effectively evaluating supplier prices; also defines what can reasonably be expected to be paid for the designed and specified equipment.

PRICE ANALYSIS

Utilizes the buyers' experience and knowledge to facilitate choosing the best price, considering:

- Current prices of similar equipment
- Current competition
- Previous prices paid
- Pricing trends
- Design and manufacturing processes for the equipment
- Etc.

COST ANALYSIS

Utilizes a review and breakdown of supplier costs to evaluate the accuracy and reasonableness of the specific elements of those costs used in establishing a fair price for the "equipment to be acquired".

Information is usually difficult to come by, but is the best negotiating resource ...

BEWARE:

Experience dictates that in many occasions, the fact that costs are disclosed by a supplier can be construed as a "tacit" agreement to buy ... when the fact is, that the purchasing decision has NOT yet been made.

AT THIS STAGE THE BUYER IS ONLY READY TO BEGIN NEGOTIATIONS!

"EVERYTHING IS NEGOTIABLE"
Prof. Karas

Reality Check:

Who in reality originates the need for new equipment, may it be a complete new line, a replacement line or just a new machine?

It is usually the OPERATIVE departments of the company ...

WHEN THIS HAPPENS, PURCHASING SHOULD BE INVOLVED FROM THE VERY BEGINNING.



Representatives from Purchasing should accompany the engineers (technical personnel) in their visits to suppliers or equipment manufacturers.

Participate actively in designing the EQUIPMENT SPECIFICATIONS and prepare the purchasing orders with the assistance of technical personnel. (*List your specifications, do not copy the ones sent by the supplier.*)

The purchase order should be as specific as possible, including need for drawings, how will changes (during manufacturing) be agreed to, frequency of visits to review advancement in the production of the equipment, delivery time and penalties, etc.

Also, the purchasing order should specify things not directly related to the piece of equipment, such as:

- Training by the supplier in the proper handling of the equipment.
- Guarantee for the supply of spare parts, if possible, at certain prices, for certain periods of time.
- Which items – for the proper functioning of the equipment – will be supplied by the buyer; i.e. power lines, construction supports, water sources, etc.

The clearer and complete the specifications are, will avoid problems and nasty discussions in the future.

Now we are ready to buy our equipment, may it be a new plant, a new (used) manufacturing line or just one piece of equipment, but

HOW ARE WE GOING TO EVALUATE OUR INVESTMENT?

We have to assess its RETURN!

RETURN ON INVESTMENT - ROI

The pre-tax profit contribution measured against controllable assets is the measurement known as **ROI**.

In layman words, this is defined as how much money will the investment return, after it has done its "job".

Very simply - money that is placed in a bank returns a certain interest without any risk, therefore if this money/investment has a certain risk, it should return more than what the same money did in the bank.

Corporations have limited amount of funds (resources) regardless who they are. It is therefore important to use appropriate techniques to evaluate how those resources are to be used, or are being used.

In the following presentation we shall review this.

INVESTMENT APPRAISAL is a (not perfect) mechanism that allows owners and executives of businesses, to evaluate where their resources can be (or are being) applied in order to obtain the

BEST RETURN ON INVESTMENT.

Investment Appraisal

A. Introduction

TIME VALUE OF MONEY

In particular it is important that decisions involving substantial investment of funds are based on financial data which objectively compare the best estimates of the costs and benefits which result from the various investment proposals put forward for consideration.

Inevitably an organization's ability to undertake CAPITAL INVESTMENT will be constrained by the availability (or scarcity) of funds.

Various techniques have been developed to assist decision makers to rank competing projects in their relative order of financial attractiveness.

Informed decisions can then be made which take account of the more intangible factors, such as risk and sensitivity to variations in the underlying assumptions, which will form the commercial framework of the investment proposal.

In particular projects are only likely to be accepted if they provide an adequate RATE OF RETURN unless there are substantial environmental or strategic benefits.

The definition of adequate will vary but should be such that the cash inflows from the investment should be more than sufficient to cover the initial capital outlay, any subsequent cash costs, the costs of financing the project **AND PROVIDE SOME COMPENSATION FOR THE RISK UNDERTAKEN.**

B. Cash Flow & Relevant Costs

In the evaluation of an investment proposal it is vital that the true costs and benefits of the proposal are identified.

This is best done by consideration of the cash inflows and outflows which will arise if the project is undertaken.

As you go through the following examples it will become very clear that the cash impact of a project is vitally more important than its accounting treatment.

It cannot be stressed strongly enough that in project appraisal the major emphasis must be placed on the capital outlay, i.e. the cash outflow, (costs borne by the investing organization), as opposed to the depreciation charge in the Financial Accounts

In the evaluation of an investment proposal it is vital that the true costs and benefits of the proposal are identified.

The capital outlay gives rise to financing costs, whereas the Depreciation is merely a mechanism for spreading the cost of a CAPITAL ASSET over its useful life in accordance with the MATCHING concept which underlies financial accounting. Depreciation is NOT a relevant cost for investment decision making purposes.

Relevant costs are those which arise from the decision to undertake a project compared to the comparatively less risky, but always available option, of doing nothing. In many investment proposals it is the identification of relevant costs which is the most difficult part of the proposal preparation.

Let's take a closer look at this by considering a number of questions relating to a company called Machine Limited.

B. Cash Flow & Relevant Costs (Cont)

Machine Limited wishes to commence a new project. It can buy a new machine for \$10,000 or it can utilize a machine which originally cost \$20,000 two years ago but which is currently not being used.

Should the company: (a) utilize the existing machine
(b) purchase a new machine for the project?

Yes, the existing machine should be used as the cash outlay is nil, i.e. \$10,000 better than the alternative. The original cost of the existing machine is irrelevant to the decision, this is a **SUNK COST**.

Now, if the existing machine could be sold for \$12,000,

Should the company:

- (a) utilize the existing machine
- (b) sell the old machine and purchase a new one for the project?

Yes, the answer is (b). Note, selling and buying are separate decisions.

The selling decision is based on \$12,000 being better than nothing.

The company must now buy a new machine for the project.

Now, if the existing machine could be sold for \$5,000,

Should the company:

- (a) utilize the existing machine
- (b) sell the old machine and purchase the new machine for the project?

Yes, the answer is (a) as the sales proceeds are less than the cost of a new machine. The cost to be used as part of the evaluation is the \$5,000 cash inflow effectively forgone in doing the project.

Now, if the existing machine was not idle and could be used to produce goods giving rise to a profit of \$8,000, should the company:

- (a) utilize the existing machine
- (b) sell the old machine and purchase the new machine for the project?

Yes, the answer is (a) as the profit forgone is still less than the cost of a new machine. The cost to be used in project evaluation is now \$8,000, the *OPPORTUNITY COST* effectively forgone in doing the project.

The concept of *OPPORTUNITY COST* is one which has to be considered frequently in investment appraisal where specific resources are scarce.

The true cost of the existing machine is not its *BOOK VALUE* or its *REPLACEMENT COST* but the cost of not using it to produce profits elsewhere. Notice that the *BOOK VALUE* of the existing machine is irrelevant to the decision.

If it is assumed that the existing machine had an expected life of four years when purchased and has been depreciated to give a book value of \$10,000, then it would be necessary for a book entry to be made to write off any further amount if it were to be sold at below that figure.

The need for this book entry should not have any impact on the correct decision which should be based purely on cash flows. It should be noted that management will need to be aware that the book entry will be reflected in the profit and loss account as a loss arising from the writing down of the value of the machine.

C. Payback

	Year	Project A	Project B
	1	1,000	5,000
Consider these two mutually exclusive projects.	2	2,000	4,000
	3	3,000	2,000
	4	4,000	2,000
Both have an initial capital outlay of \$10,000.	5	5,000	1,000
	Total	15,000	14,000

The task is to evaluate the two projects in order to decide which is the more attractive.

To start with, you can see that Project A has a higher total cash inflow, whereas Project B has higher cash inflows in the earlier years.

THE PAYBACK METHOD

The first evaluation method to be considered is the PAYBACK method.

At its simplest it merely answers the question "How soon will the original investment money be recovered?" In the case of Project A it will take 4 years; Project B - 2.5 years. B is therefore to be preferred since the initial capital outlay is recovered more quickly.

The PAYBACK METHOD, by virtue of its simplicity, does have some weaknesses, namely; it does not effectively take into account risk and inflation and it ignores cash-flows beyond the payback period.

For these reasons it cannot lead to optimal decisions and is therefore NOT recommended as a criteria for investment appraisal.

D. Present Value & Discounting

Would you rather have \$100 now or \$100 in a year's time?

The answer ought to be "Now" as you could invest \$100 making it worth more or pay a debt saving interest.

However, if the question had been different offering \$110 in a year's time you might begin to have a few more doubts.

You accept the money now if you can use it during the coming year to make or save yourself at least 10%. So, given that you can make 10%, \$110 in a year's time is worth the same as \$100 now.

This concept of PRESENT VALUE is central to the discounting technique which underpins the concept of DISCOUNTED CASH FLOW

Given \$100 now is the same as \$110 in a year's time if the cost of capital is 10% - what would you accept NOW instead of \$100 in a year's time?

I would accept \$ _____

The answer is 91, calculated from the sum $100 \times 100 / 110 = 91$

The present value can be checked back by adding 10% to its value.

That is:

$$91 + (91 \times 10/100) = 100.1 \text{ or approximately } 100$$

In order to calculate the present value of \$1 in two year's time you simply multiply again by the factor 100/110. This gives the value - \$0.83.

Following is a table of discount factors for a rate of 20%.

YEAR	Discount Factor @ 20%
0 (TODAY)	1.0000
1 (1 x 100/120)	0.8333
2 (0.8333 x 100/120)	0.6944
3 (0.6944 x 100/120)	0.5787
4 (0.5787 x 100/120)	0.4823
5 (0.4823 x 100/120)	0.4019

Here we have a valuable method for converting future cash flows to what they are worth today, bearing in mind likely interest rates. The rate depends on many factors including a consideration of the cost of capital.

This method does not guarantee perfect decisions, it merely gives a quick and convenient way, less laborious than compounding, of bringing interest into investment evaluations. Indeed, it is made even simpler by the provision of tables of discount factors both in print and on computer.

A final word on discount factors.....

If the numerical aspects provide you with some difficulties, then think simply in logical terms - the longer you have to wait for money, the less it will be worth in today's terms. That is what discounting quantifies - it is nothing more than compounding in reverse!

E. Discounted Cash Flow

	Year	Project A	Project B
	1	1,000	5,000
Let's now see how the present value	2	2,000	4,000
concept can be applied to business	3	3,000	2,000
decisions. One of the problems when	4	4,000	2,000
examining the merits of an investment	5	5,000	1,000
is to know whether the future money	Total	15,000	14,000
earned will justify the outlay.			

The figures above were used earlier and were for two mutually exclusive projects each involving a capital outlay of \$10,000.

Discounting lets us convert these future amounts to their present values by applying the relevant discount rate based on the company's own cost of capital.

	Year	Project A	Project B
	1	1,000	5,000
Consider project A. The cash flow	2	2,000	4,000
by year is as follows:	3	3,000	2,000
	4	4,000	2,000
	5	5,000	1,000
	Total	15,000	14,000

Year	Project A
0	-10000
1	+ 1000
2	+ 2000
3	+ 3000
4	+ 4000
5	+ 5000
Net Cash Flow + 5000	

Working on a 10% interest rate, the discount factors are:

Year	Project A	Project B
1	1,000	5,000
2	2,000	4,000
3	3,000	2,000
4	4,000	2,000
5	5,000	1,000
Total	15,000	14,000

Year	Project A	10% Discount Factors
0	-10000	1.0000
1	+ 1000	0.9091
2	+ 2000	0.8264
3	+ 3000	0.7513
4	+ 4000	0.6830
5	+ 5000	0.6209

Net Cash Flow + 5000

So, by now multiplying the cash flow for each year by the discount factor you get the following present values for each year and the resulting net present value for the project:

Year	Project A	Project B
1	1,000	5,000
2	2,000	4,000
3	3,000	2,000
4	4,000	2,000
5	5,000	1,000
Total	15,000	14,000

Year	Project A	10% Discount Factors	Present Value
0	-10000	1.0000	- 10000
1	+ 1000	0.9091	+ 909
2	+ 2000	0.8264	+ 1652
3	+ 3000	0.7513	+ 2254
4	+ 4000	0.6830	+ 2732
5	+ 5000	0.6209	+ 3104
Net Cash Flow + 5000		Net Present Value + 651	

	Year	Project A	Project B
	1	1,000	5,000
	2	2,000	4,000
	3	3,000	2,000
	4	4,000	2,000
	5	5,000	1,000
	Total	15,000	14,000

Year 0 is used to represent today's cash flows which are converted at 1.0000 since they are already in today's terms.

Year	Project A	10% Discount Factors	Present Value
0	-10000	1.0000	- 10000
1	+ 1000	0.9091	+ 909
2	+ 2000	0.8264	+ 1652
3	+ 3000	0.7513	+ 2254
4	+ 4000	0.6830	+ 2732
5	+ 5000	0.6209	+ 3104
Net Cash Flow + 5000			Net Present Value + 651

	Year	Project A	Project B
	1	1,000	5,000
	2	2,000	4,000
	3	3,000	2,000
	4	4,000	2,000
	5	5,000	1,000
	Total	15,000	14,000

So, the result of the calculations shows that at a discount rate of 10% the project is viable as \$10,651 is received (in present value terms) from an investment of \$10,000 giving a positive present value of \$651.

Year	Project A	10% Discount Factors	Present Value
0	-10000	1.0000	- 10000
1	+ 1000	0.9091	+ 909
2	+ 2000	0.8264	+ 1652
3	+ 3000	0.7513	+ 2254
4	+ 4000	0.6830	+ 2732
5	+ 5000	0.6209	+ 3104
Net Cash Flow + 5000			Net Present Value + 651

	Year	Project A	Project B
Let's now carry out the same calculations for Project B in order to find the Net Present Value.	1	1,000	5,000
	2	2,000	4,000
	3	3,000	2,000
	4	4,000	2,000
	5	5,000	1,000
	Total	15,000	14,000

Year	Project A	10% Discount Factors	Present Value
0	-10000	1.0000	- 10000
1	+ 1000	0.9091	+ 909
2	+ 2000	0.8264	+ 1652
3	+ 3000	0.7513	+ 2254
4	+ 4000	0.6830	+ 2732
5	+ 5000	0.6209	+ 3104
Net Cash Flow + 5000			Net Present Value + 651

E. Discounted Cash Flow

	Year	Project A	Project B
This project is also viable and with a higher present value than project A despite the fact that it has a lower cash flow before discounting. This is as a result of its better earlier years being given more weight.	1	1,000	5,000
	2	2,000	4,000
	3	3,000	2,000
	4	4,000	2,000
	5	5,000	1,000
	Total	15,000	14,000

Year	Project B	10% Discount Factors	Present Value
0	-10000	1.0000	- 10000
1	+ 5000	0.9091	+ 4545
2	+ 4000	0.8264	+ 3306
3	+ 2000	0.7513	+ 1503
4	+ 2000	0.6830	+ 1366
5	+ 1000	0.6209	+ 621
Net Cash Flow + 4000			Net Present Value + 1341

	Year	Project A	Project B
Project A suffered in that its better years were later and so have lower present value. This is as it should be - the longer you have to wait the less the money is worth in today's terms.	1	1,000	5,000
	2	2,000	4,000
	3	3,000	2,000
	4	4,000	2,000
	5	5,000	1,000
	Total	15,000	14,000

Year	Project B	10% Discount Factors	Present Value
0	-10000	1.0000	- 10000
1	+ 5000	0.9091	+ 4545
2	+ 4000	0.8264	+ 3306
3	+ 2000	0.7513	+ 1503
4	+ 2000	0.6830	+ 1366
5	+ 1000	0.6209	+ 621
Net Cash Flow + 4000			Net Present Value + 1341

	Year	Project A	Project B
Without discounting it would have been impossible to know. (a) if either investment was viable; (b) which was the better way of investing the \$10,000 available.	1	1,000	5,000
	2	2,000	4,000
	3	3,000	2,000
	4	4,000	2,000
	5	5,000	1,000
	Total	15,000	14,000

Year	Project B	10% Discount Factors	Present Value
0	-10000	1.0000	- 10000
1	+ 5000	0.9091	+ 4545
2	+ 4000	0.8264	+ 3306
3	+ 2000	0.7513	+ 1503
4	+ 2000	0.6830	+ 1366
5	+ 1000	0.6209	+ 621
Net Cash Flow + 4000			Net Present Value + 1341

	Year	Project A	Project B
	1	1,000	5,000
	2	2,000	4,000
	3	3,000	2,000
	4	4,000	2,000
	5	5,000	1,000
	Total	15,000	14,000

Note that in this exercise we chose a rate of discounting of 10%. Had the value been different, both projects would have shown different results.

Year	Project B	10% Discount Factors	Present Value
0	-10000	1.0000	- 10000
1	+ 5000	0.9091	+ 4545
2	+ 4000	0.8264	+ 3306
3	+ 2000	0.7513	+ 1503
4	+ 2000	0.6830	+ 1366
5	+ 1000	0.6209	+ 621
Net Cash Flow + 4000			Net Present Value + 1341

	Year	Project A	Project B
	1	1,000	5,000
	2	2,000	4,000
	3	3,000	2,000
	4	4,000	2,000
	5	5,000	1,000
	Total	15,000	14,000

There are 3 different methods of Discounted Cash Flow evaluation:

1. Net Present Value (or NPV)

This is simply the calculation of the net present value as you have just seen, at an assumed cost of capital. It gives a "go/no go" decision on a project.

Unlike the other methods, it does not help you see how good a project is compared, for instance, to the degree of risk involved.

2. Discounted Payback

This method involves the calculation of the TIME taken to break even in present value terms. If we consider the figures from project B, we get:

Investment	- 10000
Year 1 Present Value	+ 4545
leaving	+ 5455
Year 2 Present Value	+ 3306
leaving	+ 2149
Year 3 Present Value	+ 1503
leaving	+ 646

\$646 is needed in year 4 to recover the investment so break even would come in year 4. This time measure might be particularly important to a project involving high risk, specially a "sudden death" one.

3. DCF Rate of Return

This third method is probably the most common form of DCF evaluation and is widely used within the food industry. It involves a process of trial and error to find the rate which will bring the net present value to zero, i.e., where \$10,000 present value will be recovered to exactly cancel out that amount of initial outlay.

Let's start by taking a look at the figures for Project B again, this time comparing the present values of each years cash flow and the resulting net present value for discount rates of 10% and 20%.

Year	Cash Flow	10.0 % DF	Pres.Val.	20.0 % DF	Pres.Val.
0	10000	1.0000	-10000	1.0000	-10000
1	5000	0.9091	4545	0.8333	4167
2	4000	0.8264	3306	0.6944	2778
3	2000	0.7513	1503	0.5787	1157
4	2000	0.6830	1366	0.4823	965
5	1000	0.6209	621	0.4019	402
Net Present Value			1341		-532

There is a positive present value at 10% and a negative one at 20%. So, the DCF Rate of Return must lie between the two.

Year	Cash Flow	16.8 % DF	Pres.Val.	16.9 % DF	Pres.Val.
0	-10000	1.0000	-10000	1.0000	-10000
1	5000	0.8562	4281	0.8554	4277
2	4000	0.7330	2932	0.7318	2927
3	2000	0.6276	1255	0.6260	1252
4	2000	0.5373	1075	0.5355	1071
5	1000	0.4600	460	0.4581	458
Net Present Value			3		-15

As you can see from these figures, the DCF Rate of Return is close to 16.8%; or 17% if you round the answer the answer to the nearest whole number.

SO, EVEN IF YOU BORROWED THE MONEY AT 17% YOU WOULD STILL BREAK EVEN. THEREFORE YOU MUST BE MAKING 17% (BEFORE INTEREST) ON THE PROJECT

The DCF Rate of Return or to give it its other common name, the DCF Yield, is a very useful tool for:

- comparison of projects
- measurement of the risk in respect of both the project itself and the future cost of capital.

It is important to note that a higher rate would be required from risky projects in order to compensate for the higher level of risk.

Discounted Cash Flow is not a panacea which will make investment decisions necessarily more effective. It is merely a good, convenient way of expressing the financial aspects of the decision by accounting for the time value of money.

REMEMBER: the answers it produces are only as good as the basic assumptions which are fed in.

IT IS VITAL THAT ONLY RELEVANT CASH FLOWS ARISING FROM THE PROJECT ARE CONSIDERED. The decision must be taken on true cash inflows and outflows arising from the project, i.e only changes as a result of the decision to undertake the project should be included in the calculation.

Finally, one particularly useful refinement to these DCF measures is the use of **SENSITIVITY ANALYSIS**. This involves the testing of critical assumptions e.g., how would the various measures be affected by a change in sales or cost levels.

F. Sensitivity Analysis

Discounted Cash Flow is only as good as the assumptions built into the cash flows on which it is calculated:

thus these assumptions should be realistic.

As a matter of course, whenever possible alternative outcomes based on changes in the underlying assumptions should always be evaluated.

This is where SENSITIVITY ANALYSIS comes in; an approach to planning which ties in well with DCF. It involves saying: What if?

What if the costs are higher than assumed?

What if the life is 4 and not 5 years?

What if prices are lower than assumed?

Sensitivity Analysis should be applied to all the key variables of a project - price, volume, capital cost, revenue cost, life, tax rate, etc. It enables the key elements of risk to be identified so that the most sensitive assumptions can be reassessed.

Example:

A project has a DCF Rate of Return of 20%. Future analysis might show that:

- A 2% decrease in the price assumption would cause the DCF Rate of Return to reduce to (say) 15%, and
- A 5% increase in the material cost assumption would cause the DCF Rate of Return to reduce to (say) 8%.

The assumptions about price and material costs would need to be checked carefully. The sensitivity of the project to these assumptions could be a reason for management being more cautious about giving the go-ahead.

Though sensitivity calculations can be done manually, it can be a long process and the use of computer facilities make such evaluations much easier. They also enable the calculation of multiple sensitivities - combinations of cost, price, volume assumptions for example.

It is important that the results of sensitivity analysis be included as part of the investment proposal. This is particularly useful when a number of projects are being evaluated. Decision makers can evaluate the sensitivity of a portfolio of projects to particular risks - e.g. Foreign exchange movements. This may make certain combinations of projects more attractive particularly where there are projects which show a better return under the same conditions which would cause the return for other projects to worsen.

TOP MANAGEMENT'S VIEWPOINT ON PURCHASING

The industrial purchasing function has evolved through many phases since the turn of the century. Two major wars, a long-term depression, and a number of business recessions and booms have all made their impact on the purchasing function and changed the manner in which it is performed in the industrial business world. The role of the purchasing individual today is that of manager, not agent. Whether the manager operates effectively in this new role depends primarily on four factors: management's attitude toward and organizational acknowledgment of the purchasing function; ability to manage a business relationship with suppliers; effectiveness in interacting with other functional areas within the company; and ability to staff, organize, and develop effective purchasing personnel.

Historical Development of Purchasing

The responsibilities of the industrial purchasing people and their role in company operations have changed greatly over the past 50 years. In the early days the owner or chief executive of the company generally handled important purchases. This may still be true today in many companies where a purchased raw material or product represents, to a large extent, the final product sold to the customer. The growth of business during the early 1900s gradually forced management to delegate some of the buying of key goods and commodities to the purchasing department. It was a slow and selective process, however, because growth was minimal at best, particularly during the Depression of the 1930s.

The Purchasing "Agent"

In the early industrial organization, the purchasing function was not generally considered part of the internal operations of the company. The term "agent," commonly used as the title of the top purchasing person, signified an individual who served the company as liaison with the supplier. The company made its plans, generated its requirements, and turned over to the agent the list of items to be purchased outside the company which were needed to support (or "service"—the term generally applied to purchasing's operations) the internal operations of the company.

The World War II period saw the first major change in the role of the industrial purchaser. Shortages, priorities, rated orders, and related matters made the job of dealing with suppliers a highly complex one. Purchasing personnel became important, if only for their ability to scour the country for raw materials and parts to meet the company's production schedule. "Cost" was a word that was temporarily erased from the company's vocabulary. If purchasing individual could get what was needed—at almost any price—they had, in most cases, done their job to the satisfaction of management.

The end of the war did not change the situation to any great extent. A consumer market that had gone without goods and services for five years was eager

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to buy and had the money to do so. The purchasing individual continued to be viewed primarily as a developer of sources of supply, and the word "cost" continued to be heard but seldom. A couple of minor downturns in business did not change the environment appreciably, and the Korean conflict in the early 1950s merely brought back most of the shortages, priorities, and other industrial troubles of World War II.

During this entire period, the techniques and responsibilities of purchasing individuals changed very little. Their activities fairly well reflected the title of "agent" ("one who represents someone else") and the definition of the word "purchasing" ("exchanging money for goods"). Someone else told them what to buy, how much to buy, and when to have it delivered. In general, both they and their management were satisfied to leave things this way. The purchasing activity, sitting in the corner and handling paper, was generally considered as a necessary overhead by management, while the manufacturing individual and the engineer thought of it as a function to be bypassed whenever possible.

Cost Consciousness

The first indication of a change in the role of the industrial purchasing person began in the recessionary period which, for many industrial concerns, began in 1957 and extended through 1962. For the first time since the 1930s, management became seriously concerned with cost. Profit margins began to shrink in the highly competitive marketplace as consumers found themselves, for the first time in many years, in the driver's seat. Management now began to seriously explore ways of reducing the costs of production. In so doing, it became aware that the purchased content of a product represented, in most cases, at least 50 percent of the total product cost. A quick financial look at the company's business easily showed that \$1 saved in the purchased cost would have the same effect on profit as a \$10 or possible \$15 increase in sales. It soon became apparent that the purchased content of the product was virgin territory for cost reduction if one knew how to exploit it.

Expanding Responsibilities

The enlightened purchasing agents reacted to the challenge of cost reduction and began to expand their responsibilities and develop techniques which would lead them away from being an agent for the company and make them managers of outside business relationships. The change from agent to manager did not come easily. The mortality rate was high. A study of the men and women appointed to top industrial purchasing jobs during this period would probably show that at least half of them had nonpurchasing backgrounds. Just what did this change from agent to manager entail? First, it required recognition on the part of company management that the purchasing function, because of its tremendous impact on cost, had to become an integral part of the company's operations. Once this had occurred, the purchasing individual was asked to accept the responsibility for managing the total relationship with suppliers—a responsibility which included far more than just "exchanging money for goods" and which, if effectively implemented, would assist the company in meeting its business objectives. Sec-

ond, the change from agent to manager required the recognition and acceptance of this new role by the purchasing people themselves.

Many companies in recent years have recognized the importance of the purchasing function within the company's total operations and have taken various steps, organizational and otherwise, to indicate their recognition. Although this new attitude has created an environment in which purchasing can operate more effectively, the primary responsibility for the implementation of the manager's role must fall directly upon the purchasing man or woman.

Purchasing Function

To fill this role, the purchasing manager has to place particular emphasis upon two areas. First, it is essential to develop proper support to purchasing from other functions, such as engineering, quality control, and production control, which have an impact on buying decisions. The directing of all of these functions, including purchasing, toward the support of the buying relationship represents a relatively new functional concept (originally introduced in government buying) called procurement. Procurement expands the role of working with suppliers from one of merely exchanging money for goods to one of total responsibility for acquiring goods. Second, it is necessary to develop a purchasing organization equipped with the skills and experience required to perform the purchasing responsibilities at a high level of excellence.

The Purchasing Organization

In order to balance more effectively the many functions which affect the buying relationship and assure their continuing support, companies should consider combining them organizationally to form a purchasing function. The functions generally included are manufacturing engineering (known as procurement engineering when it is related strictly to purchasing requirements), production control, quality assurance (not receiving and inspection in many instances, however), traffic, financial analysis, and estimating.

Although management opinion generally agrees that all these functions must play a part in the supplier relationship, disagreement exists as to whether they should be grouped together organizationally and report to one person or operate as separate departments. For example, many management people feel that manufacturing engineering should be a separate organization, outside both purchasing and manufacturing, and providing services to both areas as required. Experience has shown, however, that two general problems result from such a separation. The first arises when both the manufacturing and purchasing groups require assistance from manufacturing engineering at the same time. Usually the manufacturing group's requirements are met first. This is only to be expected, since the manufacturing group is made up of the company's own employees, and the solutions to problems in one's own company are generally easier to implement than those of an outside source. This problem, nevertheless, can often be solved if the manufacturing engineering manager fully accepts his or her continuing responsibilities to suppliers as well as to in-house functions and distributes personnel resources accordingly.

The second problem, probably the greater of the two, arises when an attitude of "service when requested" exists in the manufacturing engineering area.

The real benefit to the procurement concept is the establishment of a continuing, full-time support of purchasing on the part of other functions—manufacturing engineering, for example. When manufacturing engineers are assigned full-time to outside relationships, they develop strong feelings of responsibility toward the supplier relationship. If the relationship is effective, they feel that they personally helped make it so. This type of continuing responsibility covers more than handling problems on a service-as-requested basis; it includes the initiation of such activities as technical cost reduction programs, improvement in the manufacturing processes, and the introduction of new and improved tooling programs. These are the sorts of cost reductions purchasing individuals cannot implement on their own; rather, they require the continuing support of the manufacturing engineer.

Purchasing Excellence

Regardless of the organizational approach used, the responsibility for meeting the company's objectives of cost, quality, delivery, and supplier relations must remain with the purchasing department. Only by handling all the areas effectively can a level of excellent performance be achieved. Effective handling is reached through no one skill but rather through the use of many skills applied in a professional manner by purchasing personnel. Company management and the purchasing manager must recognize that only through the proper marrying and balancing of the skills can excellent performance be attained.

Among the more important skills that must be developed are proficiency in managing the various activities that affect a purchasing decision and the supplier relationship. Required skills include the ability to conduct effective negotiations, to provide support necessary for effective negotiation, to understand and analyze all aspects of the business relationship with the supplier, and to reach business decisions which properly consider these aspects.

These and all other required skills in purchasing are primarily acquired through continuing professional buyer training. □ *Harry J. Moore*

RESPONSIBILITY AND AUTHORITY OF THE PURCHASING DEPARTMENT

Consider the situation of the manager of a large industrial manufacturing company which produces a variety of products. As a profit-oriented business manager, he or she recognizes that purchasing commitments control a significant proportion of the total operating budget; 50 percent of the production costs are for purchased materials and services. Furthermore, unplanned changes in the cost of purchased items could dramatically affect the budget. No lack of control or of information on the status of purchased materials costs or on progress accomplished against long-range plans can be tolerated. In fact, more and better controls and information are needed.

The traditional responsibility of purchasing to obtain a continuous and adequate supply of raw materials at reasonable prices is no longer adequate to meet company needs and must be expanded. The managers must be as well informed on planned purchased materials costs as they would normally be on the comparative costs of competitive manufacturing methods, distribution techniques, or marketing strategies. Effective control of such costs can no longer be regarded as a casual goal; it has become a vital necessity.

The paper-processing clerical function of purchasing is obviously not adequate to meet the company's information needs. What is needed is a single reliable source of advance information on cost of purchased materials, availability, long-range market trends, alternate sources, technological developments, and a host of other factors so that plans can be modified in time to prevent losses or take full advantage of possible gains. Equally essential is solid evidence that current and known future requirements will be met by competitive and competent suppliers.

To provide the expanded services required of it, purchasing must become a management function responsible for establishing goals, developing profit potential, providing essential information to management, and exploiting and directing market potential to achieve management objectives.

Characteristics, Functions, and Objectives of an Efficient Purchasing Department

The effectiveness of the purchasing operation depends upon the development and proper blending of departmental and personnel characteristics, functions, and objectives to form an efficient operating unit of the corporate structure. Some of these follow.

Broad supplier contacts. To facilitate locating unusual or unfamiliar items quickly.

Budgets of departmental costs and expenses. Should have management approval and be used for the control of operations.

Supplier relationships. Should be ethical, fair, and mutually profitable.

Communications. Within the department, with other departments, and with management should be unrestricted and productive.

Conflicts of interest. Should be strictly forbidden. Investment or involvement in a supplier's business will always compromise a buyer's interest and interfere with his or her judgment, and should be expressly prohibited.

Total cost of a product. Is a function of service and quality as well as price. Better quality and timely, reliable service may compensate for the payment of a higher price and still provide the lowest final cost of acquisition.

Definition of accomplishments. Cost improvements, cost reductions, and other savings should be defined and acknowledged. Credit should be given for initiative in the pursuit of improved value and profit contribution.

Creative thinking and planning. Continuously generate new ideas and projects and then develop programs that will assure their progressive attainment.

Discounts. Should be sought and achieved when they can be obtained by combining requirements for larger quantities or by making longer-term contracts.

Economic order quantities. Should be calculated and followed if appropriate.

Disputes, complaints, and claims. Should be promptly processed in an orderly manner.

Effective leadership. Should be practiced to gain the loyalty, confidence, and cooperation of others and to motivate and direct them toward a predetermined goal.

Engineering specifications. Should be established after consultation with manufacturing and purchasing to be sure all possible quality and cost alternatives have been considered. Specifications should be clear, and the buyer should be conversant and knowledgeable regarding them.

Cooperation. Should be a prime purchasing objective. There should be a minimum of complaints or controversy with other departments or suppliers. Use the team approach to solve company problems.

Flexibility and adaptability. To changing conditions and unexpected developments should be coupled with a positive attitude toward change.

New ideas. For research and development of materials, products, processes, and equipment should be welcomed, solicited, and sought by purchasing.

Job descriptions. Should be in writing, and they should give purchasing personnel guidance in their responsibilities, objectives, and activities.

Make or buy. Investigations should be a regular practice in the purchasing department.

Objectives and goals. Should be set and met, and they should conform with overall company plans.

Professional development. Should be an objective of every buyer and purchasing manager.

Clearly defined policies and procedures. Purchasing guidelines should be in writing and should conform with the overall policies of the company. They should be coordinated and compatible with those of other departments.

Purchasing research. A continuing program of research should be devoted to locating and developing cost-saving opportunities and proposing new materials and processes and more efficient methods.

Standardization. Purchasing should have a major role in standardization. Programs should be vigorously pursued when better value is obtainable.

Qualified alternate source of supply. Especially for critical items, should be available at all times.

Appropriate levels of quality. Materials and services must be adequate for manufacturing requirements and product demands. Acceptance by all other departments of the quality received is a major measure of the competence of the purchasing department.

Proper order quantities. Quantities requisitioned often do not correspond with standard commercially packaged amounts. Requirements should be questioned when it is possible to take advantage of buying economies. Quantities should be adequate for current requirements plus proper inventory levels.

Qualified personnel. Are essential in purchasing. On-the-job training is a singular responsibility of the purchasing manager.

Records—current and accurate. Records maintained by the purchasing department.

ment should be current, and they should fulfill legal requirements as well as the operational needs of purchasing and other departments. Accuracy is essential.

Reports of management. Should be regularly submitted to management by purchasing. Included in such reports may be economic forecasts, price trends, and market conditions, as well as departmental operating data and cost reduction and cost avoidance accomplishments.

Consolidation of requirements. Items commonly used by various departments should be coordinated and combined in order to minimize frequency of ordering and to obtain lowest costs through quantity purchasing.

Proper handling of rush requirements. Crash programs may be necessary to support company objectives, and they should be handled enthusiastically and with initiative by the purchasing department. Urgent demands, even if they result from matters that are beyond the control of purchasing, must be met.

Expediting deliveries as required. Schedules should be met and deliveries should arrive on time in keeping with company requirements and minimum cost.

Statistical data. Information pertaining to daily activity and workload may be helpful in measuring purchasing performance, but it does not provide a valid evaluation of proficiency.

Targets. For cost improvement should be realistically established, continuously and conscientiously pursued, and consistently achieved.

Teamwork. Within the department and between departments should stimulate coordination and participation in advance planning, development of schedules, and the initiation of new requirements.

Technical assistance. And specialized services that are available from suppliers should be made known to those concerned with such matters within the company and should be used when appropriate.

The law. As it pertains to purchasing contracts, commercial practices, organized labor, and antitrust should be respected and strictly followed.

Timing of deliveries. Should allow for adequate lead time and yet meet production requirements while avoiding excessive inventories or safety stock.

Use of trade publications. Purchasing literature is an excellent source of information on new materials, products, processes, and ideas. Trade publications should be read regularly.

Trade relations. And reciprocal matters should not involve unilateral decision by either purchasing or marketing, and they should serve the best overall interest of the company. They should not be detrimental to the cost or quality of the company's products.

Sale of scrap and surplus materials. Scrap sales and the disposal of surplus equipment or materials are frequently assigned to purchasing because of that department's familiarity with market prices and the business community. These contacts and this knowledge should be used to produce the maximum income from such sales.

Variations from standard cost. Variations from standard cost should be isolated, analyzed, and explained. When standard costs are properly established, variations are one measure of purchasing proficiency and an indication of purchasing's contribution to profit.

Characteristics of an Effective Buyer

Individual buyers, as well as purchasing departments, need certain qualities to be successful. Effective buyers need these personal characteristics:

Acceptance. The qualities that lead to one's being considered a worthwhile individual by peers, subordinates, supervisors, and friends.

Flexibility. The ability to adjust to changing conditions and the unexpected and to evaluate the actual worth of new information. A positive attitude toward change.

Creativeness. The ability to develop fresh and new approaches to problems and to continually inquire into the nature of the problem. The ability to develop original ideas.

Decisiveness. The ability to arrive at a decision quickly after obtaining the necessary information and to live with the decision after it has been made.

Energy and drive. The capacity to act as a self-starter and approach activities and problems with energy. The urge to get things done and resist discouragement.

Initiative. The ability to take hold of a problem immediately and to recognize and act on new opportunities.

Intelligence. The ability to solve everyday problems, adapt to new situations, and get along successfully in society.

Leadership. The ability to gain the confidence and loyalty of others and to motivate and manage them effectively toward a predetermined goal.

Motivation. The desire to develop planned goals to fulfill one's individual needs, and thus to be realistically ambitious and willing to assume increased responsibility to realize these goals.

Attitude. The buyer feels that his or her job is important to the overall company operation and that the company is important to the standard of living in the area. The buyer's attitude is that of giving good service for the department and the company.

Oral communication skills. The ability to transfer by spoken word a thought or concept to another individual with a minimum of confusion. Such communication includes accompanying facial expressions, voice intonations, and gestures.

Self-objectivity. The ability to understand and evaluate one's own needs, goals, and personality traits and to determine other individuals' reactions to these.

Written communication skills. The ability to transfer by the written word a fact or concept to another individual with a minimum of confusion. This includes some facility with basic sentence structure, legible handwriting, and correct grammar and spelling.

Adequate memory. The buyer's ability to recall incidents, names, and faces should satisfy requirements of the job. He or she readily recalls matters at least sufficiently to satisfy reasonable requests.

Telephone technique. The buyer utilizes telephone time efficiently and is familiar with techniques that save time and minimize equipment tie-ups. He or she also recognizes the value of courteous, prompt handling of calls.

Personal appearance. The buyer is neat and clean, dresses in good taste, and keeps personal grooming above reproach.

Availability. The effective buyer is generally available when needed, leaves word where he or she can be reached, and specifies the circumstances under which interruptions are acceptable.

Aptitude. The buyer has the necessary aptitudes to grasp new information about the products being purchased and about the company functions that products would be expected to serve.

Persuasiveness. The buyer can persuade using departments to accept alternates that will do the job at lower cost. Is convincing in arguments and strives to effect the best possible buy for the company.

Ethics. Business dealings touching purchasing are conducted on a high moral plane and avoid any situation that might place the buyer or the company under obligation or in an embarrassing position. This applies to both buying transactions and social functions with suppliers.

Independence. A member of the purchasing department conducts work independently and does not need constant guidance from supervisors; consolidates those matters which require guidance for a daily or semidaily interview with the supervisor.

Punctuality. The buyer realizes the importance of being punctual on the job and in attending meetings; doesn't abuse lunch periods or coffee breaks.

In addition to having the personal characteristics described above, a buyer should be able to perform efficiently in the following ways:

Follows directions and instructions. The buyer follows directions and takes appropriate action with the minimum amount of supervision. He or she should do this promptly and efficiently and thereby require very little follow-up.

Weighs problems. The buyer recognizes the relative importance of problems and puts them in their proper perspective; does not waste time working on unimportant details at the expense of more important matters.

Accepts criticism. The buyer gracefully accepts constructive criticism, alters methods to take advantage of the criticism, and is able to accept constructive criticism from supervisors, from persons in other departments, and from suppliers.

Organizes work. The buyer organizes work efficiently so that a good buying job can be done with a minimum of delay.

Coordinates adjustments. The buyer coordinates the prompt and reasonable settlement of all adjustments and claims involved in supplier transactions.

Maintains standards. The buyer maintains standards by reviewing requisitioned items for conformance to company standards; also assists in the establishment of standards within the company and often achieves stock reductions as a result of these efforts.

Conducts interviews. The buyer conducts interviews in a prompt and businesslike manner and encourages the development of pertinent information flow in both directions.

Develops competition. The buyer considers quality and service as well as price and maintains a competitive atmosphere by securing quotations from a reasonable number of qualified suppliers.

Keeps informed. The buyer is constantly on the alert for new ideas, products,

processes, and potential suppliers; regularly reads purchasing and technical publications and maintains contact with suppliers, associates, and industry and trade associations in pursuit of this knowledge.

Ensures timely delivery. Through the timely placement of orders with reliable suppliers the buyer negotiates firm delivery dates, and arranges for special handling and transportation when required.

Develops commodity knowledge. The buyer maintains a knowledge of the commodities purchased as well as a knowledge of any unique or special marketing conditions pertaining thereto.

Leads conferences effectively. The buyer is able to conduct conferences effectively and secure agreements that result in worthwhile decisions, uses good conference techniques to advantage, keeping meetings brief and to the point, and holds meetings only when necessary. □ *Leonard A. Larson*

Commitment Responsibility and Authority

When purchasing is assigned the responsibility for control of unit costs for purchased material it must be given commensurate authority to control commitments made by the company. The more commitment authority placed with a single source, such as purchasing, the greater the control that management can exercise over all commitments. Without controlled commitment authority, isolated commitments, whether made by several departments or by management, can tend to disrupt approved long-term plans, exceed dollar volume budgetary limits on inventory and forward commitments, and create quality and regulatory problems by circumventing an approved and integrated control system. Multiple commitment authority is inefficient because it results in duplication of effort, dilutes the positive benefits of concentrated purchasing strength, demoralizes purchasing personnel, and confuses company personnel and suppliers' representatives. A management policy establishing purchasing as the source responsible for coordinating and controlling all purchase commitments, with designated exceptions, would ensure a consistent and objective approach to the reception, assembly, and evaluation of proposals.

When purchasing is assigned the commitment authority commensurate with responsibility for control of costs, management should not require purchasing to make unilateral decisions concerning the ability of specific suppliers to meet minimum specifications. Purchasing efforts in the decision-making process should center on ensuring that all elements of the purchase are considered and maximum value identified before final decisions are made.

Purchasing for multiple locations should be organized so that the commitment responsibility and authority are used efficiently. Such techniques as national contracts and blanket orders can be utilized to establish specifications, sources, prices, terms, conditions, and commitments for consumable inventory and specific and general items of a repetitive nature, allowing using departments or locations to authorize delivery as required, commensurate with the commitment. Purchasing would have no further need for involvement in day-to-day transac-

tions during the life of the commitment unless the supplier fails to perform or it is necessary to renegotiate prices, terms, or conditions.

In seeking positive assurance that all requirements for purchased materials and services will be met and that the costs of these items will be within the limits available under the budget, management can consider making purchasing responsible for the development of standard unit prices for all major budgeted purchased materials and services, just as production is required to develop and forecast manufacturing unit costs. Standard unit purchase price forecasts could be incorporated into the budget, and performance, like labor or other variable costs, could be measured by variance reports. Frequency of reports will vary by business and product. □ *Robert J. Bretz*

Material Requirements Planning (MRP)

Material requirements planning (MRP) is a formal method of production-inventory control that indicates to all levels of production and purchasing the net requirements for meeting the master production schedule. Although MRP was originally a set of techniques for production-inventory control, departments such as purchasing and materials management are finding it very useful to them. MRP is an attempt to order information and data concerning the product so that production and inventory scheduling can be accomplished efficiently. Such information includes accurate bill of materials or product design requirements, accurate production and inventory records, item lead times, and, equally important, a master production schedule. With these information inputs and some basic concepts, the MRP system can be constructed.

Historical Overview

One of the great steps forward in production-inventory control was the development of the Wilson or Camp ordering rule, now known as the economic order quantity, or EOQ, rule. This rule, developed around 1913 and still in use today, balances the ratio of order cost to inventory carrying cost for determining order lot sizes. Although the basic assumptions of the EOQ rule do not really hold in most manufacturing situations, it has performed relatively well over the years. The EOQ was useful at a time in the nation's industrial development when products were becoming more complex and mass-production techniques were beginning to be implemented. Again, the EOQ is a rather crude technique but robust in its results, and in 1913 it met the needs of the times.

The development of computers with their ability to accurately manipulate large volumes of data in a timely fashion, among other events, has led to the resurrection of production-inventory control techniques that consider the relationship between component parts and the end product. This resurrected technique is, in fact, material requirements planning.

In a few instances MRP systems have been implemented without the use of a computer, but such situations certainly have to be considered unusual. Any attempt to implement an MRP system without using a computer would certainly produce the same dilemma faced by companies around 1913.

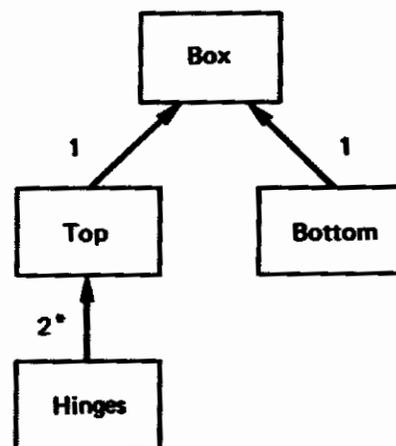
An Example

The basic concepts of MRP are simple and were probably used by the first artisan who had to make finished products from more than one component part. The idea is to know (1) how many of the end items or finished goods are intended to be made (master production schedule), (2) how many of each component part are necessary for one unit of finished product (bill of materials), and (3) how long it takes to make, assemble, or acquire each item (lead time). With this information the planner can anticipate how many of each component part he needs in order to begin production. Knowing the lead times of all items, he can calculate when each item should be started to accomplish the master production schedule on time.

For example, an item to be manufactured by a wood products firm is a small wooden box. The bill of materials for the box calls for one bottom, one top, and two hinges. The product profile of the box is depicted in Figure 5-1. Figure 5-2 is a basic production schedule for the boxes and their component parts. For Figure 5-2 several simplifying assumptions have been made: there is no inventory at any level, period 1 is the current period, and enough parts and products were ordered in previous periods to keep the schedule up to date.

The "gross requirements" row of each product is that number of units that must be made available to support the next higher level of production of sales. No consideration of available inventory, if any, has yet been made. In period 5 of Figure 5-2 there is a gross requirement for nine boxes. Since there is no intended inventory these nine boxes will have to be assembled. Because there is a one-period lead time, the assembly period should show these nine boxes being started one period earlier than needed, according to a planned order release in period 4.

Figure 5-1. Product profile of a cedar box.



*Number required per unit at the next higher level.

Figure 5-2. Master production schedule.

	Time periods					
	1	2	3	4	5	6
Box, lead time 1						
Gross requirements	4	3	2	7	9	5
Planned order receipts	4	3	2	7	9	5
On hand inventory						
Planned order release	3	2	7	9	5	
Bottom, lead time 1						
Gross requirements	3	2	7	9	5	
Planned order receipts	3	2	7	9	5	
On hand inventory						
Planned order release	2	7	9	5		
Top, lead time 2						
Gross requirements	3	2	7	9	5	
Planned order receipts	3	2	7	9	5	
On hand inventory						
Planned order release	7	9	5			
Hinges, lead time 1						
Gross requirements	14	18	10			
Planned order receipts	14	18	10			
On hand inventory						
Planned order release	18	10				

If the schedule goes as planned these nine boxes will be received by period 5 and available for sale in that period. The gross requirement for the top is nine units also, but lead time for the box assembly requires these tops to be available in period 4 and to be started in period 2. As for the hinges, since two are needed for each top, the planned order release of nine units for tops in period 2 is multiplied by two for a hinge gross requirement of 18 units. Since there is a one-period lead time for hinges, these 18 hinges must be started in period 1.

Other important aspects of an MRP system are illustrated in Figure 5-2. The time frame shown of six periods is the planning time horizon, which must be at least as long as the total offset lead times of the product and component parts. In this case the total offset lead time is five periods, and the master production schedule is greater by one period. It should also be apparent that any changes in the production schedule for the finished box in periods 1-4 will cause many

scheduling and inventory scheduling problems at the lower levels. Also, a change in finished goods in period 5 will have to be accomplished immediately because the hinge department will start on the 18 hinges immediately. In other words, to have a workable schedule the requirements for box assembly will have to be "fenced in" for the next five time periods. The lot sizing rule being used for this example is lot for lot, that is, order exactly what is needed when needed. Other lot sizing rules are viable but any that combines more than one period's requirements will telescope the total offset lead time requirements.

Benefits of MRP

The implementation of an MRP system offers a number of benefits. In most companies new methods or improvements are not even considered until the old methods are in such terrible shape that they can no longer be ignored. Often the production-inventory control system has been allowed to limp along so many years without managerial consideration and effort that any effort at all will show benefits. Thus the managerial attention and effort focused on the production-inventory system in order to implement an MRP system will cause improvement over the old system or methods.

In addition to inventory carrying costs and other obvious costs, there are additional hidden costs that are attributable to the production-inventory system. Most of these hidden costs stem from the inherent inaccuracies in the traditional production systems. The implementation of an MRP system should lead to smoother functioning with fewer internal stockouts and thus less expediting. Moreover, with the guesswork taken out of the production schedule, the correct items are manufactured at the correct time, alleviating both the problem of storing excess inventory and the problem of the committed manufacturing capacity that such inventory represents.

Another advantage of an MRP system is that it formally represents the production-purchasing-inventory plan for the immediate future for all concerned to see. Thus, each department can determine what actually is required of it and of other departments to support the master production schedule. That is, the MRP system can be a large and very useful part of the management information system of the company. It is one of the most integrative concepts to be advanced in recent times in the area of production-inventory management.

Disadvantages of MRP

The greatest disadvantages of MRP are its implementation and operating costs. Many of the MRP implementation failures seem to derive from the traditional problem areas of production-inventory control systems, such as lack of information, lead times, inventory and bills of material, master production schedule time horizon, master production schedule changes, safety stock, and the application of "ABC" inventory analysis techniques. (The ABC system involves classifying inventory items according to their monetary value and then buying the more expensive ones in smaller quantities.)

Cleaning up a traditional production-inventory system with all the attendant problems stemming from years of inertia, the need to reeducate the people in the system, and the teething difficulties of implementing a new program can cause

monumental problems and costs. Installation costs of from \$2.5 million to \$3 million have been estimated, and a time frame of two to three years is not unusual for a medium to large company. In some instances the problems and costs of an MRP implementation have been so large that the effort was abandoned and the firms went back to the traditional methods of production-inventory control. Before implementing an MRP system and incurring the very large cost entailed, a company should balance the visible cost of the MRP system against the hidden but very real and large costs of the traditional system of production-inventory control.

Suitability of MRP

MRP has been stressed as being most useful in a multistage, multiproduct production-inventory system, and most successful applications of MRP have been of this nature. The EOQ as originally proposed is simply a lot sizing rule for minimizing the ratio between order costs and carrying costs. Since its inception there have been many additions to and variations of the original formula to adapt it to the various needs of industry. It does not seem unreasonable to predict that material requirements planning concepts will go through similar adaptations and mutations to fit the needs of industry. □ *Joseph R. Biggs*

Guidelines for Supplier Prices

Authority to select sources and determine purchase prices is essential in obtaining control of purchased materials unit prices. Prices determined must be the lowest with consideration for all value factors desired. It is false economy to establish so-called low prices if those are obtained at the sacrifice of essential quality, delivery reliability, or other essential considerations. The purchasing function must be given the sole commitment authority in order to ensure full value received for each dollar expended. Analytical techniques utilized by purchasing to ensure full value return include the following.

Value analysis. A technique usually applied at the design or engineering stage to systematically evaluate the materials and services that must be purchased and to determine the lowest overall cost that must be paid to have a useful function or service performed reliably (best value). This technique generally is applied by a team of which purchasing is a vital member. In its broadest application, value analysis is utilized to consider the total cost of a product from the design stage, through manufacturing, to its ultimate application. More detailed discussion appears later in the subsection on techniques and procedures.

Purchase analysis. A technique generally applied after a product is designed, but before materials or components for manufacturing it are purchased. This technique endeavors to determine a reasonable current market price for the materials or components required for manufacturing a product by establishing an independent estimate, sometimes referred to as a target price, to assist the buyer in effectively evaluating supplier prices. A target price is defined as a price that can reasonably be expected to be paid in the current marketplace by estimating the manufacturing processes and materials costs of an efficient producer includ-

ing a reasonable profit factor. The maintenance and utilization of key information and data on major commodities involved is an important adjunct to utilization of this technique.

Price analysis. A technique that utilizes buyer experience and knowledge to facilitate choosing the best price by considering such factors as current prices of similar items available, current competition, previous prices paid for the same or similar items, pricing trends, and the age of design and manufacturing processes to be utilized.

Cost analysis. A technique that utilizes a review and a breakdown of supplier costs to evaluate the accuracy and reasonableness of the specific elements of those costs in establishing a fair price for value to be received. This technique is generally utilized prior to entering into price negotiations.

Many suppliers maintain expert technical personnel to assist customers or potential customers in working out acceptable solutions to production equipment problems. Normally, there is no charge or obligation for such service and, properly handled, it can be effectively utilized. However, activities associated with or immediately following such arrangements can easily lead to extensive and unplanned purchase commitments. Often, the potential customers are unaware until after the fact that they have led the supplier to believe that he has been authorized to furnish materials or extra services. Obviously, management approval for commitment of the funds would not be obtained in advance. Perhaps such problems could be avoided by establishing relatively simple controls that would limit supplier access to the plants and clearly define the authority to make commitments. Under such conditions, purchasing would be ideally situated to serve as the principal contact and primary control agency for such projects.

□ *Donald E. Howard and Joseph J. Kalkbrenner*

Inflation Control

One of the chronic problems facing most purchasing departments today is how to offset most or all of the inflation impact on purchased materials. The first step is for purchasing managers to understand some of the options available to avoid inflation. Such options include changing designs and specifications and improving the productivity of the company and of its suppliers. Step two involves becoming an expert in the statistics of inflation. The U.S. Government's Producer Price Index has 15 subdivisions. Of these, 13 are for industrial commodities, and many of them do not apply to a specific company's needs. Therefore, a specific purchase inflation profile can be calculated for a company, permitting the purchasing manager to focus better on inflation avoidance and productivity activities. A typical company's Producer Price Index is shown in Table 5-1.

Commodity Forecasting

Important as it is to maintain current control of purchased materials costs within the budget, it is equally important to be fully aware of outside technological developments and changing market conditions that may affect future costs, particularly if such information can be accurately forecast and measured against

Table 5-1. Producer price index (industrial commodities).

<i>Index</i>	<i>Description</i>	<i>Weight</i>	
		<i>PPI</i>	<i>ABC Company</i>
WPI 03	Textiles	7.5%	—%
WPI 04	Hides and skins	1.0	—
WPI 05	Fuel and power	13.5	0.1
WPI 06	Chemicals	9.3	0.1
WPI 07	Rubber and plastic	3.6	13.8
WPI 08	Lumber and wood	2.8	—
WPI 09	Pulp and paper	6.9	0.3
WPI 10	Metals	16.4	46.3
WPI 11	Machinery and equipment	15.4	38.1
WPI 12	Furniture and durables	4.4	—
WPI 13	Nonmetallic minerals	3.6	1.3
WPI 14	Transportation equipment	11.1	—
WPI 15	Miscellaneous	4.5	—
Total	Industrial commodities	100.0%	100.0%

some recognizable standard that will permit projection of total impact. In the event that purchasing is made responsible for the preparation and maintenance of commodity profiles on major purchased items, there should be available a source file of up-to-date market information that can be periodically summarized, interpreted, and reported by purchasing as a forecast of specific variances from standard unit prices for purchased materials. Both negative and positive variances can be quickly evaluated, and where appropriate, corrective action can be initiated before the forecast event actually occurs.

Since a \$1 reduction in the cost of purchased material from the standard would increase profit by an amount roughly equivalent to a \$10 or \$15 increase in sales, it is highly desirable to establish some method of forecasting such possible actions and of estimating their impact on cost. Assuming that purchasing personnel are to be kept fully informed of the company's products, manufacturing processes, and long-term production plans, purchasing can reasonably be expected to recognize situations where consideration of new sources of supply, changes in specifications, or substitute materials may have an economic advantage. Further, with regular access to outside information, purchasing may become aware of technological developments or other changing market conditions that can be exploited and directed to achieve company objectives. With purchasing assigned the responsibility for recording each such opportunity as it occurs, the basis can be established for a careful review and evaluation by the using department and other responsible personnel. Items which appear to have potential can be assigned to purchasing as specific profit improvement projects. Periodic reports on progress accomplished against such projects, when reviewed on an exception basis, will provide a quick summary forecast of profit improvement.

Reporting Price Variances

If purchasing is to be responsible for the development of standard unit costs for purchased materials, and if these standards are incorporated in the budget, the result will be an acceptable basis for reporting the actual cost experience against the standards. Only costs that deviate substantially from the standard will need to be reviewed. (A minimum reportable deviation can be established to avoid getting reports on minor discrepancies.) Such reports will automatically identify any existing problem areas. Ranking the problems in order of importance becomes a simple matter of listing dollar amounts in declining order.

Reporting purchase-price variances is one of the most fundamental means by which purchasing can track its own performance and that of its suppliers. Purchase-price variances can be calculated from several starting points, including current price versus the following: previous buy price, standard cost, design engineering target, purchase engineer estimate, annual purchase plan, general market indicator, general inflation rate, specific commodity inflation rate, previous duty/insurance/freight charges, previous foreign currency rate, or purchase order versus invoice price.

Productivity

Purchasing and its suppliers can be one of the principal contributors to the productivity of a company. A typical purchasing department can encourage and manage several aspects of purchased materials that will lead to increased productivity through outright cost reduction or cost and inflation avoidance. One company describes its multifaceted productivity in the chart shown in Figure 5-3.

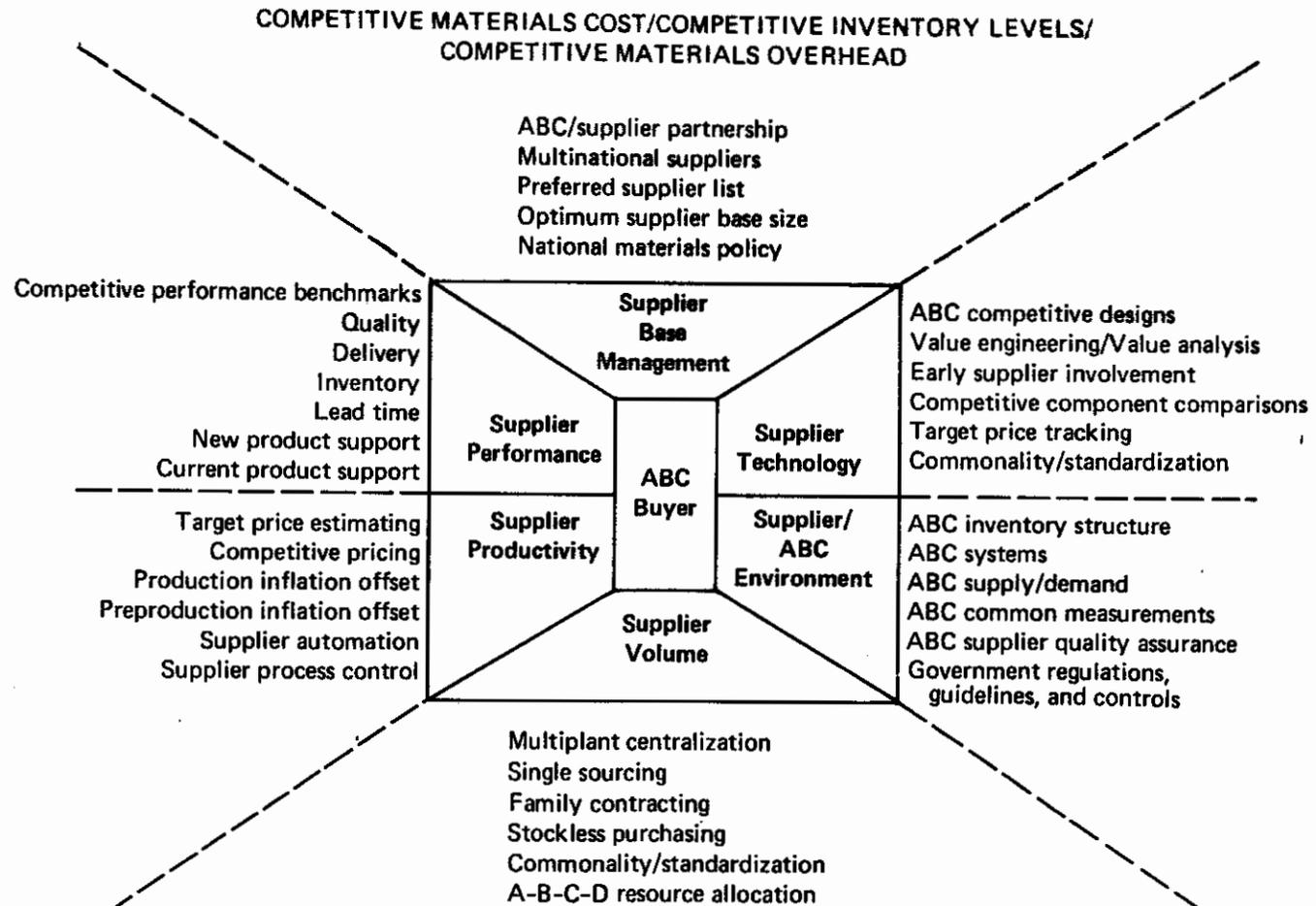
Cost-Price Analysis

The purchasing function should, on a selective basis, continually analyze supplier costs and prices. This is necessary in order to accurately determine whether or not the company is paying fair and comparative prices for essential items. In this context, the terms used can be defined as follows: price analysis—a comparative technique to facilitate choosing the best price, with or without competitive quotations; cost analysis—the process of developing a breakdown of supplier costs, verifying it, evaluating specific elements of cost against value to the company, and projecting these data to determine the probable effect on price. The application of this technique is difficult and time-consuming. Its use is normally resisted by purchasing people, but it is justified and in fact necessary on a selective basis. □ *Gaylord E. Powell*

Purchasing of Capital Equipment

It should be the practice of the purchasing department to encourage contact between the requisitioner or user and the supplier or potential supplier. The transmission of information, particularly of a technical nature, is much more reliable when given directly from the supplier or potential supplier to the individual responsible for writing the specifications. However, purchasing must make ar-

Figure 5-3. ABC Company's materials productivity program.



rangements for such contact and be present at any preliminary meetings with suppliers. Purchasing must also be present when any commitment is discussed.

It is the responsibility of organizations other than purchasing to decide what the precise specifications will be for all classes of material purchased. Specifications should be given to purchasing as technical or performance specifications, not as brand preferences. If an individual or department authorized to specify materials, supplies, or equipment honestly believes that a particular brand is best for the application, purchasing should want to buy only this suggested brand. But it must be given to purchasing on the basis of honest belief and extensive experience and testing on the part of the requisitioner or user, and not as a result of a recent limited investigation. In such instances, the requisitioner should provide a written single source justification, outlining in some detail why only one product will meet the required specifications.

Purchasing's Responsibilities

Whenever a request is made of purchasing concerning supplier contact (whether requesting information or samples), the member of the purchasing department who has been requested to make this contact must do so promptly. There should be no such thing as being "too busy" to perform this service. In such instances, the purchasing department is being extended a high degree of cooperation, and this cooperation can be fostered only if purchasing promptly and ably performs this portion of its responsibility.

On all basic items of capital equipment and tools such as lathes, presses, and other equipment with which purchasing is quite familiar, an appropriate number of prospective sources should be selected. These sources should be contacted by purchasing by telephone to determine whether or not they produce equipment or materials that purchasing is likely to be interested in buying. When this list has been reduced to a suitable number, and before the formal inquiry is issued, the remaining firms should be visited to determine whether they have products that purchasing will be interested in buying. It is agreeable (in fact, in many cases it is desirable) that the requisitioner or using department be a party to the phone calls and to the visits to the prospective suppliers, but purchasing should make the selection of sources, and purchasing should make the telephone calls and arrange for the visits. Phone calls and visits should cover any prospective sources suggested by the requisitioner, provided such suggestions are made as a result of his or her prior knowledge, experience, and testing.

Every request for proposal should be accompanied by a complete set of specifications. If this cannot be supplied readily by the requisitioner prior to the investigation outlined above, it will be necessary that the buyer make certain the complete set of specifications is prepared before any formal invitations to bid are issued. In some cases, it may not be possible to complete the specifications until after the visits are concluded.

A suggested checklist to assist the buyer in determining if these specifications are complete enough to procure the product will be found at the end of this presentation. A review of the specifications should not be limited to this checklist, which should be used merely to make certain that the specifications are complete.

It was prepared to cover inquiries for capital equipment only, but the same principles apply to the purchase of other materials and supplies.

In order to avoid delays, it is extremely important that all requisitioners give purchasing as much notice as possible prior to issuing requisitions. Needs for machine tools and other capital equipment can be called to the attention of purchasing no later than the time the requisitioning department enters this item in its proposed budget for the coming year. In most organizations, the submission of a proposed budget item precedes the requisition of it by a substantial period of time. Purchasing can then proceed with its research action, as outlined above, well in advance of a requisition and thus frequently be in a position to place the order immediately upon receipt of a requisition.

When any requisitioners or persons authorized to prepare specifications know they need or will ultimately need to requisition a given product, they should be required by the company procedures to make that need or potential need known to purchasing before making any contact with suppliers or potential suppliers. Purchasing should discuss with the requisitioner his or her suggested sources or suggest additional sources it knows to be qualified in this particular field. When it is determined that contact made by other than purchasing people has resulted in correspondence, copies of correspondence must be secured and put in the procurement file.

From time to time it may be necessary for representatives of the using departments to visit suppliers to clarify specifications or to determine whether or not certain design changes can be effected. Such contacts with and visits to suppliers should be arranged by purchasing. In most cases, it will be necessary and desirable that purchasing accompany the using department's representative on such visits.

Requests for Quotation

On all capital equipment and certain other materials and supplies such as production assemblies, purchasing should include the following statements in the request for quotation (and where appropriate, on the resulting purchase order):

- A standard phrase indicating that a regular progress report will be required except in the case of standard items shipped from stock. At the time of issuing the order, the buyer should indicate the frequency of the progress report and other specific and detailed information required. Progress reports should generally contain such information as (1) when the designs will be complete; (2) when the supplier's processing plans will have firmed up; (3) when all the supplier's purchase orders have been issued; (4) completion of tool designs, whether tools will be built in supplier's tool room or purchased from an outside tool shop, and when promised; (5) promised dates on all raw materials and purchased parts required for assembly; and (6) build progress and the estimated completion dates.

- A statement specifically defining the requirements for any drawings to be furnished. This should be required on all special tooling, gauges, and fixtures required for the job. Approval of the supplier's tool drawings must be secured from purchasing before the supplier proceeds to manufacture the tooling or equipment. The purchasing company's own manufacturing engineers can review

- such drawings, and frequently they will discover that certain modest changes will make the tooling adaptable to in-plant equipment. Obviously, to discover this before the special tooling is built is very much to the company's advantage.
 - Arrangements for procurement of spare parts.
 - A statement outlining the field training requirements and/or supplier installations and training responsibilities on company property, and in detail what expenses, if any, such as travel, meals, hotel, and the like, are allowable.
 - Warranty and service requirements.
 - Late delivery penalty consideration.

Checklist for Specifications

To assist purchasing in making a better prequote research effort in the machine tool and special equipment industry, the requisitioner should furnish all the pertinent data available as early as it is known that capital equipment is needed. This information may not necessarily be complete. And lack of information will be rectified by purchasing through channels of research and investigation. Below are listed some of the important general specifications which should precede, or at least accompany, the requisition. These general specifications should be confined to those wanted and should not include copies of specifications from a supplier's catalog.

The following items represent the kinds of things in which purchasing should be interested, but by no means are they intended to limit the requisitioner in the collection of prequote information. The requisitioner should supply:

- Part drawings and process sheets of the items this machine will manufacture.
- General approximate dimensions of the machine or equipment should be stated (these sizes should be compatible with floor space allotment and other installation information).
- Weight range or maximum weight (for floor loading considerations).
- Critical dimensions such as outside and inside dimensions, door dimensions, and other information regarding type of doors, table travel, other effective working area dimensions, and so forth.
- The specific requirements of kinds of metals, temperatures to be obtained, safety features, operating features, special requirements, and so forth.
- Accurate information on the available electric current in the plant.
- Feeds and speeds on all machine tools.
- Detailed descriptions of the accuracies required and the methods that will be used to check these accuracies.
- Coolants—kinds and volume needed.
- Vertical or horizontal machines.
- Angular capacities.
- Description of motors required (explosion-proof and other features, voltage, speeds).
- Traverse, conventional or rapid. Hand-operated screw or hydraulically driven mechanism or both. Detailed description of requirements, simultaneous actuation, and the like.

- Detailed description of attachments, indicating horsepower capacity and special features required.
- Lubrication.
- Requirements for tracer control.
- Kind of programming.
- Requirements for tape/numerical control and associated equipment.
- Special characteristics such as hardened ways, cast iron or steel fabrication, spindle tapers, pendant control, optical equipment, and so on. Any special requirements for rigidity should be defined.
- Information regarding characteristics to be fabricated.

□ *Kenneth A. Cruise*

Records and Forms

The most frequently used form in the purchasing department is the purchase order. Its primary purpose is to establish the basis for a legal contract between buyer and supplier. Generally, the front portion contains all necessary information to describe the specific purchase. Quantity, description, price, delivery schedule, and transportation responsibility are included. And general terms and conditions which apply to most purchases are usually printed on the reverse side. Legal counsel should be sought for development of appropriate terms and conditions. When the original is mailed to the supplier many companies also send an acknowledgment copy to be signed by the supplier and returned—this acknowledges receipt and acceptance of the order. Should a supplier use its own acknowledgment form, it must be carefully reviewed for any changes that would make it a counteroffer rather than an acceptance. In such an instance, the burden of acceptance reverts to the buyer. Often the acknowledgment is sent only for orders amounting to \$500 or more. Internal copies are available for purchasing follow up and files, such as accounts payable, receiving, and stores, and to the originator of the request.

Other forms commonly used are purchase requisitions (to make requests for buying action), change notices to revise a purchase contract, and price history for each item repetitively purchased.

Adequate records and forms should be utilized and retained to ensure effective purchasing administration and to facilitate financial control and audit of a company's purchasing operation.

Many companies have converted from manual record keeping to the use of data processing to greatly reduce the need for copies and the need for manual filing, sorting, and summarizing. □ *John F. Doyle*

Inventory Control

The inventory control function performed by purchasing is usually limited to maintaining the proper levels of inventory of materials needed. The materials needed by production should be maintained in the proper quantities and in a timely manner. This requires purchasing to be sure that the right materials, those needed by production, are available to production, at the right time, in the right quantities.

If materials inventories are kept at the proper level, several benefits will be derived by the organization. Production will be able to avoid costly interruptions due to a lack of materials. This eliminates idle time for workers and machines and maintains high utilization rates of costly equipment, thus reducing production costs per unit. By using materials inventories, production can be leveled, thus eliminating hiring and firing of production workers from one period to the next. If purchasing orders the proper quantities of materials, then economic lot sizes, both purchased lots and production lots, can be used. In addition, purchasing may be able to take advantage of quantity discounts, if the savings due to the discount are not offset by the increase in inventory storage costs.

To maintain the proper inventory levels, purchasing must be aware of production needs (demand), the cost of placing orders, the cost of carrying inventory, and the cost due to a shortage of inventory (stockout). Demand may be a forecast of production needs made by purchasing or production, or both, or it may derive from the firm's material requirements planning system. Order cost is simply any cost that can be attributed directly to the placement of an order. Such things as the labor and materials cost associated with writing the order, the cost of negotiation for that order, and follow-up costs associated with the order should be included. Carrying cost includes any costs related to holding inventory and covers such things as materials handling costs, insurance, pilferage, obsolescence, damage, and opportunity cost. The opportunity cost is equal to the amount of capital invested in inventory that could have been invested somewhere else; thus, many firms use their cost of capital as a basis for figuring carrying costs. Stockout costs are the costs related to being short of material. For purchased materials, production shutdowns will represent the major portion of stockout costs.

The charge of purchasing in the area of inventory control is to buy materials in such a way that demand is satisfied at the lowest total cost of ordering, carrying inventory, and stockouts. □ *Thomas E. Callarman*

Quality Control

Purchasing managers ought to be familiar with quality control. They are frequently called upon to assist in assessing a supplier's quality control program, to assess the quality of suppliers during supplier evaluations, and to interact with quality control people within their own organization. This does not imply that they should be experts in the area, but it does require a working knowledge. More important, purchasing people need to have a level of quality control understanding so that they may effectively communicate and interact with quality control departments.

It is essential that, as quality is defined, a purchasing manager understand the significance of control. This important management function, while applied to many areas, consists of three often misunderstood yet far-reaching and significant steps. First, it is important that quality standards be developed. Such standards may be based on stitches per square inch for clothing, the percentage of defects in a lot, or even the appearance of an item. Second, quality performance needs to be measured. A viable procedure or process needs to be developed to ascertain or gather data and information for assessing performance. It is impor-

tant that this step does not become a paperwork exercise. Last, as performance is measured and compared to the standard, corrective action may be necessary if unwanted trends develop or if quality exceeds the standard.

Choosing an Inspection Program

The maintenance and measurement of quality control are generally based on an inspection program. There are three potential alternatives available: (1) zero inspection, (2) 100 percent inspection, and (3) sampling. Zero or no inspection may be used for items where uniformity and consistency are not important and/or if the item being evaluated is insignificant in cost. One hundred percent inspection may be used where high quality is important and/or when zero defects is a paramount goal, such as with life-saving equipment. However, the cost of this latter alternative may be prohibitive, and in other instances quality assessment may result in the destruction of the item. Therefore, sampling may be a viable alternative.

There are essentially two types of sampling plans—sampling by variables and sampling by attributes. Variable sampling requires that an actual measurement be taken—weight, length, and so on. For sampling by attributes, special types of “go, no-go” gauges are used. That is, the sample is either accepted or rejected—no measurement is taken. For a sampling plan to be effective, it is important that the correct sample size be drawn. This is facilitated by using or developing an operating characteristic curve, generally known as an OC curve. Standard tables are helpful in formulating the curve. In general, the curve is based on the sample size, the number of defects or errors allowed in a sample, and the average quality level or process average of the supplier. Once the quality standard is set and the sampling plan determined, samples are continually drawn and compared to the standard. If necessary, corrective action may be taken. This discussion has been limited to single sampling methods, but the purchasing manager should become familiar with other techniques, such as double sampling and sequential sampling.

Each inspection program (zero, 100 percent, sampling) has distinct advantages and disadvantages. However, the implementation of each rests on the evaluation of two basic costs: cost of inspection and cost of failures reaching production and/or the customer. The purchasing manager would no doubt consider these two costs in controlling supplier quality. But these two costs do nothing but place a quantitative value on detecting quality problems. The important issue, cost of preventing failures, is often overlooked and is an area where purchasing may have an important impact. That is, it is important for purchasing, once quality problems are detected, to find out why there are problems. Has quality been effectively communicated to suppliers, or perhaps is purchasing and/or another organization using the material or components improperly?

Wherever possible, a quality evaluation system, either automated or manual, should be developed to track the quality performance of the major supplier. Such tracking is particularly important not only because manufacturing efficiencies are directly affected by the quality of materials received, but also because it enables the buyer to determine the best ultimate cost from suppliers on the basis of quality, service, and price.

Close, friendly, and courteous cooperation should exist between the buyer's company personnel and the suppliers at all times in order to meet the objectives regarding quality standards. Managers soon realize that while quality control is generally recognized as an objective or quantitative process, the real problem is people. Variations in human performance and attitudes cause more quality control problems than any other single source. It is imperative that suppliers, as people, are provided the proper incentive and are motivated to maintain and control the proper levels of quality needed by purchasing.

Cooperating with Quality Assurance

The quality assurance and purchasing functions will need to work as a team if both functions are to meet their objectives fully. Purchasing decisions should always be made on the basis of quality, service, and price. Establishing appropriate quality levels is imperative. Maintaining quality levels may not always result in the lowest materials prices, but if the quality level has been properly set, it should contribute to lower overall costs and improved profits. When a new supplier is being evaluated, purchasing and quality engineering personnel should visit the plant together and observe quality assurance activities, including inspection and test procedures, standards maintenance and process control activities, and the tolerances and finishes routinely obtained. In general, the team will ascertain the quality level that may realistically be expected from the supplier. This determination plays an important role in evaluating the qualifications of the supplier.

Cooperation between purchasing and quality assurance should also eliminate most of the cross-purpose activity that may otherwise occur. For example, purchasing may overprotect a supply source while, at the same time, quality control is overinspecting the supplier's product to emphasize the existence of quality problems.

Naturally, it may take more personnel to do a comprehensive purchasing job than to do an incomplete or routine one, but that will not necessarily lead to an increase in corporate expenses. When the indirect costs related to shop losses, customer complaints, and lost sales are taken into account, the enlarged purchasing function will usually be found to be cost efficient.

In all these cases, highly visible top-management support will be necessary if potentials are to be realized. Placing the purchasing function at a meaningful level in the organization structure is one way of doing this, and it will give the purchasing organization the necessary access to other functions on terms of greater equality. □ *William G. Enloe, Jr., and Russell W. Morey*

Receiving

Receiving should be organized expeditiously and efficiently to receive, identify, generally inspect, and count material as it reaches the company. Unless damage prior to receipt and quantity accuracy are determined promptly upon receipt, it is difficult to prove that the problem existed prior to receipt.

Receiving should be provided with a copy of the data used to order, usually the

purchase order, so that after unpacking, comparison can be made to the ordering information. The receipt is then documented for accounting, purchasing, and the using department's information. The ordering information should also indicate instructions for rapid internal processing to the point of storage or use. This function is involved in both physical control of materials and financial accountability for payment to suppliers. Taking advantage of cash discounts depends upon the timely verification of receipt of materials or equipment.

Salvage and Scrap Disposal

Industrial firms want to minimize the items or materials which are left over, but it is inherent in most manufacturing processes that some surplus materials, obsolete parts, "trimming," and rejects are generated. Effective disposal can be a significant source of revenue. Since sale of such items or materials closely parallels the purchasing process and often involves the same companies, the responsibility for disposal is generally placed in purchasing.

Among the possible methods of disposal are (1) use within the company; (2) return to the original supplier; (3) sale (generally on competitive bid); (4) sale to employees; and (5) donation to educational or charitable institutions.

□ *John F. Doyle*

Reports to Top Management

Effective purchasing reports, knowledgeably written, are an important facet of the departmental operation. They should always be considered a means to an end and not an end in themselves. Such reports are essential to help people perform their tasks more effectively, providing needed coordination and informational services. Accurate and comprehensive reports to upper management should both appraise results and control activities.

Quality reports to top management provide much valuable information, all of which probably could be classified in one or two major categories: (1) reports which provide needed information, aiding in controlling present operations and in necessary future planning for greater effectiveness; (2) and reports which inform top management of purchasing's contribution to the total corporate structure.

Report Frequency and Content

One type of report (sometimes issued weekly but more often issued monthly) should emphasize certain information of specific value and importance to the corporate chain of command. Purchasing data includes diverse items that include but are not limited to: price, changes in major items purchased, a review of new or enlarged departmental problems, general price trends, required important lead time changes, items currently in short supply or anticipated to be, and specific methods for dealing with current problems in all major categories. In summary, such a report should be as complete and accurate as possible, considering from the procurement perspective all conditions currently impacting on the total corporate picture.

Another type of report, issued on a regular basis, differs greatly in content and approach. This type of report is a newsy, factual summary of internal considerations of value to top management. Specifically, it reviews major categories of internal considerations with emphasis on personnel and related matters, general departmental activities, problems, new methods, accomplishments, and internally generated profit improvement and related procedures.

The report format and specific coverage within each part may differ greatly, but the following are indicative of sections and content.

Statistical data. A recapping of basic statistical information for the period covered, with or without period comparisons and trend indicators, to keep management informed of the variety of activity carried on within the department. Data presented may be as specific as needed or desired. Information provided includes purchase dollar volume, average employee productivity determined by a fair and acceptable standard, and supplier-related information.

Problem areas. Candid and comprehensive comment on specific problems and on management and employee concerns. New developments and new problem areas should be highlighted and discussed. A positive attitude should be taken, with emphasis on potential or actual remedial and/or corrective measures taken or projected and on the positive effects of such action.

Research activities. Diverse information ranging from research-oriented savings as a result of newly applied methodology to ongoing research potentially offering measurable and worthwhile savings. In either category, the reported or estimated savings may be shown as a percentage of total purchases or as a dollar amount with incremental units shown.

The future. Clear statements of anticipated needs, including additional personnel, necessary equipment, and added facilities to meet greater than expected future demands upon the purchasing area. Emphasis in future planning should be on any needed cooperative or coordinated actions.

Clear, concise, correct, and complete communications should always be emphasized in purchasing reports. Only essential and appropriate information should be prepared for top management. When appropriate, carefully selected visual aids are helpful for clarity of presentation, maximum effectiveness, and potential value to the recipient. □ *Robert D. Henderson*

Management by Objectives (MBO)

In a survey of middle managers it was found that a "significant number of managers are dissatisfied with their job situations. More than three-fourths say they want other positions that offer greater responsibilities . . . 67 percent say they do not have regular progress reviews with their bosses. And 57 percent have not set specific, detailed work goals with their bosses, while 41 percent say their jobs do not challenge them to make full use of their capabilities. . . ."

It is not difficult to understand these negative attitudes if managers do not regularly have an opportunity to participate in the goal-setting process, monitor their progress, and review their accomplishments with their immediate managers. Management by objectives, while not a new concept, can be of substantial help in meeting these needs.

For an MBO program to be most effective, it should be applied throughout the organization, from the chief executive down to and including first-line supervision. MBO provides an excellent means for communicating company goals (as defined in the CEO's objectives) as management at each successive level establishes targets and assumes responsibilities that relate back to company goals.

It is significant that purchasing managers led the list of dissatisfied managers in the survey. Perhaps part of the cause stems from purchasing's low profile in many firms and lack of upward communication. A good MBO program can help to remedy this situation.

Attitudes

Management attitudes can go a long way toward determining the success or failure of an MBO program, and once established, the program can do much to improve management attitudes. Purchasing people should want to be measured as measurement provides a basis for better recognition of their contributions. Responsible individuals who reach the realistic goals they have helped set can be appropriately rewarded.

Goal Setting

Objectives define the direction toward which an individual or group wishes to move; and goals, or targets, specify the levels of accomplishment that have been set. They should be stretching but attainable. Subsequently, comparisons of realized to planned accomplishment will measure individual effectiveness or degree of contribution. As each organizational level begins to develop its own objectives and goals, it has the goals and objectives developed at the next higher level for guidance. And as each level of management develops its objectives and goals, it adds the details and specifics that will implement the more general goals and objectives of higher management. In this way a meaningful and coherent set of guidelines and expectations can be set for the entire company.

Objectives and goals that are very general at the top become increasingly more detailed and specific as the program is implemented throughout the company. Typical company (and CEO) objectives relate to profitability, growth, asset utilization, personnel development, new-product development, capital expenditures, marketing effectiveness, productivity improvement, social responsibilities, energy conservation, and quality assurance. For each of these areas the chief executive will identify an appropriate objective. For example, taking into account the overall potential of the company and external factors affecting its performance, he or she might set objectives to improve profitability by 10 percent annually, to increase the corporate share in the market by 15 percent over five years, or to reduce energy consumed by 5 percent. In preparation for setting these objectives, the CEO may have tapped a variety of sources, including industry studies, evaluation of corporate operations by an outside consulting organization, and consultations within the organization.

Each corporate objective must be broken down into its components, and objectives, goals, and plans developed to the point where attainment of the objectives seems assured. With respect to profitability, for example, two major factors are the costs of goods sold and the income from sales. Since purchased items usually

represent a major portion of the costs of goods sold, purchasing effectiveness has a direct bearing on profitability. After reviewing objectives and goals set by upper management, purchasing managers will develop their own objectives, goals, and plans, consistent with those of their superiors.

The process of setting objectives and goals and the associated planning, described here in simplified form, may in actual practice require more than one set of up-and-down communications within the company. Generally speaking, goal setting flows downward in the organization, and planning flows upward. Planning and goal setting interact, so that if goals have been set too low in relation to planned performance, they can be revised upward. If they have been set higher than planning will support, and the planning cannot be improved, the goal can be adjusted downward. By this kind of iterative process, plans and goals are brought into realistic alignment. □ *Edgar B. Wycoff III*

CONTROLS IN THE PURCHASING OPERATION

No management function is performed today without some element of control. Government regulations, corporate structuring, and management philosophy by their very nature impose some degree of regulation on the function being performed. The procurement function does not escape these restrictions.

The real question to be considered is the degree of control. Overcontrolling this function imposes on the upper levels of purchasing management a morass of paperwork, while undercontrolling may result in a very loose and ineffective operation. Purchasing management has to strike a fine balance between these two extremes.

Authorization Limits

The concept of authorization limits has many advantages to a purchasing activity. First, the review of limitations is useful for long-term commitments. Also, the limitations protect a buyer when upper management makes decisions that affect the purchase without the knowledge of the buyer (for example, design changes). Finally, authorization limits may be useful in a centralized function with the total corporate cost information readily available to determine total cost impact.

The amount of authorization limit and the management philosophy behind the concept varies with each company. It is recommended that the purchasing manager, knowing the responsibility of the buyer, select a limit that will coincide with the buyer's compensation level and will facilitate a buyer's job to prevent major future cost penalties. The limits should not be considered restrictive, but rather informative and beneficial.

Policies and Procedures

Policies and procedures are a necessary part of a successful purchasing activity. Policies are corporate or departmental guidelines that define the scope and intent of the purchasing function. Procedures detail the *how, when, what, and who* of the

buying function. Because the purchasing activity inherently affects personal relationships between parties who are highly visible and open to scrutiny, policies and procedures must encourage good business ethics. Propriety and integrity are two essential components of all policies and procedures.

The effectiveness of the policies and procedures depends on the systematic evolution of communicating concepts. Purchasing personnel need to know what is intended and expected in performing their buying function and in developing internal and external relationships. Procedures propose a policy direction which in combination with management's long-term goals reduces reactions to specific one-time conditions. Too often policies and procedures are a restraint because of imposed limitations, unclear purpose, and restrictive rules reacting to exceptional situations. The safeguards before implementation are careful review and cautious evaluation.

Policies and procedures should reflect an evolution that works to the benefit of the purchasing operations by allowing for buyer initiative, systematic purchasing growth, and a common understanding for implementation. Policies and procedures should be recognized as a constant and necessary function giving continuity, cohesiveness, integrity, and clear guidelines for the benefit of the purchasing activity and the entire organization.

Centralized versus Decentralized Purchasing

With changing economies, exchange rates, materials, and worldwide sourcing, a centralized purchasing function can be advantageous. Some objectives of centralized purchasing are to reduce materials and manpower costs, prevent scarce managerial resources, promote purchasing advantages across divisions, handle recurrent shortages (concentration of purchasing power on demand side), efficiently use computer-based management information systems, and maximize worldwide sourcing capability.

For centralized purchasing to be successfully implemented, certain factors need serious consideration. First, the most important factor is the need for top-management support for the concept. Next, extensive consultation with divisions is needed to determine the nature and structure of a centralized purchasing function. Also, the divisions need to participate in this phase for acceptance and commitment to the concept. Once the centralized concept is to be implemented, gradual adaptation is essential for most efficient adjustment of personnel, equipment, and work factors. The development of buying teams can be useful where appropriate to help efficiency. Finally, revision of monetary, promotion reward policies for the centralized function should be recognized and adjusted when the concept is being implemented.

There is potential resistance to centralized purchasing because certain individuals perceive a loss of direct control of the purchasing function in a decentralized profit-center management philosophy. Also, there is the probability that communication problems and disruption of purchasing relations with plants will occur. People generally resist a major change, and initial confusion may occur when changing personnel and systems; personnel may feel insecure and threatened.

However, management can effectively deal with these concerns by planning ahead and being very sensitive to employee thoughts and feelings. Finally, the regionalization concept, which is a compromise between decentralization and centralization, may be more acceptable for achieving a cohesive purchasing activity.

Centralized purchasing is as good and as effective as the feedback from the decentralized activity. It is mandatory that divisions share price, quality, and delivery concerns with the centralized function. The corporate headquarters need flexibility for meeting divisional needs and execution of supplier agreements. Contracts for services, supplies, and components must be continually evaluated on the basis of information received from divisions as well as the corporate planning level. Significant effective effort, sophisticated computer systems, and communication codes are necessary to do the right job. If implemented, centralized purchasing can show numerous cost-reduction advantages.

In summary, the centralized purchasing function may be very advantageous and create significant cost savings. However, the decentralized concept also maintains advantages. For example, there are short, direct communication lines between users and purchasers. This is especially advantageous where quality, reliability, and durability of highly technical, custom-designed parts is a factor.

Overall, each organization must identify its company's long- and short-term goals, the scope of the purchasing activity in the company, and the major needs of the department. Once these are identified, they can be evaluated and a decision can be made on which purchasing concept is most applicable and effective.

□ *Robert B. Stone*

Personnel Selection, Development, and Evaluation

A professional purchasing staff is essential if a company is to realize maximum effectiveness in a department frequently responsible for committing over half of the company's expenditures. Organizational objectives, operational guidelines, and clear, concise job descriptions should be written, communicated, and understood. The possibility of successful personnel selection can be greatly enhanced when teams of skilled interviewers from personnel and purchasing who are familiar with the department's requirements are involved in the entry process. Selected formalized training for entry level through the executive level combined with a well-planned work experience program can contribute significantly toward the development of a well-balanced professional purchasing organization.

The following are specific selection and training recommendations for successful purchasing functions. First, there must be constant recruiting, with a regular awareness of any potential purchasing professional. Second, classes for purchasing personnel need to include topics related to *all* aspects of the product (engineering, marketing, financial, international, among others). Classes should also be held on future trends in purchasing. One-year "extra information" programs should be provided for every new purchasing person (lectures, reading, seminars, on-line information, and the like) to help the individual assimilate the

purchasing culture more quickly. Finally, the assessment center concept could be applied in selection of purchasing professionals; this is a consideration for future development in purchasing selection techniques.

In summary, the selection and training of purchasing professionals is critical. The responsibility of any purchasing professional demands highly competent, ethical, and conscientious individuals.

Professional Development and Training

The purchasing function is constantly changing and dealing with both internal and external sources. Therefore, the purchasing professional must be aware of current concepts and future trends which could provide the most efficiency and effectiveness for the job function and the organization. Professional development should be a high priority to maximize personnel and organizational resources. The following are recommendations to make the purchasing discipline more functional and competitive with other disciplines in the organization:

- Regular promotion of professionals, and constant search for potential job candidates by competent purchasing individuals.
- Sharing of successful purchasing concepts and opportunities across staff and divisional purchasing, as well as with other companies in the community, state, and worldwide.
- Participation in professional purchasing organizations and their activities.
- Attendance at purchasing training programs as well as classes that could help the discipline/organization in the future.
- Institution of formal performance appraisal systems for purchasing individuals as well as suppliers.
- Recognition for activities purchasing individuals perform internally and externally to help the organization and the purchasing discipline.
- Active contribution to education for better preparation of future purchasing professionals (papers, lectures, visits, and the like).

Training Programs

The primary objective of any buyer-training program is to provide the buyer with the tools, techniques, and knowledge that will allow him or her to manage a business relationship effectively. The term "professional" applies because a great deal of the material can be taught within an academic environment.

More and more colleges and universities are offering relevant formal courses in both degree and certification programs. Further, professional programs (seminars, workshops) are offered by organizations such as the American Management Associations, the National Association of Purchasing Management, and local purchasing associations.

Only large companies can afford to develop and conduct their own training programs. The majority of firms in the United States, however, are small and in need of outside professional training.

A partial listing of training subjects would include negotiations, cost and price analysis, value analysis, contracts, industrial economics, and business ethics.

Through these subjects, and others, buyers in their new role as manager of a business relationship gain the capability of evaluating all factors that can affect the buying-selling decision. This type of training supports a fairly new concept—that the buyer and the salesperson are not in direct conflict, each attempting to outdo the other. The buyer accepts a role of manager and attempts to develop a relationship utilizing the strengths and minimizing the weaknesses of both the buyer and the seller in a total business relationship.

The industrial purchasing person of today should play a basic part in the company's operations. Such persons can, through their skills and knowledge, contribute in a major way to the success of the company.

Professional Certification for Purchasing Managers

Qualified individuals in purchasing or materials management now have an opportunity to move to a new level of professionalism as certified purchasing managers (C.P.M.s). The certification program of the National Association of Purchasing Management (NAPM) establishes standards of competence and proficiency in purchasing and materials management, and provides for certification of those who meet the standards.

The NAPM standards represent minimum levels of formal education, experience, and professional contributions required for certification for a five-year period, after which recertification is required. The standards thus serve as a goal that can be reached through study, training, and passing the required examinations. The significance of the C.P.M. designation, however, goes far beyond the established minimums. Attainment of C.P.M.:

- Is evidence to employers that a person has spent time and effort in preparing to render a professional standard of competence.
- Highlights a willingness and ability to stay abreast of developments in purchasing and materials management.
- Indicates to management that really effective purchasing and materials management personnel can relate their activities to organizational goals. This implies awareness of the interrelationships of the functional areas of the company or corporation and the major strategic problems it faces, such as competition.

Participation in the NAPM certification program is preparation for a broader role in management. Certification should not be viewed as a purely specialized achievement that would tend to limit one's sphere of knowledge and expertise. The certification program is a cooperative effort to advance the status of purchasing in the business community. Examinations are given twice each year and administered in all 50 states.

Certification is open to all engaged in purchasing or materials management, NAPM members and nonmembers alike. The only prerequisite for eligibility is a minimum of five years of experience in purchasing or materials management or a degree from a recognized four-year college plus three years of related experience. In addition, applicants for certification are evaluated on the basis of results of four examinations, experience, and contributions to the purchasing pro-

profession. They earn points for specific accomplishments in each of these categories, and must accumulate a minimum total of 70 points to qualify for certification, 35 of which must be earned by passing the four examinations.

Evaluation of Staff Performance

It is imperative that purchasing managers develop fair and candid evaluation programs for determining the performance of their buying staff. Periodic evaluation, which gives the manager a knowledge of the buying staff, will also result in more effective motivation. However, if evaluation is treated as simply a routine chore, impact on the motivation and morale of the employees can be disastrous.

Frequency of evaluations may vary from one company to another. Many companies believe once a year is sufficient, but employees develop a much better understanding and attitude with semiannual reviews.

Several major areas can be evaluated. Some of the most important are the quality and quantity of work; the buyers' knowledge of the items assigned to them; success with cost savings objectives, such as value analysis and negotiations; dependability and willingness to cooperate; ethical conduct; leadership abilities; and the success in meeting quantified goals and objectives with established completion dates.

It is most important that employees know at all times how they stand with their supervisors. Without fair, honest, and candid appraisals this understanding cannot be achieved. Although buyer evaluations are often considered necessary evils, they are a vital part of a manager's responsibility and must be taken very seriously. Purchasing managers should consider how they would like to be evaluated by their own supervisors and treat their own people in like manner.

□ *Charles L. Blue, Floyd D. Hedrick, William G. Enloe, Jr., and Robert B. Stone*

Financial Control

Good financial control is essential to any business operation, and purchasing people need a good, basic understanding of costs and their components. A buyer is in a good position to identify materials price trends if he or she has developed good sources of supply and can rely on their forecasts. If this information is incorporated into the standard materials costs projected for a budgeting period, it becomes possible to measure this aspect of purchasing effectiveness by comparing budgeted costs with actual costs. Often these comparisons will highlight areas that should be considered for cost reduction—for example, design changes, materials substitutions, and the development of new sources. In times of generally escalating costs this kind of collaboration can be especially important. Purchasing can make a major contribution to profits by holding the cost line. In addition, collaboration with finance often makes a reduction in administrative expenses possible by eliminating duplicated work, records, and information processing.

Budgets are the guide for the purchasing function. To maximize budgeting effectiveness, it is necessary to identify the staff function and build on it. The following are basic steps in developing the budgeting strategy: (1) Know the objectives of the purchasing activity, (2) define the organizational structure needed to

meet the objectives, (3) determine personnel positions, and (4) identify budget categories to accomplish the goals of personnel positions (facilities, equipment, supplies, professional development, recruiting, travel, periodicals, and so on).

A budget is also a reporting mechanism of monthly performance against annual expenditures. The critical point, upon implementation, is determining controls for expenditures and who will monitor the controls. Once this is determined, the budget will be useful only if management encourages use of the controls as a guide. Regular review of budget procedures maintains an effective budget. □ *Leonard A. Larson and Robert B. Stone*

ANALYSIS AND PLANNING IN PURCHASING

Analysis and planning are management tools that keep a company competitive and sensitive to changing needs of its customers. To make meaningful contributions to the specific goals and objectives of the company it serves, purchasing must be proficient in its use of these tools. The function of planning is to deliberately seek ways of advancing the effectiveness of purchasing; and planning itself must, of course, be based on careful analysis.

The experience of most large companies indicates that an organization group reporting to the director of purchasing is needed to ensure that planning is accomplished. This group functions as the general staff does in the military for planning operations. Men or women in this activity should be seasoned and experienced purchasing people who have developed convictions concerning methods of realizing more effective performance.

Whether or not a company can justify a full-time purchasing analyst or planning group, the principles are the same. Managers in any function who "fail to plan—plan to fail." Time must be budgeted for this purpose, particularly for a function such as purchasing in which an average of 50 percent of the revenue dollar is probably being expended.

The focus of the purchasing analysis and planning effort should be on the management decisions needed to improve performance. Such issues as purchasing policy, organization, procedures, controls, interaction with other functions, more advanced techniques of decision making, staff support in essential materials decisions, training, and personnel planning should be thoroughly studied. From this effort, specific plans of benefit to the particular company should evolve.

The Planning Process

The planning process is developed by the manager, who delegates specific analysis and planning tasks to the staff. The manager sees that the staff knows and understands the objectives and needs of the enterprise. Purchasing plans are then prepared which support corporate objectives and programs. Planning is iterative—a back and forth series of thrusts toward acceptance. Purchasing should provide short-term and long-term forecasts of unit prices and availability

of principal purchased items. The forecast prices become elements of product line business plans, which in turn go into business unit consolidations. Finally there is gathered a proposed corporate plan for general management review and approval. Usually the final corporate plan, somewhat modified from the proposal, is released with some stated priorities and with allocation of resources. This corporate direction enables purchasing people to complete or modify procurement programs for specific items, as well as to plan departmental operations.

Even at this stage, plans are not static nor are all business units in an organization at the same stage of development. The purchasing manager must keep informed on current and forecast sales, inventories, product mix, and operating rates. Changes in capital or maintenance programs, along with probable acquisitions and/or divestitures should also be known. With this knowledge as well as good sense of the outside supply environment, purchasing plans can be adjusted to suit current conditions.

Involvement of department members is important and helpful in developing and reviewing policies, plans, and procedures for purchasing. Similarly, business unit people should be enlisted to participate in developing supply plans. Suppliers, too, should be asked for their thoughts on supply program improvements.

Sharing of completed plans for purchasing department operations with managers of other functional groups as well as with business unit managers and corporate management is recommended. In this way they are provided information on objectives and programmed activities, and concurrence, albeit tacit at times, is obtained for the steps to be taken in the planning period.

One of the prime responsibilities of purchasing is to fulfill general management's urgent need for advance information concerning both short-term and long-term aspects of the cost of purchased materials, availability, market trends, new processes or materials, and the like. Effective planning must be preceded by selective analysis of worthwhile opportunities. Some of the major sources of required information should therefore be reviewed.

Sources of Information

Many progressive companies commit their forward plans to writing one, five, or even ten years ahead of anticipated events. These plans and the resultant capital and expense budgets should be made available for careful study and analysis of purchasing operations. Under ideal circumstances, purchasing should contribute to the formulation of these planning documents, particularly in view of the ever rising percentage of the revenue dollar that leaves the average manufacturing company by way of the purchasing function.

Purchasing must stay abreast of the forward plans of principal suppliers of materials, supplies, and equipment essential to the continued profitability of the company. This information is readily attainable through effective communication with the suppliers' general management, sales personnel, marketing analysts and research groups, as well as government, trade journals, and local professional purchasing associations. It must not only be sought; it must be carefully analyzed and thoughtfully interpreted in terms of the company's special needs.

Thus, purchasing can be a valuable source of commercial intelligence to the personnel of a company by furnishing information on what the firm's competitors are doing in terms of new materials and manufacturing processes.

Another source of information is a carefully recorded history of the past purchases of a company. However, analysis of the past is only important if coupled with a realistic viewpoint of the future.

Intelligent use of all three major source areas by purchasing is needed. Just as in any other management activity, meaningful data must be analyzed, worthwhile opportunities selected and planned out, and plans committed to writing so that they can be carefully evaluated by knowledgeable people from many functions. Purchasing should be required to operate in this manner.

Systems should be developed for comprehensive quarterly or annual reports of money spent for purchased materials and services, by category, location, and supplier. Similar information on estimated future needs of key items should also be developed. For cost analyses, data are needed on department operations from period to period, monthly expenses for personnel, benefits, rent, telephones, travel, memberships, supplies, and postage. Information on number of transactions, savings, personnel numbers, and the like is used for analysis of buying unit operations.

Buying Responsibilities

Specific areas that must be analyzed and planned if a company's purchasing function is to be effective will be obvious from the questions that follow:

Flow of purchasing expenditures. How is your company's money being spent now?

Corporate interest materials. What reasoning should be advanced on the methods of selecting materials of corporate interest? In a particular business, which specific materials should have the strongest corporate focus? Which materials are better purchased at the local level? Is sufficient attention being paid to these essential items by general management?

Future needs. What are these needs? What systems are needed to enable management to make imaginative decisions regarding future material requirements sufficiently far in advance?

Markets. Is purchasing alert and sensitive to markets in which it buys, so that it can make better decisions than its competitors? Will essential items be available in the right quality, quantity, and place—and at the right price—one, three, or five years from now? Is the technology changing? Will new materials or equipment lessen or heighten the company's competitive thrust? What is happening to the suppliers' markets for raw materials? Should the company shift its policy to make rather than to buy? When is the best time to buy? Purchasing should acquire sufficient knowledge in this area to accurately predict the future direction of key markets.

Value decisions. How can purchasing make more effective value decisions beyond the arrangements of supply at a certain price? General management can help in at least two ways. First, it can encourage the participation of purchasing as a team member in planning the development of new products; and second, it can

insist that purchasing make judicious use of the various analytical techniques at its disposal, that is, value analysis, purchase analysis, price analysis, and cost analysis.

Source development. Does management consider purchasing as a link between the company's needs and an endless variety of outside resources? Purchasing should be expected to ferret out suppliers who are leaders in new ideas, new processes, new materials, and overall management.

Negotiation. Is negotiation preceded by considerable analysis and planning? (This subject is covered in detail in the subsection titled "Techniques and Procedures in Purchasing.")

Supplier selection. Is purchasing choosing suppliers on a rational basis for long-term needs of the company? These capabilities must be accurately assessed, following the critical analysis of supplier strengths and weaknesses: financial, managerial, innovative, technical, process, logistic, and geographic factors as they apply to the company's precise short-range and long-range needs.

Planning Specific Purchases

Important continuing purchases deserve periodic written procurement plans. Such plans, prepared in a series of steps, collect past usage and prices paid, qualify suppliers, show expected future needs, spell out objectives for value improvement, show how inquiries will be made, outline negotiating strategies, and in an epilogue evaluate supplier performance.

Plans can be developed for individual raw materials, fuels, components, classes of packaging, maintenance services, project material requirements, and supplies for maintenance, repair, and operating. This periodic planning technique focuses the purchasing manager's analysis on a specific requirement. Special elements of such plans might be value analysis, cost analysis, standardization, delivery lead times, make versus buy, lease versus buy, quality control, inbound transportation, and terms of payment. Procurement plans are also used for significant nonrecurring needs such as machinery, major repair programs, and construction of new facilities. Plans are usually reviewed and approved by purchasing and financial management.

This type of planning can be implemented by having each purchasing manager prepare an annual written plan for the most important items purchased. Preparation that is scheduled over the year will spread workloads and will assure thorough attention where value and other factors are important.

Normally there is not enough time to study each need carefully every time it occurs. Concentrating on time period requirements of a significant item or class of items permits the purchasing manager to review plans of previous periods, analyze alternatives carefully, counsel with management, and construct a favorable supply program. This style of buying operation places attention where it counts.

Nonbuying Responsibilities

Purchasing generally requires staff people specifically assigned to nonbuying responsibilities; otherwise, these planning activities of a general but essential nature

are done poorly or not at all. Individuals carefully selected, highly trained, and motivated toward excellence are, of course, the key to the ultimate success of a company's purchasing operations. To achieve this success requires careful analysis and planning effort within certain broad areas which, again, will be obvious from the questions that follow:

Policy decisions. What general objectives should purchasing have for the company? What specific policy decisions will help corporate buyers and purchasing personnel in decentralized operations make better decisions in the future?

Procedures. What procedural changes are needed to simplify the flow of paperwork?

Controls. What controls are needed to satisfy internal auditing needs and assure top management that needed, decentralized decisions are being properly made?

Organization. What plan should be made to design the organization to ensure that the general objectives of purchasing are realized and that emphasis with regard to company needs is correct?

Personnel resources. What specialist skills are needed?

Training. What training will be effective in developing the specific skills needed?

Decision making. What techniques and specific staff support will lead to more competitive decisions on essential materials?

Interaction with other functions. What plans can be made to effect better interaction with other groups in decision making, especially in the materials design stage?

Measures of performance. What measures of performance can be devised to provide top management with purposeful insights to purchasing results?

Management should expect its purchasing function to identify problems that limit optimum purchasing performance and to create plans and programs that will convert weaknesses into strengths. Effective management of purchasing deserves the same careful attention as is normally given to other functions that are directed toward profit. Purchasing should be seen as an activity that can be used by planning to develop business decision makers—an ideal training ground for general management. Virtually every decision made by purchasing is a dollar decision, and these dollars should be wisely invested to increase the capital available for profit-seeking opportunities.

Results of Planning

The principal measure of effectiveness in planning is the general competitive edge of purchasing performance. Realistic measures may be reduction in the unit costs of essential purchased materials, standard costs lower than projected for new products, or lowered costs of products from an acquired facility. More important may be the confidence of top management and, as a result, the participation of purchasing in top-management decisions.

Among the outputs of planning may be the following: definable policy and general objective statements from the director of purchasing; carefully thought-out controls in a variety of forms; analyses of the flow of purchasing expenditures, with recommendations for management action; the projection of future

needs for essential materials; staff support in essential materials decisions; and market studies of essential materials; suggestions for improved organization and definition of training objectives and advancement of specific programs.

Materials Management

Materials management is a concept which seeks to centralize under one manager the various functions of a business concerned with the flow of materials from determination of requirements to delivery at the production line. Some of these functions are planning, scheduling, purchasing, receiving, stores, warehouse, inventory control, production control, traffic, and distribution, among others. This idea creates a new layer of administrative effort in the corporate structure.

Considerable difficulty has been experienced by many companies in finding people who have adequate knowledge of all the subfunctions being centralized and who are capable of managing them effectively. Managers have been chosen from such areas as purchasing, production, and traffic as well as others in the materials flow cycle.

The advantage sought by this centralization is better coordination of the various functions involved in the total materials flow process. In most cases, however, the centralization has not changed any of the individual operations of the departments involved or their interrelationships. It has merely removed them one step further away from top management. This, as well as the tendency for each of the department managers to compete and strive for the materials manager position, tends to set into motion political power plays capable of disrupting an entire organization.

For details on the materials management concept, see Section 4 of this Handbook, on manufacturing.

□ *Charles L. Blue, Albert J. D'Arcy, Leonard A. Larson, and Donald L. Murphy*

TECHNIQUES AND PROCEDURES IN PURCHASING

The manner in which technical details of procurement are handled must be determined from an established course of action and communicated by defined policies. Such policies must provide the method of action selected from among alternatives and in light of given conditions to guide and determine present and future actions.

The development and establishment of purchasing policies is the responsibility of the assigned executive. His or her role includes responsibility for review, revision, maintenance, and distribution so that policies may be kept current and compatible with the company's operations for meaningful procurement performance.

Implementation of these policies should be carried out in the specific manner set forth in applicable procedure or instructions developed to direct procurement activity. This leaves room for sound individual judgment and direction and encourages reference to supervision of any questions of interpretation, clarification, or applicability to an individual case.

Value Analysis

Value analysis, a proven cost-reduction technique, is one of the tools a competent buyer uses. Value analysis can be as simple as a "study of value" to achieve lower costs. But it is not solely cost reduction. In the strictest sense, it is an organized approach to study value and cost relationships (sometimes termed value engineering) with an objective to improve performance. Value analysis provides the same or better quality but at reduced cost.

In simplified terms, the first step of value analysis is to identify the basic function of the item under scrutiny, preferably with just two words. For example, a pencil "makes marks." Step two involves a speculative or brainstorm approach. All ideas that would do the same "makes marks" function would be listed. Step three is analyzing those alternatives, or as some would say, "blast and refine" the suggestions analyzing associated costs. Step four is deciding on an alternative way to provide the function but at lower cost. Finally, step five is implementation of the new design, method, manufacturing process, packaging or shipment method. The transition from the decision, step four, to implementation, step five, usually is most difficult in practice. Many companies have shown a cost reduction of 25 to 35 percent and more resulting from a formal value analysis/value engineering team approach.

Key elements of a successful approach to value analysis are: wide scope of information collected, costs well identified, functions defined and evaluated effectively. These elements must be augmented with top management's full support. In larger organizations, a separate value analysis section may exist, but usually only one person is responsible for the program. Teams consisting of personnel from such departments as product engineering, purchasing, production, and manufacturing engineering undertake the study. The coordinator's role is to screen new projects, assign them, see that teams meet, and report results to management.

In the course of value analysis many charts are developed, and component displays and supplier participation are encouraged. A creative variety of visual presentations can help promote effective value/engineering analysis.

Whereas cost reduction in most companies is a part-time activity of many individuals, value analysis is an intense approach by specific people using value analysis techniques, thus bringing new and collaborative information into the decision process. Value analysis evolved from simple value/cost studies into a distinct, disciplined team approach. Various functions work cooperatively to eliminate unnecessary costs, resulting in cost reductions that need not lessen quality—actually it is often improved. The study of cost, price, and value and the relationship between them may bring about insights leading to desired change. Studies of these relationships are the essence of value analysis.

Make or Buy?

The choice to make or buy rests with top management, since manufacturing involves use of the plant's capital equipment and its manpower availability. The purchasing department must be able to evaluate the factors in a make-or-buy decision and furnish such information to management.

The quantities of materials and parts required and their time needs are essential factors in proper make-or-buy studies. Buying may become necessary at times due to a lack of production capacity. On the other hand, capacity may be available to fabricate parts previously purchased. The economics of this decision must be carefully weighed to overcome either plant or purchasing pressures.

Each component used in a product can be either purchased or fabricated. Although most companies prefer to manufacture their own components, many factors make this uneconomical or impractical. The decision to manufacture a component or to purchase it is based on the costs involved and the availability of productive capacity and acceptable suppliers.

Components should be purchased (1) when the component requires an extensive investment in new plant or equipment, which is contrary to corporate financial objectives; (2) when current facilities can be more economically applied to other corporate use (for example, although the company can machine nuts and bolts, the machine tools that would do these jobs are producing more intricate income-producing components and parts—a return on investment factor is involved here); (3) if manpower is not available to manufacture the component; (4) if extended production levels exceed current capacities; or (5) if a supplier controls the supply of special components as a result of his skills or rights.

Conversely, a company should manufacture its own components when it can produce them more economically and with better quality than it can purchase them. Special care must be exercised to ensure that all costs are considered. The company should also manufacture when its manpower and facilities are available to produce the components economically, when the labor agreement prohibits farming out certain work, or when there are no suppliers who can or will produce the components. The last consideration is often the case with specialized parts whose suppliers find it uneconomical to produce the component in the quantities required or to the specifications needed by the customer.

The decision to make or buy must be based on the judgments of all concerned functions. Although the ultimate recommendation is made by production engineering, it can only be valid if purchasing, industrial engineering, quality control, and others concur. For this reason, a committee of these people frequently weighs the alternatives and makes the recommendation.

The make-or-buy program must be evaluated constantly for both current and new components. Internal (make) or external (buy) factors change, and change can mean that a revision of prior economics is in order.

Competitive Bidding

Recognizing a wholesome and active bid policy not only is fundamental to cost reduction and control, but also provides discipline and stimulus to the market and serves to attract new supplier capability. Purchasing policy should establish the necessity to competitively bid every requirement to be purchased. Any exceptions in actual practice, under analysis, must meet one or more of the following conditions:

- Single-source item (according to the specification drawing) when it is not considered practical, desirable, or possible to establish a new source at the time.
- Schedule does not permit sufficient time for quotations.

- Quantity involved is so small that possible savings through bidding would be offset by expense of bidding, moving tooling, qualification testing, or starting costs.
- Published price lists are available or standard prices are quoted; they are the same throughout the market for the item or material to be purchased.
- Tooling is in existence and in use on other orders, schedule considerations make its movement impossible, and cost considerations make its duplication uneconomical.
- Very recent bids have already established a logical course of action.
- The commodity to be bought is subject to a definitive policy or pattern of purchase designed to ensure maximum price advantage without competitive bids.
- The purchase is spare components of supplier proprietary items where production procurement has already established the source of supply.
- Purchase order is placed under terms of a central procurement, corporate-wide, or negotiated contract that was competitively bid by the written quotations on which the contract was based.

Any exceptions should be subjected, where appropriate, to a competitive sampling of the market sufficiently often to assure that the maximum price advantage has been obtained.

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Negotiation

Negotiation is the art of bargaining with suppliers to obtain the most value possible for the price. In arriving at the "most value" one recognizes that values are relative and must be weighed against each other. Quality, service, performance, business relations, reputation, ethics, costs, profits—these are some of the values of consideration. Negotiation is the buyer's prime means not only to arrive at the lowest competitive cost but also to protect the financial interests of the company.

Objectives in Negotiation

Before every meaningful negotiation objectives should be established and priorities established for their accomplishment. It is essential to determine what is important in a given environment, such as performance guaranties, quality, price, delivery, technical service, cash flow, liabilities, and warranties. The most important objectives to the buyer are counter to those of the seller. They should be realistic and in keeping with the supplier's ability to perform.

Equally important is establishing objectives for what not to give up during the bargaining process. They should be in keeping with the business conditions of the day—the buyer should know whether it is a buyer's or seller's market for each objective.

When to Negotiate

Negotiation is used when the potential values to be obtained warrant the time and effort of negotiation. Price is only the most obvious of negotiable values.

Often more important are considerations such as warranties, time, performance technical service, warehousing, quality, insurance, time payments, innovative ideas, and assurance of supply.

Negotiation is normally not warranted for routine purchases of commodity type items on which competition limits costs and profits to a logical level. Negotiation is usually desirable when the specifications are not clear, when the usual terms and conditions of a purchase/sales order do not properly cover the situation, when the purchase is of high value, or when the item or qualities are outside the usual competitive supply range.

Conduct of Negotiations

Negotiations of low value potential or of little scope can be handled off-the-cuff. Negotiations of significant scope should be thoroughly planned and the negotiation conducted accordingly, deviating only when the person in charge indicates the deviation. If confusion develops, it is best to ask for a recess for caucus.

The buyer should try to control the negotiation unless the tactic is to let the supplier lead. Following are several guidelines for buyers:

Attempt to keep discussion on the issues important to the buyer. Hold to the plan, bringing issues to the table in their planned sequence. Convert supplier's issues to versions of the buyer's issues, watch supplier for reactions, and keep discussion under emotional control—change subject or call recess if necessary. Be sure issues are clearly defined and understood. While there are disagreements or strong objections let the discussion run. Don't beat a dead horse—make your point and then go on. If stymied on an issue, leave it, go on to a new issue, and come back later. Sparingly give in on the minor issues in order to gain on a major issue. When there is agreement, write it down and read it out loud—have the supplier initial the agreement. On the issues of disagreement, be sure to define the disagreement—it may be beneficial to write this down also.

Negotiation or bargaining techniques and tactics are numerous. Professional negotiators are well versed in the art and usually know what the other is doing—that “gamesmanship” is usually fruitless. However, there comes a time to close discussion, to postpone it to later, to decide to agree or not to agree. By all means be sure that both sides are positive about what was in agreement as well as the points of disagreement. Agreement principles should be put in writing and initialed by both parties—at least by the writer.

Ethics of Negotiation

What is ethical or not ethical lends itself to personal interpretation, but it is generally accepted that in a negotiation the parties are expected to be truthful in what they say. However, negotiators are not expected to tell all they know, particularly if the information is detrimental to their position. Purchasing personnel occupy a position of trust in the company and are expected to perform in accordance with the company's ethical guidelines. The ethical code as adopted by the National Association of Purchasing Management is a good example of a proper code of ethics.

Preparing for Negotiations

A simple negotiation in a commodity item market may take little preparation. For example, a negotiation on mimeograph paper for a quantity discount, heavier weight, or better finish does not warrant a thorough study of the market, production costs, cash flows, engineering studies, and the like—but a \$10 million purchase of electrical equipment would. The amount of preparation for a negotiation depends upon the knowledge of the negotiators, the complexity of the negotiation, and the scope of the item to be bought.

In a competitive market the buyer must know the product, the markets, the suppliers, the advantages and disadvantages of competitive products, the technology, whether the markets are strong or soft, what usual terms are, what suppliers are giving on terms, how business is, what backlogs there are, how badly suppliers need this business, whether there is management pressure, whether any are in a financial bind, and so on, and on. For a negotiation of a significant purchase, the buyer must do his or her homework—it is impossible to know too much.

For complex negotiations, strategy and tactics should be developed and should be fully understood by all participants. A schedule of planned progress is advisable, and each participant should know what he or she can or cannot say. The person in charge of the negotiations should have signals agreed upon to communicate changes in the plan. Potential positions to be taken by a supplier should be reviewed, and in very serious negotiations, role playing may be advantageous. It is of utmost importance that all team members know the specific objectives of the negotiation, but it is equally important to know what the fallback positions are and to know those key positions beyond which there is to be no compromise. The tactics of compromising on preplanned points of issue should be reviewed.

Source Development and Selection

Any company requiring materials as a part of its business needs has a very keen interest in suppliers. This is true whether the need is for new materials, partially processed components, completed components, a total product, or machines. The skill by which those suppliers are selected and developed will do much to determine the degree of success of the user company. The availability of suppliers for any particular need may vary from surplus to scarcity. There is no reason to believe that a surplus supplier condition means any less attention to the selection process than a shortage of suppliers. Each condition brings different problems and opportunities to the professional buyer.

General Objectives of Source Selection

There is universal consensus that most of the responsibilities of purchasing can be summed up within the supply, price, and service categories. To these might be added supplier relations to be certain that purchasing has control over the buyer-seller relationship in an area where several other functions also have ongoing supplier contact. Thus the objectives of purchasing are to (1) maintain a contin-

uous flow of material needs in quantities and at times specified by the requirements of the company (2) at a price competitive with the industry (3) and of a specified quality. The first two objectives are the direct responsibility of purchasing with support from other functions. Purchasing receives direction from other functions regarding quality but its role in supplier selection is the start of the continual quality assurance surveillance process that includes consistent supplier monitoring.

It is a prime responsibility of a purchasing manager to obtain the lowest possible price, and of a salesman to obtain the price established by his or her company. It is the responsibility of both to know the laws that affect pricing and to conduct their negotiations accordingly. Buyers should keep within their ethical position when discussing competitive prices. A buyer is not obligated to quote any competitive price to a supplier, and of course a supplier is not obligated to meet any competitive situation or a buyer's demands. Each has a right to buy or sell or not to do so. That is the way it is and should be understood by both parties.

□ *Ralph C. Phillips*

Supplier Evaluation and Selection Criteria

A formal supplier rating program serves the purpose of contributing a first-hand working knowledge and history to the pool of information necessary for supplier evaluation. Such a program should be carried out on a periodic basis, encompass all prospective suppliers, and utilize computer-generated information where possible.

In order to assure and affirm the capability of major suppliers to fulfill all the requirements associated with the purchases of significant value and complexity, it is desirable to conduct a pre-award survey. Where possible, such surveys should be conducted with representatives of the following organizations:

Auditing. To assure that the supplier's policies, systems, methods, and philosophies for the accumulation, recording, and control of costs are in keeping with the purchasing requirements.

Quality control. To assure that quality control policies, instructions, practices, organization, and performance are in accordance with industry-approved standards and criteria.

Engineering. To evaluate design experience, problem-solving versatility, organization, control, capability, and value engineering activity as they apply to the equipment, parts, and systems to be designed and produced.

Manufacturing. To evaluate the manpower and management capabilities and the facilities and capacity thereof to produce the level of precision required in the necessary quantities and within the proper time span.

Production control and/or scheduling. To review the suppliers' scheduling and production control methods; determine that they are realistically suitable to the control and accomplishment of the proposed program; determine that they are within the required time span; and consider other, parallel programs.

Finance. To assure the suppliers' financial ability to assimilate the proposed program in light of their other commitments.

Purchasing. To assure that all significant areas of the proposed procurement

have been properly investigated; to review the suppliers' purchasing and subcontracting policies and practices for acceptability; and to assess general management capability, attitude, and interest.

Supplier selection criteria are outlined in the following guidelines:

- Do business with suppliers who are qualified and capable of performing the work to be done at the proper levels of quality, in the desired quantity, in keeping with the functional requirements, and at prices properly representing the value received.
- Base the selection of suppliers upon consideration of the maximum available pertinent information and knowledge. Develop and maintain a listing of consideration elements or evaluation factors, or both, that may be readily referenced as a basis to formulate the particular selection.
- Select suppliers for major items of equipment by committee action to permit maximum contribution to the decision by all knowledgeable, interested, and affected organizations and individuals.
- Select sources from among suppliers of proven performance, promising new suppliers who have been well investigated beforehand, and previously average suppliers who are eager to atone for past failures and can show active evidence of ability to do so.
- Limit selection to those suppliers with whom the business may be placed with reasonable confidence, and who pass your criteria for acceptability.
- Wherever reasonable to do so, limit selection to four bidders in order to keep down the attendant clerical, recording, and follow-up costs. It is recognized that the number of bidders must depend upon the individual case, but in any case, the number and type of bidders selected must assure adequate and valid competition.
- Where there is a particularly attractive requirement for a broadly competitive item, expand the list of bidders for the sake of fairness and maintaining market interest to induce the most favorable price and other conditions of purchase.
- Select bidders in an open-minded and unbiased manner.
- Where there are a number of eligible suppliers for a given commodity, at least partially rotate selection of bidders for each new requirement.
- Take particular care to select suppliers with capabilities known to be suitable to the application being bid to ensure that resulting quotations or proposals will be representative and comparable; assure adequate and vigorous competition.
- Permit the incumbent and any former suppliers to bid on follow-on requirements, similar items, replacement items, or items with similar applications.

The use of sound and impartial judgment, adherence to ethical principles, and close control over the handling and documentation of bids are essential to the company's character and procurement reputation in the industry.

□ *Robert R. Paul*

Tools for Sound Source Selection

Buyers should be equipped with certain informational tools that, if properly understood and used, will greatly assist them in selecting their sources wisely. These tools include but are not necessarily limited to (1) a general knowledge of

the commodity or commodities to be purchased; (2) possession of at least some general specification information; (3) a comprehensive knowledge of the end-use application of the product or service to be procured; (4) possession of historical records of previous purchases from suppliers; and (5) a knowledge of and familiarity with the marketplace in which the buyer must deal.

Knowledge of commodity. Professional buyers rarely reach the point where they have uncovered all the knowledge they can use about the commodities or materials under their control. What materials are used in the manufacture of the product purchased? Which are of major importance or of minor importance? Are these freely available in the marketplace or not? What lead times will you face? Can the product be stored? Is it perishable? Is there a futures market? Is the product easily transported? What other industries compete for the supply of these commodities? Are the raw materials needed for the item a by-product or the primary commodity? Is it sourced domestically or abroad? In what process is it manufactured? Is the equipment specialized or standard? Is it labor-intensified or does it lend itself to high automation? What key commodities are used in the manufacturing process but are not a part of the end product? What energy demands are created in the manufacturing process?

Specification data. Formal, well-written specifications for material requirements, clearly detailing all aspects of the materials purchased and used by all interested functions, are the sign of a professional, well-managed company. In the hands of the professional buyer, specifications are a most important tool. They provide clear communication from buyer to seller regarding the buyer's needs. They allow for the use of a common language. They become a part of the purchase contract. They are a prime determinant of the value received when delivery is made. In addition to the technical details of the normal specification, data should also be included that covers any identification requirements, packaging conditions of transportation or storage, and the like.

End-use knowledge. Buyers must know functional requirements of materials purchased under their responsibility. This may be the chemical used to flavor a food product or a gear in a transmission, or any other of an infinite number of end uses. This knowledge is primarily useful in the continuing search by the buyer to find a better material or a better shape or better or less costly material or a source of greater supply, or anything to lower cost or improve quality or efficiency. This knowledge and this search are very important in supplier selection because buyers want those suppliers who share their innovative objectives.

Purchase history records. The development of sophisticated electronic data processing applications for purchasing use creates a valuable resource that includes data applicable to supplier selection. When confronted with supplier selection for infrequent purchases, the buyer will find that the historical records provide useful information of the available sources and some useful data on previous purchases. It may save time usually consumed searching catalogs or other supplier listings.

For the more important repetitive items this record will provide good price history. It may allow for the elimination of some suppliers and a more efficient approach to final supplier selection. This historical record certainly should include

very important supplier performance data such as a full coverage of price, delivery performance, quality, reliability, and ability to meet peak demands.

Not a part of the usual supplier history but related to it is a supplier manual, prepared and maintained by each buyer. In this manual buyers record not only much of the historical information touched on here but, in addition, all the data the buyer has accumulated on each material or commodity under his or her responsibility—price history, volume requirements, approved suppliers, industry capacity, individual supplier capacity, government requirements, environmental issues, and every factor relating to the objective of each buyer including supply, price, and service.

Knowledge of marketplace. Each market of goods (commodities, machines, and so on) is different. The buyer must recognize this and know what these differences are and what effect they will have on his or her ability to negotiate competitive prices and supply assurance. Is it a commodity market, that is, one where there is no discernible difference between the product of competing suppliers? Is it a market dominated by one or two suppliers who set prices that others follow? Is it a market where technology dominates? Are there unusual regulations that influence the sale of goods? Are long-term contracts available? Are these contracts firm price or escalation types? Is the industry dominated by large producers or is there a mix of large and small? Can the buyer recognize when there may be advantages with either?

Selection Process: The Four-Stage Method

There may be unusual reasons and conditions dictating the need to search out and qualify suppliers. The two basic demands are, first, the selection of the original source of supply when the need is for a new product. From this start, the need for sufficient sources of supply then becomes a second phase of the search.

Frequently, when selecting the original supplier the buyer may find the item to be purchased is still in the design or formulation stage. Specifications may be incomplete. Volume requirements may only be rough estimates. Usually the original supplier search is conducted by a team that includes research and development, quality assurance, engineering, and certainly purchasing. Other functions may also be represented, but in that case, R&D or one of the technical representatives may make the final supplier selection, and purchasing must be satisfied that the supplier selected can meet production and cost requirements. It is important that purchasing be included in the development team early in the process to avoid creating unnecessary problems for a supplier who has little chance of meeting the supply and economics demands.

After an initial supplier is approved, it is the responsibility of purchasing to obtain additional sources, with assistance, as needed, by other functions. The actual process of source selection can be difficult and time-consuming, but the effort can be very rewarding to the buyer and his or her company. Moreover, much of the work becomes automatic after constant practice by experienced purchasing personnel.

Normally, good source-selection techniques follow a series of basic steps or phases which can be classified in four general categories. These are the phases of

preliminary exploration, inquiry or solicitation, analysis and selection, and review and reevaluation. Every purchasing transaction, however routine, passes through one or more of these phases. The more sophisticated transactions pass through all of them, and the careful and efficient buyer proceeds deftly through each step.

Preliminary exploration. This phase begins as soon as the need for the commodity or service has been determined and conveyed to the buyer. The buyer's first step is to review available resources, which are generally found in two broad categories—published sources and personal experience.

Published sources of supplier information include trade registers and directories such as the *Thomas Register of American Manufacturers*, *MacRae's Blue Book Sweets Catalog*, and the Yellow Pages of telephone directories. Most or all of these should be available in the library of a good purchasing department. Other useful publications are trade papers, magazines, periodicals and journals, catalogs, and advertising literature.

The seasoned buyer or purchasing manager will probably draw heavily on personal experience in initial consideration of potential sources. Recollection of previous transactions of a similar nature may provide immediate direction to the situation at hand. Personal experience may be enhanced through regular exchange of information with associates, both inside and outside the company. Great value in this regard is attached to membership in professional associations, attendance at trade shows, frequent visits to suppliers' plants, and similar outside activities. One of the most prolific sources of information comes from the buyer's many interviews with sales representatives—an activity of inestimable value in sound purchasing.

Most buyers probably use a combination of both published sources and personal experience to develop a list of potential suppliers. The number of such potentials add weight to the considerations of the value of the purchase, the quantity required, the complexity of the specification, and the time element in question. It is at this stage of the procedure that knowledge of commodity, specification information, knowledge of marketplace, and end-use knowledge come most prominently into play.

Inquiry or solicitation. Once the list of potential suppliers is available the selection process begins. This can be accomplished by interview or by a solicitation to bid. If there is major information attached to the particular need, it is usually advisable to invite the potential supplier to appear for a sales interview or request an invitation to visit the supplier's offices for the interview. The latter alternative offers an early opportunity to meet officials of the company, cover details that may be difficult through correspondence, and make an early assessment of the supplier's personnel and plant facilities. A second reason for choosing the interview route is that the project requiring the material may be confidential. The meeting provides an opportunity to present confidential disclosure documents to the potential supplier and any additional procedures connected with the disclosure.

Whether the bid request or the interview is used, it is important to seek from the potential supplier a wide range of important data that will influence y

final selection decision and augment your supplier data file. Such data may include an annual report, a list of products or components produced, location of the supplier's facilities, a list of current customers, samples of work (or pictures and technical data), R&D effort, price position, and pricing history. Is the supplier basic in any of the commodities or materials? Are technical services available? What are its quality control facilities and standards? Company background, labor affiliation and experience, and patent position on products sought should be checked. What is its raw materials supply policy—does it have long-term contracts on tight or critical materials? What are its lead times? Capacity, transportation data, source of power including backup, terms and conditions, contractual possibilities, and F.O.B. point should be determined. Where applicable, the costs of any tools, dies or other special equipment should be ascertained.

The importance of a visit to the potential supplier cannot be overestimated. Many materials, devices, and kinds of equipment are critical from the standpoint of human safety. This is in addition to expected normal quality standards. When the use of the material is directly related to human safety (for example, food use, airplane parts) the plant visit is essential. Many firms will not approve a supplier until their own quality assurance or other technical personnel have inspected the potential supplier's facilities and given their approval.

Analysis and selection. When all the proposals have been received, they should be analyzed in detail to determine which is most favorable to the situation at hand so that a selection can be made. This phase is undoubtedly the most difficult and delicate in the entire process of source development; it requires sound judgment, a good sense of values, and the responsibility to ensure the best possible acquisition for the purchaser. In some of the more sophisticated situations—buying military hardware or aerospace requirements—the analysis of bids is so complex as to require the use of computers to determine the best proposal. However, in the vast majority of cases, this analysis is normally conducted by the buyer or someone else in a staff function.

In the process of bid analysis, many factors must be considered. Among the more important are the supplier's geographic location, financial considerations, quality of supplier's management, labor factors, and legal considerations.

Geographic location affects the modes and costs of transportation, access to supplier personnel and facilities, and availability of replacement parts.

Financial considerations, in addition to the actual price quoted, are concerned with such matters as terms of payment, cash discounts, applicable sales taxes, tooling costs (if any), preparation and/or installation costs, and, for orders requiring long-term delivery, applicable policies on price protection or cost escalation.

Evaluation of the prospective supplier's management involves a careful judgment of the supplier's financial stability and general credit rating. Depending upon the commodities being purchased, it may also be desirable to weigh the supplier's capabilities in the areas of research, engineering, and design know-how and experience. The profitability record of the potential supplier is a good measure of its management acumen and a significant key to its dependability as a good supplier.

Labor factors take into consideration such matters as available labor supply, type and reputation of the bargaining unit (if any), and the relationship between labor and management in the plant or operation of a potential supplier.

Legal considerations encompass such essentials as compliance with local, state and federal laws or statutes; warranties, cancellation clauses, matters pertaining to patents; applicable insurance considerations; and a full understanding of all potential reciprocal arrangements.

Depending upon the type of commodities being purchased, additional factors may be considered in the bid analysis. Such factors may include the supplier's capacity; an evaluation of its production equipment; its purchasing capabilities, which could have a direct reflection on the selling or quoted price; any possible technical and/or personal ethics of the potential supplier; the competence of its sales and technical staff; and its likely attitude on cost-price analysis and renegotiation.

Once the analysis is complete, a tabulation of the various applicable factors should be made so that the differences between the bids are readily apparent. Most buyers use some formal type of tabulating procedure, and some even resort to computers. Whatever method is used, it should be able to inform the buyer adequately about the differences between bidders on all important factors of the quotations, thus enabling the buyer to make a sound judgment in the subsequent award of the order.

At this critical point in source selection, the objectives of quality, service, and price must be most carefully and seriously considered, because the source that is finally selected must assure their attainment well enough to satisfy the best interests of the purchaser.

Review and reevaluation. Review of the approved supplier listing is a continuing process. The use of EDP systems has greatly facilitated this process. Supplier performance data on each supplier can easily be captured, accumulated, and reported on the computer printout. Many firms maintain a listing of approved suppliers and the list is distributed to many interested departments, including quality assurance, research and development, and operations.

The critical materials list has become an important part of supplier selection and it is a continual reevaluation process. Starting in the early 1970s our country suddenly found that the availability of all materials was no longer automatic—we had depleted our domestic supply of many critical materials. We also found that foreign countries could now compete with the United States for critical materials and were able to outbid us, if necessary. This situation has brought about at least two procedures for supplier selection: The buyer must maintain an up-to-date critical materials list, and the buyer must know much more than the immediate sourcing of these critical materials. The buyer must know and monitor the complete chain of sources that finally brings these materials to the point of use. It may be that these materials are not classified as critical, but somewhere in the supply chain they may be used in the manufacturing process. The buyer must know this and he or she must know whether or not the firms in the chain are protecting their supply of any critical materials. This is an added dimension to supplier selection and will remain an extremely important responsibility.

□ Franklin H. Mann

Foreign Purchasing

Material can sometimes be purchased at greater advantage from foreign sources, but such purchasing tends to be more complex than domestic purchasing. For example, longer acquisition cycles may call for an adjustment in inventory levels. On the other hand, the possibilities of air freight deliveries, overnight from almost anywhere in the world, may make it possible to cut inventories. Although in many respects offshore and domestic purchasing are much the same, there are differences for which the buyer should be prepared:

- Questions concerning manufacturing capability and control can be even more important than in the case of domestic purchasing, because of greater difficulty in securing adjustments. Where the amount involved warrants it, a visit to the supplier's plant may provide cheap insurance against the possibilities of poor performance.

- Particularly under present conditions of floating exchange rates, some consideration should be given to the currency in which the contract is priced, conditions under which adjustments to prices may be made, and the period for which the contract is to run.

- As communications often suffer in translation, special care should be exercised to see that all drawings, specifications, instructions, and requests are clear to the supplier.

- Care should be exercised to see that the purchase agreement will have the same legal effect in both countries. Implied warranties, for example, can be different under different legal systems. It goes without saying that the agreement should be legal under the laws of both countries.

- Negotiations—particularly in-person negotiations—are best conducted with some advance knowledge of the prevailing attitudes and customs of the foreign country. In some countries it may be considered rude to arrive early for an appointment or to plunge immediately and without any preliminary social gestures into the business at hand. In general, negotiations will probably be more formal and ceremonious than at home, and words and gestures used in conversation may have a different meaning.

Frequently, it will be useful to do business through a broker or trading house, as it is familiar with the procedures to be followed and will take care of much of the paperwork involved. Lists of brokers and trading companies can be secured by writing to the Commerce Department of the country of interest. For example, Japan maintains a Chamber of Commerce and Industry, located in Tokyo. It publishes a trade index listing the names, addresses, and sizes of exporting and trading companies and of brokers and dealers.

□ Gary D. Columbia

Electronic Data Processing—Purchasing Applications

The basic objective of purchasing is to make available to authorized departments all necessary materials and services, of proper quality, in the proper quantity, at the proper place, at the required time, and at the lowest net cost. To this end, electronic data processing applications are most effective. They provide real

money and time savings in addition to instantaneous monitoring and status capability. They may also be allied with other functional operating systems to provide mutually beneficial services.

Computer technology, including both hardware and software packages, continues to change at a very rapid rate. The impact of these changes opens more and better avenues for integration of the purchasing function into EDP systems with other functional areas of a business. Management can have any degree of systemization and computerization it wants for its purchasing materials management activities. The conscientious purchasing manager should make a determined effort to become familiar with these tools available to his or her company and take advantage of them.

Computer Capabilities and Limitations

Aside from both the evaluated and obvious opportunities of labor and time savings generated by computer applications, such usage establishes a path toward a paperless purchasing system. Eliminating paper also eliminates delays associated with paper. The computer is capable of storage and retrieval of all associated data. Concerned personnel at all levels may look directly into the computer for timely information. They don't have to ask, or fill out a form, or make a report, or even go to a meeting. Where security is of concern, computer information may be limited. Computer capability in purchasing encompasses a broad spectrum of applications that not only have a favorable impact on today's operations but also offer continuing potential and benefits that are necessary in a competitive business environment.

It must be understood that one controls the computer, not the reverse. The computer does those things that can be done manually, but it does them at an accelerated rate. Computers are programmed to do what they are told. Instructions in programming are very detailed and basic, yet time spent in this phase pays dividends on the output end via reports in the form required and rapid availability. Some of the requirements particularly relevant to purchasing are inventory control and material requirements planning (MRP), supplier evaluation, buyer evaluation, automated accounts payable, purchase requisition and purchase order preparation, open order file, pricing history, supplier history, usage history, performance comparisons, and savings versus established standards.

The computer's capacity to perform is limited by the intelligence, imagination, and thoroughness of those designing the program(s) to be performed by the computer. In other words, EDP cannot make a good organization out of a poor one. It is not a cure-all, and if used incorrectly, it can produce unnecessary costs, irrelevant or incorrect data, and tremendous amounts of lost time.

The creation of an effective EDP system requires diligent front-end preparation, since the keys to a good EDP system are building complete files for data storage and designing programs that access those data files to retrieve information needed to perform certain functions that allow the user to make decisions and perform certain tasks.

The computer is limited to performing those tasks assigned and properly communicated, even though it may have more capabilities. Moreover, it is necessary

to consider the economics of equipment costs and personnel costs as related to establishing, operating, and maintaining a system. Some of the more useful systems are included in the following applications.

Automated accounts payable. Computer-oriented systems are readily adaptable to accounts payable and related functions. In addition, automatic payment provisions, cost distribution, status of commitment, tax obligations, discounts, receipt quantities, documentation, and so on may be established.

Open order status. On-line application provides instant visibility of open orders to the buyer, management, or any other concerned personnel. Such information may be retrieved in a format appropriate for user needs and furnished on a scheduled or "as requested" basis. The reports may be used as a basis to initiate follow-up and expediting action or to alert management for support where deemed appropriate. They can reflect total activity, proportions thereof, inventory, specific supplier, groups of suppliers, project costs, budget versus receipts, rejections, delivery dates, parts out of rework, and so on.

Materials inquiry. Information about the current status of materials is readily available via inquiry when procurement transactions are properly recorded in the system. The recording of such transactions builds a history file that may be used, automatically or on request, to support purchase order processing. An automated materials inquiry system promotes accuracy and eliminates the need for the individual buyer to maintain manual records on routine buys.

Inventory control. Each company has certain established guidelines for controlling its inventories. Some are very simple systems such as a two-bin system, but others are very complex, utilizing complex probability theory to determine safety stock level, order quantity, and reorder point. An EDP system can be prepared for whatever degree of control is desired. Essential to an inventory control system are inputs from (1) production control designating how many of a given part it is going to use and when, (2) purchasing through the open purchase order file telling how many items were ordered and delivery date, (3) forecast of materials required, (4) calculation of safety stock, (5) determination of lead time, and (6) decisions regarding order quantity. When these inputs are established and decided, inventory control can be accomplished virtually automatically. In this complex system, each item is tracked as it moves from station to station within the company, and each requirement is identified and ticketed to a particular production run, thus averting mixups in end-user portions of an inventory. Through this system, needs are identified in advance, which enables purchasing to meet the needs in an orderly fashion.

Inquiries into the system can reflect price history relative to a specific part number, particular bid data, a specific buy, or whether an item is covered by a blanket purchase agreement. They provide materials availability, stores location, disbursement and requisition status, and similar data. Information relating to any block of purchase order information can be retrieved in any sequence needed by the user.

Purchase order writing. Automation and standardization of the purchase order writing process increases efficiency, is faster, costs less, and provides better visibility. Standardization of input, forms, syntax edits, and procedures is re-

pendent organizations. In our modern economy, they are indispensable tools of management. There are many types and forms of contracts available to the purchasing managers, and it is their responsibility to select or construct the arrangement best suited to the purchase requirements.

The Need for Alternative Types of Contracts

The most common type of contract, the one with which all purchasing managers have thorough familiarity, is the firm fixed-price contract. The ordinary purchase order when executed by both parties is an example. Under it, each party will perform specified duties. Contracts are enforceable in court action if suit were to become necessary, but in the ordinary business relationship, both parties perform their duties without recourse to litigation. For most purchases, no particular thought is given to the exact type or form of the contractual relationship. Nor should much attention be paid to the contract type for routine purchasing circumstances. However, there is a need for purchasing managers to be thoroughly familiar with the range of choices available to them under circumstances requiring a more sophisticated relationship between the parties than provided by the firm fixed-price contract. The structure of a contract becomes critical under conditions such as those indicated below.

- The purchasing manager seeks to acquire nonstandard supplies or services and the period of performance is likely to be a long-term one, during which the two parties must have a working relationship that facilitates updating or modification of the relationship.
- The proposed undertaking involves a large sum of money coupled with a high degree of complexity in the technological effort required.
- The immediate undertaking leads toward substantial follow-on contractual opportunities in which the purchasing manager may wish to seek competition.
- The performance of the undertaking is risky due to technological or other sources of uncertainty, and some sharing of that risk between buyer and seller is necessary.
- The circumstances of the purchase action are such that the buyer seeks to obtain performance cost data from the supplier.
- The buyer's objectives in entering into the contractual relationship include the reduction of inventory, the simplification of ordering procedures, the reduction of the cost of repetitive purchasing processes, and other logistics goals.

Alternatives Available to the Purchasing Manager

Choosing the correct or best type of contract for a situation in which other than the firm fixed-price contract is indicated can be a complex process. Such a process begins with the necessity for each party to assess its independent objectives and to approach the common goals sought in the contract as negotiable, leading to the final agreement. Each party starts with a set of objectives that must be accommodated to the other. Of particular significance is the large number of alternatives from which a choice can be made. The choice is more complex than simply choosing from among 12 to 20 different named types of contracts.

real task is to select from an unlimited number of varied terms and conditions that might be included in any of the contract types. The combination of available features is particularly large in the case of incentive-type contracts. Let us examine some of the alternatives available to us.

Comparison of contract types is aided by classifying the alternatives. One basis, form of acceptance, is to distinguish contracts calling for completion of a specified objective from those that finance services of a continuing nature. The second basis, logistics needs, is designed to facilitate repetitive ordering and inventory minimization. The third basis and principal method of classification is by the pricing arrangement thereby established. Under this method, several contract types are known by techniques used to finally determine the cost, profit, and/or price to be paid upon completion of the contract.

Form of Acceptance of Work

Contracts may be written on a term or completion basis. These are distinguished by the basic obligation assumed by the performer, that is, whether the performer is obligated to complete a specific, defined, and measurable end objective, or to apply efforts and resources in the pursuit of an end objective that in itself is beyond the completion of the contract. End objectives of buyers are not necessarily achieved coincident with the completion of a specific contract. Instead, a contract may provide for a period or term of service. For example, in the purchase of services of a routine nature such as maintenance services, it is evident that services are continuing in nature and do not come to completion at the end of any given contract—the services will continue, and a new contract or an extension of the existing contract is necessary in order to continue the performance of the services by a supplier. That type of arrangement is quite different from a construction contract wherein the builder assumes the obligation of construction of a specifically identified building at a particular location, and upon completion of the building and acceptance of it by the buyer, the work contracted is considered to be complete and is coterminous with the expiration of the contract itself. The essential point to remember here is that the nature of the performer's obligation to the buyer is very different under a completion contract than it is under a term contract.

Another example of this distinction is in the area of research. Many research undertakings are initiated under a contract that recognizes that the performing research party will apply his or her best efforts to the investigative process during a specified period of time. But the parties at the outset recognize that the probable total extent of the research necessary for fruition of the ultimate hoped-for discovery of new knowledge is likely to be far beyond the end of the initial contractual instrument. Thus, in many cases, the research effort is contracted for on a term basis rather than a completion basis, and as a consequence, the pricing arrangement and the funding of the contractual instrument are based upon resources expected to be applied during the specified contract period. In contrast with that relationship, let us examine a research and development contractual relationship.

In most R&D contracts, the buyer expects to have, at the end of the initial contract relationship, a working prototype of the system ultimately planned to be

produced. Thus, the buyer of a new technological device such as a numerically controlled machine newly designed to achieve greater rates of production and fewer defective products than have been previously achieved by such a machine expects the performer of the R&D work to meet a delivery schedule with a newly designed machine that will, in fact, achieve the higher production rate and the reduced defective rates that were anticipated to be achieved by the contractual relationship. Thus the R&D effort is a completion-type effort, and the performer is expected to demonstrate at the delivery time that the newly designed machine in fact delivers the required performance. This distinction between term and completion contracts is not dependent upon the pricing arrangement. That is, we will find when we examine the fixed-price contract types that we have both term and completion fixed-price contracts, and we will also find when we examine the cost-type contracts that we have both term and completion cost contracts.

Logistics Needs

Logistics needs that can, in part, be met through appropriate contract mechanisms include inventory minimization, standardization and simplification of inventory, consolidation of ordering and shipping, simplification and reduction of repetitive document generation, and improvement of ordering and delivery elapsed time requirements. These objectives plus some potential price savings can be achieved through application of arrangements known variously as corporate agreements, blanket purchase orders, systems contracts, open-end contracts, basic ordering agreements, and indefinite delivery contracts (including requirements, indefinite quantity, and definite quantity contracts). Each of these techniques is designed to systematize, perhaps to automate, purchase of categories of materials and services that are used on a continuing basis. There will normally be a separate agreement for each category of need, and a wide variety of individual arrangements are encompassed by the techniques.

Pricing Arrangement

Fixed-rate contract types as a group. The fixed-rate contract differs significantly from the firm fixed-price contract in part because the final amount to be paid to the performer is not determinable until performance has been achieved. Furthermore, the fixed-rate contract is not comparable to the cost-type contract because final payment of the contract is not dependent upon the level of costs incurred by the performer. The fixed-rate contract types are distinguished by the establishment at the outset of the contract of a reimbursement rate for direct labor applied to the work. For example, if the contract requires the performance of engineering analysis, there will be specified in the contract a rate for the reimbursement to the contractor for each man-hour (or each man-day) of engineering analysis effort which the contractor applies to the job. The fixed rate is inclusive of direct labor costs, overhead charges, general and administrative, selling expenses, and profit. All these elements of the cost of delivering the engineering services are summed, and a rate for reimbursement to the contractor is agreed upon by the parties. In the execution of the contract and in its administration as the work progresses, the buyer must observe and monitor the contractor's performance in order to verify that the delivered services are in fact acceptable.

There are two types of fixed-rate contracts. One is the labor-hour contract, in which the only provision for reimbursement of the supplier is the reimbursement rate for the direct labor applied to the job. The other contract is the time and materials contract, which in addition to the fixed rate includes a provision for the delivery of materials at cost as required by the performance of the specified work. Ordinarily the provision of materials is severely limited in a fixed-rate contract, but the time and materials arrangement provides for reimbursement.

Fixed-price contract types as a group. The fixed-price contracts include (1) the firm fixed-price contract, (2) the fixed-price incentive contract, (3) the fixed-price redeterminable contract, (4) the fixed-price contract with economic price-adjustment provisions, (5) the fixed-price level-of-effort term contract, and (6) the fixed-price incentive contract with multiple incentives. Thus, when we examine the fixed-price group of contracts, we have a fairly complex structure of potential arrangements.

The firm fixed-price (FFP) contract should be compared with all the others. It is a contract in which the party who is the supplier is a guarantor of successful performance of the requirements set forth in the contract, including accomplishment within the time frame allowed by the terms of the contract. Under FFP, the supplier becomes financially responsible for successful performance without any right to subsequent change in the specified contract price and schedule. In return, the FFP buyer is obligated to make payment of the fixed price as specified in the contract without regard for the actual cost of performance of the work covered by the contract. The relationship could not be simpler: The supplier, working independently and under its own management direction, is provided the financial incentive to perform ever more efficiently and effectively, since the ability to perform at less cost than originally anticipated secures for the supplier, as profit, 100 percent of the costs thereby saved. The buyer, on the other hand, is able to plan with the confidence that needed supplies will be delivered in a timely fashion at the cost defined in the contractual relationship. None of the other contract forms accomplish this fundamentally simple set of relationships.

The fixed-price incentive (FPI) contract is distinguished by its inclusion of a sharing formula whereby the performer is paid more profit if performance is completed at a cost below the expected (target) cost agreed upon in the contract. Conversely, the contractor is paid less profit if cost at completion exceeds the agreed-upon target cost. The ratio of reward or penalty is controlled by the formula stated in the contract. As an example, the buyer might shoulder 75 percent and the seller 25 percent of decreases or increases in cost of performance (as compared with target cost). The FPI contract retains the fixed-price concept, because it includes a ceiling price which limits the buyer's obligation regardless of cost of performance.

A fixed-price redeterminable (FPR) contract avoids the inclusion of a sharing formula, yet leaves the final negotiation of price until performance of work has proceeded to the point at which costs of performance are well enough known to predict (and negotiate) the final cost and price necessary for completion of work. The redetermined price is set forth in the contract when negotiated. Historically, the FPR contract was important to large government projects, but it has fallen into disuse in favor of incentive contracts. Its principal advantage of delaying

price determination until some cost data are generated by performance while allowing a firm price to be set prior to completion of performance is offset by administrative complexities in negotiations and lack of confidence that it motivates efficient performance.

Fixed-price contracts with economic price-adjustment provisions (FPE) provide for price adjustment on the occurrence of specified changes in cost or price factors set forth in the contract. The factors may be labor or materials price indices or changes in industrywide price levels. The factors selected should be exogenous variables not controllable by the management of the instant contract. This contract is designed to shift risk of price or cost inflation from seller to buyer.

The fixed-price level-of-effort term (FPLET) contract embraces the concept of term contracts. It is normally limited to research undertakings of limited scope which progress toward a technological achievement, not completion, is sought. The contract permits firm budgeting of the contractor work plan and minimizes administrative oversight activity associated with performance. A high degree of confidence in the technical skill and dedication of the performer is necessary for this type of contract.

Multiple-incentive (MI) contracts, whether fixed-price or cost type, increase the complexity of negotiation and administration of the contractual relationship and administration of the contractual relationship to its maximum. Whereas the FPI contract uses one independent variable (cost) to govern the amount of incentive profit to be paid, the multiple-incentive contract may employ several variables: performance, schedule, and cost. The modeling of such contracts is difficult and the impact of tradeoff decisions difficult to discern. Nevertheless, the contracts attempt to provide motivation, in a monetary sense, to the supplier for achieving maximum performance toward buyer objectives.

Cost versus fixed-price contracts. The most fundamental distinction between types of contracts is the difference between one that is based on a fixed price and one based on cost. In a cost contract, the customer will reimburse the supplier for costs incurred by the supplier in attempting to carry out the obligations of the contract. This form of payment requires the supplier to disclose cost records to the buyer and, in the case of government contracting, to submit books of records and accounts to the government auditor for purposes of verification of the amounts claimed for reimbursement. This approach differs from that employed in the fixed-price contracts discussed above. In all the fixed-price types, the ultimate obligation of the buyer to pay is based upon the price agreement of the parties as set forth in the contract and is not governed in totality by the actual level of the incurred costs. Nevertheless, as has been shown, several of the fixed-price contract forms do require a disclosure of the supplier's costs to the buying organization.

Under the cost reimbursement contract (completion format), the supplier's obligation to perform the work required is essentially similar, with one distinction, to the supplier's obligations in the firm fixed-price contract, whereby the supplier takes on the obligation to complete the job in accordance with specifications and within the time frame established by the contract. The distinction lies in the level

of accountability for results assumed by the supplier in a cost reimbursement contract. Such accountability is significantly reduced because the supplier is not a guarantor of the estimated cost of performance. In effect, the obligation of the supplier is reduced to the obligation to apply best efforts to the performance with the objective of completing the contract in accordance with the agreement. The difference is expressed best in terms of the assumption of risks of the two parties. In the cost contract, the buyer assumes most of the financial risks of nonperformance or delayed performance. In the fixed-price contract, the supplier assumes most of the financial risk of nonperformance or delay of performance.

The cost reimbursement contract, however, is considerably more complicated than either a fixed-price or cost type of contract. The ultimate allocation of risk between buyer and seller is determined not only by the form of the contract but by the inclusion or noninclusion of numerous possible terms of the contract such as warranties and incentives. Additionally, the specifications of the contract are critical in the allocation of risk because the ultimate complexity and difficulty of performance derive from the specifications or other technical documentation that form a part of the agreement.

Cost contracts as a group. While all cost contracts are similar in the requirement that there be a disclosure of costs for purposes of reimbursement of the performing organization, the several types of cost contracts differ in their provisions for payment of fee or profit for work completed. The cost-no-fee (CNF) contract is primarily used for research undertakings in which a university or other nonprofit educational institution is the performing party. The contract simply provides no sum of money over and above the allowable costs of performance. However, it should be noted that contributions to fixed and semivariable costs may be of great benefit to performing institutions.

The cost-plus-fixed-fee (CPFF) contract is the predominant form of cost contracting usually applied when a private industrial organization receives a cost contract. In the case of the fixed-fee contract, the amount of fee is agreed upon as a sum of dollars during the negotiation of the contract prior to its award. That sum is then payable to the performing organization upon achievement and delivery of a satisfactory end product or result of the contracted effort. It does not vary in amount with the actual level of cost incurrence experienced by the contractor. The cost-plus-fixed-fee instrument is of primary use when a substantial degree of uncertainty surrounds the performance cost of the effort required by the contract. The source of uncertainty normally derives from technological or producibility issues resulting in inability to discern cost of performance with a high degree of reliability in advance of the award of the contract. As a result we find that the cost-plus-fixed-fee contract is used extensively when research or research and development work is being undertaken.

A cost-sharing (CS) contract is also pertinent in many procurement situations when it is evident that the performing organization will gain substantial commercial advantage as a consequence of being funded for an element of work by the buying organization. As a consequence, it is when there is a significant commercial advantage to the private performer that a cost-sharing contract might be proposed by the buyer. While this contract type is not limited to government pro-

curement, the cost-sharing idea is not ordinarily a popular method of contracting from the point of view of the performer, and it would only rarely be applicable for commercial relationships between private enterprises.

The cost-plus-incentive-fee (CPIF) contract is similar to the FPI, except that it does not have a ceiling price established at the outset of the contract. Instead the ultimate cost limitation of the contract relationship remains unstated at the time of award of the contract. As with FPI, the fundamental incentive relationships can be varied by incorporating independent variables in addition to the cost variable. Thus a cost-type contract may be designed as a multiple-incentive contract.

Contracts may take the form of an award-fee arrangement. Under the cost-plus-award-fee (CPAF) contract, incentive for performance is based upon the buyer's subjective judgment of how well the supplier is meeting contract requirements. The award-fee contract provides no formula at all with respect to final payment of profit to the performer, but it does provide reimbursement of costs by the buyer and normally allows a minimum fixed fee to be paid for the duties completed by the performer. Although the agreed-upon minimum fee for completion of the job in an award-fee contract structure is relatively low, such a contract provides that an additional sum may be paid as an award fee that is based on the buyer's periodic assessment of the seller's performance. The better the performance, according to the standards of the buyer, the higher the award fee to the buyer at the time the award-fee assessment is made. This system of incentive allows maximum exercise of judgment by the contracting parties during the performance period of the undertaking, allows for changes in direction or modification of emphases during performance, and permits payment of profit in accordance with the degree of satisfaction that the performer is able to deliver on his contract. The award-fee arrangement is normally used only by government agencies, but under some circumstances an industrial purchasing agency may wish to examine its possible advantages. □ *Stanley N. Sherman*

Leasing

A properly structured lease, in certain situations, may be a viable method of financing an asset. For example, a more desirable location may be obtained more readily through leasing than through ownership. However, before a leasing arrangement is entered into, all affected company departments must review actual value, costs, advantages, and disadvantages to determine if leasing fulfills the needs of the company. It may be advisable to consult with the company's financial people for assistance based on the organization's accounting methods before making a commitment on leasing.

Regular retail or wholesale suppliers are not, as a rule, capable of offering a comprehensive leasing program. A lease should be entered into only with an experienced and established leasing firm.

Various factors that usually influence the decision between a lease and a purchase are maintenance and repair costs, tax advantages, obsolescence, inflation, and interest rates, need for immediate delivery, long-term cash flow, product

changes, cost control, and the reputation and experience of the lessor in the leasing field.

Advantages of Leasing

The terms of a lease can usually be spread out over a longer period than other forms of financing. At the end of the lease, there may be an option to purchase, negotiate a new lease, or renew the existing lease. Further, when prices are firm for the term of the lease, leasing may be used as a hedge against inflation by paying for equipment or material used today with future dollars.

Leasing improves the financial picture of the business unit, and accounting for costs is simplified. Moreover, leasing provides a method of circumvention of various restrictions which may be imposed by a lender.

Another major benefit associated with leasing is the conservation of working capital and improved credit lines for the lessee. The lessee may choose to use this capital for new-product research or building up reserves of fast-selling inventory items. There are usually tax advantages (for example, sales tax, excise tax) associated with leasing that would not be available under more conventional procurement procedures.

Low initial capital outlay and immediate delivery can make leasing especially attractive to small or new companies with limited startup capital. The small company may transfer most of the risk to the lessor while hoping to pay the leasing costs from anticipated earnings from the leased equipment.

If a company's labor costs for maintenance and repair personnel are extremely high, or if additional maintenance and repair personnel are needed, leasing could prove more economical than purchasing.

Leasing would obviously be the most prudent method of acquisition when an expensive piece of equipment is needed for a short period of time, and there is no foreseeable future need for the equipment. In addition, the risk of having obsolete equipment is greatly reduced.

Disadvantages of Leasing

One of the major disadvantages of leasing is that the lessee loses all rights to the property after the lease expires. There is no asset, no title, no depreciation allowance. Further, rental payments are legal liabilities of the firm, and failure to pay could result in bankruptcy or reorganization.

Many leases are fixed, thus creating a high degree of inflexibility, and leasing costs more than owning the equipment. The offset of deducting leasing costs as direct expenses from profit, hence reducing taxable income, should not be the sole consideration for opting to lease. Corporate income tax will always take its due.

Coordination of the lessor's and lessee's personnel may be required to introduce or explain the leased property. A redistribution and/or change of usual work patterns may also be necessary, with an adjustment phase at both the beginning and end of the lease period.

Usually maintenance is integral to any maintenance agreement, with the lessor's offsite personnel servicing the equipment. Any period during which the

leased property is nonfunctional is a "down" period, resulting in a loss of production, missed deadlines, and lost revenue.

Leasing as a Method of Procuring Assets

Leasing rather than purchasing the asset. A business firm contracts to rent an asset from another firm. The contract includes: (1) a basic term during which the lease cannot be canceled; (2) periodic rental payments; (3) the inclusion of costs of maintenance, taxes, insurance, and the like as part of the rental price; and (4) an agreement that will permit the firm to continue to use the asset after the basic lease term.

Sale and leaseback. Transferring the title of an asset that is owned by the firm to another party in exchange for a price that reflects the market value of the property, following which the asset is leased by the original owner. The net effect of the transaction is for the firm to trade a fixed asset for a current asset.

□ Thomas J. DeSena

Typical Leases

Fleet leasing. Because of high fuel costs, increased maintenance costs as vehicles age, insurance costs, and the trend toward smaller, more efficient vehicles, for many companies automobile leasing has proved to be a viable alternative to purchasing. Automobile leasing usually falls under one of three basic leasing structures:

Maintenance lease. The lessor supplies the vehicles, provides maintenance, and assumes responsibility for depreciation.

Net lease. The lessor supplies the vehicles and assumes the depreciation risk. The lessee pays maintenance and operating costs.

Finance lease. The rental charge is usually a percentage of the capitalized cost of the vehicle, a portion to be used as a depreciation reserve and the remainder as a service charge. When the vehicles are sold, any amount above the depreciated book value is returned to the lessee. If the vehicle is sold for less than the depreciated book value, the lessee is responsible for making up the difference between the actual sale price and the depreciated book value price. Under this type of lease, the lessee usually pays for all maintenance and operating costs along with any state or local taxes.

Real property. Because of location requirements, space requirements, and the finite quality of land, leasing is often used to acquire property, in the right location, when needed. Legally, the term "real property" includes all things which are permanently attached by man or nature to the land.

A lessee has rights in a piece of land which may be graded below those of others, such as owners or mortgage holders. The right to occupy, called right of possession, has been given under a written contract.

As lessee in possession, he or she has the right to privacy and undisturbed peaceful enjoyment of the demised premises. Unless the lease provides otherwise, he or she may keep all others, even the owner, off the property, even defending the right of privacy by force where necessary. In law he or she is regarded as one who has been deeded certain of the rights usually incident to ownership.

Computers. The continual fast technological advances of the computer industry warrant leasing rather than buying various data processing and related equipment. Via a leasing arrangement, the company has available the latest equipment designed for given requirements. The fluctuating demands of current industrial trends do not warrant the financial outlay for an asset that could possibly be obsolescent before it can be depreciated.

The highly specialized technology involved in computers requires professional expertise to resolve problems. Many computer leases provide 24-hour rapid response by the manufacturer's engineers. In some cases, the manufacturer's engineers have on-site facilities at the lessee's location.

□ *Karen V. McGann, Jack Parsons, and David A. Reynolds*

Bailment Agreements

The term "bailment" normally applies to the consignment or loan of property by a supplier to the buying organization, or the loan of property by the buying organization to the supplier—tooling, for example. All property furnished under such circumstances should be covered by a bailment agreement setting forth the responsibilities of the parties for the care of the property and for liability in case of damage, loss, or destruction; the use to which the property can be put; and other pertinent provisions.

Federal Government Contracting

When a government agency decides to make a procurement, it sets in motion carefully documented procedures in the form of official regulations by major agencies of the federal government. These procedures are based on statutes enacted by Congress spelling out what is permitted and the necessary constraints connected with government procurements. The contracts resulting from government procurement actions must reflect all the permissiveness and the constraints embodied in the laws and regulations. Since government contracts represent relationships between private business firms and the government, they represent a special concern that the public interest is served. The statutes and the regulations governing government procurement exist for this purpose, and for this reason it is the responsibility of both businesspeople and government representatives to know the requirements of public documents. Such requirements produce a career field or profession in government procurement quite different from the field of purchasing in private business.

Ensuring Reasonable Prices

A point of great concern in protecting the public interest in government procurements is the contract price. The fact that every government procurement is made with the use of public funds supports the requirement that contract prices be fair and reasonable. Government procurements are performed in a business environment where it is believed competitive forces ensure fair and reasonable market prices. A buyer facing a market price may not necessarily agree that it appears fair and reasonable. When many buyers in a market decide to withhold

their purchases, they tend to depress the market price until it moves to a level considered more reasonable to buyers. On the other hand, withholding of supplies by sellers may accomplish an upward change in the market price considered more reasonable to them.

In terms of total dollars spent, most government procurements are not accomplished under conditions of market prices. Even so, the key to reasonable prices is the force of competition, that is, the more closely the competition resembles what takes place in a market, the more effectively will it ensure reasonableness in the long run. The market is a mechanism which determines the price of particular products, but if market conditions do not prevail for most government procurements, we must determine how effective alternatives to the market mechanism are to produce reasonable prices and thus protect the public interest.

Alternatives to Market Pricing

The preferred alternative to market prices is stated as a public policy in the United States Code (41 USC 252 [c]), which says that procurement shall be made by formal advertising whenever such method is feasible and practicable. The rules of procedure for formal advertising, when this method is feasible, ensure that the lowest bidder will get the contract, and thus the lowest price is realized from among those who are capable of executing the contract. The requirement to apply a test of feasibility or practicability suggests that the use of formal advertising is left to the judgment of those who are planning a particular procurement but they must give priority to this method when regarding alternatives (except when small-purchases methods apply).

Negotiation is the alternative to formal advertising. It is our purpose here to promote the reasonable approach to negotiating government contracts, because such an approach follows the public policy of requiring fair and reasonable prices for such contracts. In the reasonable approach to price negotiation of contracts, as opposed to the pressure approach often used in labor-management disputes, fact finding and analysis are very important ingredients since they are the very essence of reasonableness. The negotiators' skill consists in using the results of fact finding and analysis to bring negotiation positions into some sort of reasonable accord.

In government contract negotiation, the subject matter and the chief issue at stake are the price of the contract. In other negotiations many issues, including price, are to be decided by the negotiators. In government contract negotiation the terms and conditions of a proposed contract are determined at the time of planning the procurement so that they may be incorporated in the request for proposal. Those who are invited to respond to the request must propose a price based upon the terms and conditions contained in the request for proposal. If later, when the government is engaged in negotiations with a particular respondent, one or more of the terms are changed in the process of negotiation, the other respondents must be notified of the changed conditions and be given another opportunity to respond. Generally speaking, the terms and conditions are not negotiable, although negotiators may wish to discuss the precise way of expressing them in applicable contract clauses. The purpose of discussing terms

and conditions is to make sure that the negotiators have a common understanding of them, but they are not issues about which negotiators take positions and move to agreement by yielding or conceding. Only the question of price is resolved in this manner.

Role of the Contracting Officer

In government procurement the contracting officers are the managers of particular procurements. They have been given a warrant which spells out the limitations of their rights and the extent of their responsibilities. The granting of the warrant indicates the degree of confidence in the ability of the contracting officer to manage a procurement. The contracting officer's functions are in two areas: (1) management of fact finding, analysis, and planning; and (2) management of the negotiation process, which calls for leadership in the most effective use of specialist team members.

In today's complex government procurements, the team approach is an absolute necessity, and the role of the team's leader becomes an ever more important aspect of the team's performance. The contracting officer must organize the team into a well-integrated unit working in harmony toward a well-planned objective and must, in addition, have a broad vision of all the complexities of the procurement. Knowing how and when to use specialists to advantage; having sufficient information of the product and its production or its development in a research process; realizing the implications of production and technological problems on cost, quality, and timeliness; being aware of the contractor's viewpoints concerning the likely problems to be encountered; understanding and protecting the government's interests—these demands call for leadership of the highest caliber. It is possible to conceive that each specialist should negotiate his or her particular specialized area of a contract. The meeting of minds in the negotiation process can be achieved only through the leadership of single individuals on each side who have a better grasp of the procurement situation as a whole than any of the specialists.

Negotiation functions are performed within the organizational environs of a team. The formal organization of procurement provides the structure, which in turn provides the management functions for any procurement activity, but within this structure is a fluid arrangement of negotiation teams that vary in their memberships, depending on the stage of a procurement. Membership also depends on the complexity of the procurement. The manager of the team is the contracting officer who is the team leader, responsible for the entire procurement. □ *Ralph P. Baker, Jr., Edward A. Franklin, and Floyd D. Hedrick*

Systems Contracting

Simply defined, systems contracting is a purchasing technique that permits authorized requisitioners to order materials needed to perform their duties from outside sources of supply. The agreement between the using company and the supplier is called a systems contract.

Systems contracting is designed to improve service, reduce cost, and improve

profits. Of major importance is the fact that cost reductions and profit improvement are achieved by both parties.

Application of Systems Contracting

This concept is successful in companies that receive many small orders. A survey of most companies will reveal that 80 percent of all purchase orders issued over an extended period account for less than 20 percent of the dollars spent including raw materials; replacement parts; and maintenance, repair, and operating (MRO) supplies. In addition, we find that MRO items not only are low in value but are highly repetitive and competitively priced. By using systems contracting techniques to acquire MRO supplies a company can greatly reduce many of the problems associated with purchasing.

Paperwork. The standard purchase order method requires many forms and much documentation to complete the cycle from the time a requisition is written to the issuance of the check in payment for the materials. The most commonly used are material requisitions, requests for quotation, supplier quotations, purchase orders, shipping orders, invoices, and checks.

Systems contracting eliminates all the forms except the material requisition and the check. Companies that are totally committed to systems contracting report that over 65 percent of the paperwork can be eliminated in the purchasing department.

Service. By permitting a user (requisitioner) to order materials as they are required directly from a supplier the time cycle is reduced from days and weeks to hours. The purchase order method requires many days to (1) write a material requisition; (2) transfer materials requisitions internally to the purchasing department; (3) select the source of supply; (4) prepare a purchase order; (5) mail the order to the supplier; and (6) assemble the order for delivery.

Attitude. This problem is seldom recognized by the purchasing function where service is regarded as poor by the users, an adversary or defensive situation exists. Purchasing managers try to insist that only their department can commit the company. Users believe that it takes too long to get what is wanted, and therefore orders become "rush" and expediting is required.

Inventory. Closely associated with the service and attitude problems is the buildup of excessive inventory. Where one item is needed, two will be requisitioned to provide a hedge. Purchasing will often inflate these quantities as a further hedge and in the mistaken belief that lower prices for large quantities mean lower costs. Purchasing must recognize that the cost of possession is very often greater than the value of a price difference between immediate needs and quantity procurement.

Systems contracting depends on a highly reliable service capability of a supplier to provide normal material requirements on an "as needed" basis at a competitive price. Once a user becomes convinced of a supplier's consistency in delivering material on time, inventory levels will be reduced dramatically. It will no longer be necessary to duplicate a supplier's inventory to maintain plant operations.

Standardization. The dependence on one supplier for a wide range of supplies automatically achieves product standardization. Brand substitution is not permitted under a systems contract without prior authorization.

Cost reduction. Significant cost reductions are achieved only after several product categories have been placed on the system. At this point, activity levels of paperwork will be reduced to the point where certain job functions can be combined or eliminated, such as clerk-typist, office supply buyer, MRO buyer, and inventory clerk.

A reduction in inventory required to maintain normal operation will free not only capital but also floor space which can be converted to a productive unit.

Systems Contracting Method

It is important to select a category of material that has sufficient volume in terms of order activity and dollars. It is also recommended that the initial venture into systems contracting be confined to a product category that is not considered a critical requirement to maintain production.

The selection of a supplier who is capable of performing according to the objectives of systems contracting is the key to the success of this program. Factors to consider are: proximity, brands, financial strength, dealer volume, purchasing ability, inventory capability, management interest, building, and housekeeping.

Cataloging the material. It is the supplier's responsibility to prepare the catalog of materials. The usual first step is for the supplier to make a survey of each department to determine what items are required to maintain normal operations. The list is then submitted to the users for approval prior to being compiled in a catalog. Each item in the catalog of materials should be clearly and accurately described so that a user can order the correct material in the right amount.

The systems contract catalog also helps the supplier know exactly what items will be purchased and what the order quantities will normally be. As a result, the suppliers can manage their inventories better and expect a higher rate of return on investment.

A priced catalog is made available to the accounting department to verify the cost of materials. In the event of a price change, only the catalogs in accounting and in the hands of the supplier need to be updated. Requisitioner's catalogs are usually unpriced.

Order procedure. The actual order procedure for acquiring materials under the systems contract concept begins with the preparation of a four-part material requisition. This document is essentially the same type of form used to order supplies from a company storeroom. It is controlled by the charge numbers, the signature of the requisitioner, and the signature of the requisitioner's superior (normally referred to as the purchase authorization point). Once the four-part requisition has been approved, the fourth copy is separated from the set and retained by the requisitioning department as its record of the transaction. The original and copies two and three are forwarded to the supplier, usually by mail.

Upon receipt, the supplier assigns each three-part set of requisitions an order number in numerical sequence for control purposes. The supplier also prices each item. Each item is extended to a total, and the total value of all materials required is indicated on the original and copy two. The supplier retains the second copy as a record of the transaction.

The original and copy three are returned with the merchandise and serve as shipping papers. When the shipment arrives the receiving clerk removes the

original document from the package and forwards the package and copy three to the requisitioning area. The requisitioner, therefore, becomes the ultimate point of verification of the acceptability of the transaction and is responsible for inspecting the materials received and insuring that the count is accurate. This is essentially the same responsibility that the requisitioner would assume if he or she had received the supplies from a company-controlled storeroom. The receiving clerk signs the original document, verifying that the transaction has been received, and forwards the original to accounting.

Accounting checks the item prices with the prepriced catalog, checks the mathematical extensions and additions, checks the signatures, and charges the expense as received of the total value of the transaction against the charge number shown. In effect, the material requisition order also serves as an invoice. Rather than pay each transaction individually, accounting accumulates transactions for a specified period of time (usually 15 days) and then issues a voucher referring to the requisition numbers in sequence so that only one check is required. When the supplier receives the voucher, he or she makes a tabulation of value by the corresponding order numbers for verification. The fact that the original document resides in the company's accounting department eliminates the possibility of duplicate payments.

This, then, is the basis of systems contracting. If the method is properly implemented, a company can acquire 80 percent or better of its repetitive requirements from outside sources in a matter of 24 to 36 hours.

Special Situations

Occasionally, quantities of materials greater than those established for a supplier's inventory are needed, and the supplier and the customer must reach an agreement on the amount that will be acceptable in partial fulfillment of the order. Similarly, the customer may experience an emergency need for material outside regular delivery schedules.

Partial deliveries. The chief reason that partial shipments exist is that most companies order large quantities of materials only infrequently. Under systems contracting, the quantities required are considerably less and are ordered "as needed." Most suppliers attempt to turn their inventory six times annually, and they should therefore have ample stocks to take care of daily and weekly requirements.

In the event that the inventory is not sufficient to permit a complete shipment the supplier must notify the requisitioner immediately. If the requisitioner agrees that the quantity available for shipment is acceptable, the quantities indicated in the requisition are adjusted accordingly. The transaction is therefore considered as "shipped complete" and no back order is required.

Emergency shipments. Most suppliers will agree to provide emergency deliveries, regardless of the time of day, under systems contracting. When an emergency delivery is required, the requisitioner simply telephones the supplier, giving a charge number and specifying the material required. The supplier is permitted to add to the cost of materials shipped on an emergency basis all additional costs incurred. The total value of the transaction will therefore be charged

against the requisitioner's charge number, which tends to decrease the frequency of emergency orders.

Writing a Systems Contract

Essentially, systems contracting is a management-to-management technique, and therefore the agreement between the parties should be well defined. It is recommended, however, that both parties should be in a position to discontinue the agreement in the event of nonperformance. Systems contracting is definitely a two-way street, and if either the supplier or the customer feels that it is not being treated fairly, service will deteriorate and the program will fail.

□ *Ralph A. Bolton*

LEGAL ASPECTS OF PURCHASING

A purchasing manager need not be a lawyer to properly handle his or her responsibility of procurement; however, a general knowledge of business law and the current acts, codes, and taxes of the national, state, and local governments is necessary. Purchasing managers must be aware not only of legal obligations to which they commit their company but also of the areas in which they can be held personally liable. They should be familiar with the legal aspects of titles, warranties, rights of rejection and inspection, order cancellations, patent rights, and, in general, with the terms, conditions, and ramifications that are normally considered part of a formal purchase order and acknowledgment.

No longer is the age-old doctrine of caveat emptor ("let the buyer beware") the basis on which business is transacted. While, frequently, warranty may be merely implied, it is becoming more and more important. The complexity of items manufactured and purchased today requires that they be clearly described in a manner which is legally termed as an "expressed" warranty—one where all details and performance requirements are spelled out.

Purchasing personnel should limit their application of legal principles to the area of preventative law and the recognition of problems and situations that should be referred to legal counsel. Familiarity with basic concepts provides a means of avoiding pitfalls and enabling purchasing personnel to recognize areas in which to seek legal guidance.

Liability

In purchasing, the individual whose title is buyer, purchasing manager, or director of purchasing serves as an agent in carrying on the business of buying. Each transaction makes the employer legally responsible under contract law. The actual authority may be expressed, implied, or apparent, depending on whether or not it is spelled out by the employer. The purchasing person must be completely aware of limitations as they exist. Only those transactions that are within the scope of his or her authority may be entered into. There can be cases where pur-

chasing individuals would become personally liable if they were to obtain personal gain or give aid to a competitive company.

The Uniform Commercial Code and Standard Practices

The legal code that affects purchasing-sales transactions, the Uniform Commercial Code (UCC), is a compilation of many commercial laws. It was developed by the American Law Institute and the Conference of Commissions on Uniform State Laws. Purchasing managers should make certain that their personnel understand its implications.

The code is reexamined every five years. However, it should be noted that the code does not take the place of accuracy in a purchase order, care in negotiation or scrutiny of the seller's offer or sales material. It is not a substitute for definitive contractual language, nor will it override the seller's clear terms. Generally speaking, the courts assume that the buyer and seller knew what they were doing in developing and agreeing to the terms of a contract.

Telephone and written purchase orders. Many companies establish a maximum amount below which purchases may be ordered via telephone. Confirming purchase orders should be forwarded to the supplier as a legal precaution.

Terms. Terms on purchase orders are binding, provided that the order is acceptable to the seller and/or that delivery is made. If the terms of the buyer and the seller are conflicting, terms agreed to in writing are binding. The Uniform Commercial Code will usually supply many of the terms. These will be fairly reasonable, middle-ground terms unless the buyers or sellers protect themselves specifically stating, in writing, that their terms are to prevail and are acknowledged by the other party. Specific terms of purchase, clearly spelled out in the purchase order, will generally preclude dispute.

Price. It is preferable that a firm price, to be in effect for a specified period of time, be established on the written purchase order.

Materials and equipment for specified purposes. The seller must be informed of the specific use for which the purchase is intended. The purchase order should provide for details on specifications, performance expected, liability to be assumed, and delivery. Inclusion will insure that material can be rejected if not delivered on time, or that material can be rejected because of damage, nonperformance, or delayed or inadequate performance.

Title. Risk of loss normally passes at the time of title passage. There is no reason, however, that the parties cannot decide on another time and place. For example, title and risk of loss may pass at time of delivery, or title may pass at time of delivery while the buyer bears risk of loss at time of shipment. The assumption of both title and risk of loss should be clearly defined.

Inspection and rejection. Qualified personnel should inspect material within a reasonable time, and inspection should be followed by notice of rejection, when necessary. Contracts should specifically provide for the buyer's right to reject.

Rejected material should not be used except to minimize damages. Rejected material should be protected, since the seller is entitled to receive the material. The purchase price is to be returned or the material replaced.

Specific Federal Laws and Acts

There are two specific federal laws and acts common to purchasing activity, and the purchasing manager must have some understanding of both.

The Sherman Antitrust Act. This act pertains primarily to contracts and agreements which tend to monopolize or restrain trade. A triple-damage clause may be awarded to the person or corporation injured in the violation of the act.

The Robinson-Patman Act of 1936. This act, which is a further refinement of certain aspects of the Sherman Act and the Clayton Act, is under the jurisdiction of the Federal Trade Commission. It prohibits sellers from discriminating in price between different buyers who are purchasing materials of the same grade and quality, when such price discrimination could hamper competition between the buyers and encourage monopoly. Most important is the fact that the buyer and his or her employer can be held liable under the act if they knowingly are a part to such discrimination.

Purchasing managers and buyers should also be familiar with other laws, such as the Federal Trade Commission Act, the Unfair Trade Practices Act, and the Defense Production Act, so as to avoid situations which could result in legal entanglements for both themselves and their employer. Legal counsel should be sought whenever a doubt exists concerning the legality of a purchasing transaction.

State Laws and Taxes

Federal laws are a guiding influence in the operation of the purchasing function. There are, however, local municipality and state laws that must be of concern. Sales, excise, personal property, and inventory taxes vary. Multiplant operations are frequently complicated by such variations and must be reckoned with in interstate as well as intrastate activities. Purchasing awareness is most important here in the proper management of the expenditure of company funds. Taxes are considered as part of the ultimate cost of materials or services purchased. If a tax that should have been paid has not been paid and an assessment is made by the state against the taxpayer, additional costs in the form of penalties and interest are incurred by the taxpayer. Such assessments may equal 36 times the amount of the tax due. It is logical, therefore, that purchasing people obtain some knowledge in the tax area and consult their tax administration departments for guidance.

Warranty

Warranties can be expressed or implied. If, in the absence of expressed warranties of quality, fitness, or performance of a product by a seller, the buyer makes known to the seller the particular purposes for which the goods or equipment are required, relying on the seller's judgment and skill, there is an implied warranty that the goods will be reasonably fit for that purpose. The inclusion of an expressed warranty covering quality, fitness, or performance renders the implied

warranty void, because the implied warranty cannot exist if the seller expressly guarantees the merchandise.

The Purchase Order: A Legal Contract

Every purchase order, or other formal arrangement, can be a legal contract and will be considered by the courts as such if it contains four basic elements: (1) agreement based upon offer and acceptance, (2) consideration or obligation, (3) competent parties, and (4) lawful purpose. Such contracts, which are consummated by authorized purchasing personnel, commit company funds and make the company legally liable.

Purchasing people must use the same caution in their verbal commitments as in written orders, for there are situations in which a verbal agreement will stand up in the courts as the fulfillment of the basic elements of a contract.

Proprietary information. The terms "trade secret" and "confidential information" are often used interchangeably with proprietary information. Proprietary information is defined as any information that is not generally known to competitors and that provides a competitive advantage. Such information may be of a business or technical nature. Public or general knowledge is not construed to be proprietary information.

When in doubt as to whether a particular purchase has proprietary rights, a purchasing manager should seek legal counsel.

Patent infringement. A patent is a legal monopoly and is protected by law for a specified number of years. The patent owner may sue and collect damages for infringement from the user, the seller, the manufacturer, or all of them. Purchasing managers should insert a clause in their purchase orders or contracts to the effect that the seller warrants that there have been no violations of patent rights in the manufacture of the item ordered and that the seller holds the buyer harmless. □ *Arlo E. Carney, Floyd D. Hedrick, and Walter F. Terrell*

INTERNAL AND EXTERNAL RELATIONSHIPS

General company policies, as well as purchasing policies, influence relations with other groups both inside and outside the organization. Within the company, purchasing serves other groups and receives support from them. Outside, purchasing's relations with suppliers, government agencies, and the community enhance the profits and reputation of the company.

Internal Relationships

As a staff department responsible for the procurement of materials, goods, and services required by other departments, purchasing has a continuing service obligation to these internal groups. In turn, the purchasing function depends upon certain services from other internal groups, as well as communication and, in some instances, participation from those requiring purchasing services. All these

areas of interdependence are necessary and significant in properly carrying out the purchasing function.

Differences in industry practices or nomenclature may lead to variations in responsibility assignments. For example, an engineering department in some organizations may control construction, or vice versa; in others, planning and scheduling may be a part of production. Nevertheless, the relationships and interaction between purchasing and other departments in all organizations are essentially the same.

Corporate Planning

The support that purchasing provides to production and other company functions is more effective when purchasing participates in corporate and divisional planning, such as the development of new product lines or new manufacturing facilities, or even acquisition of other companies. Arranging for coordination of any new requirements with existing requirements necessitates a purchasing review of source, supply, and price factors. These activities may lead to the development of alternate sources or to price renegotiation or the use of substitute materials. Clearly, purchasing should be involved in corporate planning and prepare well in advance of need for the impact on its own area of responsibility if it is to provide the most effective support of corporate goals and objectives.

Research

In addition to meeting current production needs, purchasing must be aware of research programs and projects that may influence future trends of sales or production within its own company. This requires knowledge of general company interests as they expand or change, and the options in the marketplace which will support and foster those interests.

Consequently, a real need exists for continuing knowledge of supplier research and development projects that may relate to the company's research efforts. Within the limitations of patent disclosure or other internal security requirements, information on such supplier projects should be obtained by, or with the assistance of, purchasing for its own company's research staff. In cases of significant value to its company, purchasing may be in a position to assist in obtaining exclusive patent rights or licensing agreements.

Purchasing also may be persuasive in directing supplier research efforts into channels offering potential advantages to both organizations, but this can be effective only if purchasing is aware of what its own company's research staff is thinking about. Particularly in companies producing highly technical products, purchasing activities related to supplier research and development may have strong influence on the ultimate market position and profit achievement of the company. This area of purchasing profit making is less easily measured but potentially quite as significant as formalized cost improvement programs.

Finance

Since purchasing commits a very substantial portion of the company's income, purchasing should work closely with the company finance function. This is par-

ticularly important when negotiating terms of payment on major commitments or in the development of leasing programs. Purchasing must ensure that corporate financial policy is adhered to in the purchasing area and that any unusual expenditures are properly planned with the finance function.

Purchasing has a responsibility to be aware of conditions in the financial marketplace, just as it must be in the materials marketplace. When money is more costly or when specific company programs necessitate assistance, purchasing should contribute by recommending leasing programs or similar approaches to assist in bridging exceptional periods and in making better use of corporate funds.

Legal Department

The intricacies of modern business necessitate legal department review of many activities within a company. Major purchase contracts fall in this area. Review of such documents should verify the legality of proposed contracts under bond indentures or credit agreements, determine accuracy of legal content, check that business and policy aspects and consequences of the proposed contract have been analyzed and understood by those negotiating and signing for the company, and ensure that remedies or safeguards in event of default by the other party have been considered.

In addition, the legal department should participate in many other purchasing activities, such as approval of purchasing forms as well as special or standard terms and conditions, settlements of disputes, the legal aspects of insurance matters relating to purchasing, and the provision of legal advice respecting proper compliance with local, state, and federal laws and regulations.

Engineering

The association between the engineering and purchasing departments often involves areas of very significant expenditures, which necessitates the maintenance of excellent communications. Engineering may issue bills of materials or purchase requisitions including specifications for the procurement of equipment, new facilities, product subassemblies, or raw materials.

With the actions of both departments closely bound in fulfilling company objectives, purchasing and engineering must work together in coordinating technical data from sources of supply. Engineering personnel should continually maintain a neutral attitude with suppliers to avoid compromising the company's purchasing position prior to commercial negotiations. Purchasing, in turn, must provide the fullest support to engineering so that the company's aims and programs are effectively and expeditiously implemented.

Production

In most industrial firms production is the principal function which purchasing serves by procuring required materials, supplies, and services in time to provide optimum rate and continuity of production operations. Purchasing also has a continuing responsibility to recommend new products, more practical quality, and more economical quantities to the production department and to keep pro-

duction informed of supply conditions likely to influence future production schedules and operations.

Both departments share an obligation to management to obtain maximum value per dollar expended in determinations relating to value components such as quantity, delivery, and price. Thus, the development of a harmonious relationship is vital to achieving corporate profit objectives.

Planning and Scheduling

Regardless of position in the organization structure, the planning and scheduling department must ensure that material for production operations is requisitioned in ample time to permit purchase and delivery to meet production schedules. Therefore, the responsibilities of the purchasing department to planning and scheduling are similar in large degree to its responsibilities with regard to the production department.

Traffic

Traffic department services and participation are necessary in the attainment of purchasing department objectives. Chief among the many significant services provided to purchasing by the traffic department are the cost reductions which traffic effects through its specialized knowledge of freight rates, classifications, and routings relating to purchased goods and commodities. It is the responsibility of purchasing to solicit the cooperation of traffic in all such areas.

Stores

When the stores function is under the supervision of the purchasing department, purchasing usually has responsibility for control of inventory levels. Irrespective of the organizational responsibility, when electronic data processing is the control method of maintaining proper inventory levels and initiating shipping releases to suppliers, the accuracy of information generated by the stores department is vitally important to purchasing. Much of the information generated and documented by the stores department provides computer data to aid purchasing in evaluating supplier and buyer performance and measuring control of inventories as well as usage of materials in production and maintenance operations. The basic actions triggered by stores information are the release of orders for purchase and the expediting of delayed deliveries. The necessity of stores and purchasing to work closely is self-evident.

Other Departments

Throughout the organization structure there are other departments with which purchasing has interaction from time to time, some more frequently than others. These include such departments as maintenance, construction, and public relations. However, most of these associations are not as significant and demanding as those with the departments described above.

Line Management

When major commodity purchases are under centralized headquarters control, the headquarters purchasing group should recommend appropriate levels

of inventory and should maintain the levels authorized by line management. Consistent with requirements established by management, purchasing must ensure the most advantageous supply arrangements and procurement costs.

In single or multiplant companies, with purchasing groups at each location, plant managers should expect purchasing performance that complies with company purchasing policies and procedures and fully supports objectives and programs of the plant. Purchasing should provide leadership in developing plant purchasing profit improvement programs. Plant management must support such programs and also coordinate purchasing activities with other plant departments to ensure the proper climate for most effective purchasing performance. The interaction in all these areas can be highly significant in profit potential.

Supplier Relationships

Today, business recognizes that supplier goodwill is as important a company asset as customer goodwill. One frequently begets the other since, regardless of the managerial skills of the buyer, production emergencies occur from time to time which only a cooperative supplier can help the buyer's company to overcome. Supplier goodwill results when purchasing motivates suppliers to participate in a mutually profitable buyer-seller relationship. This means that the seller will be exposed to the buyer's manufacturing, inventory, receiving, and other operational problems related to the supplier's products. If a continuing relationship is developed, the supplier can reduce his selling effort and devote more time to the study and solution of mutual problems. The ultimate objective of the buyer is to have the seller's production line become an extension of the buyer's production line.

Since supplier capability is really what is being purchased, although it is in the form of products, the ability to motivate the supplier is extremely important. This ability is enhanced by the manner of dealing with suppliers. A company with a good reputation in supplier relations is likely to do well in meeting the basic objectives of maximum value and assurance of supply.

Reputation is the sum total of public opinion resulting from all favorable and unfavorable personal and corporate experience. Supplier personnel react in accordance with their personal experience. Integrity and reliability are evident to the salesperson if purchasing is fair and honest in its dealings and lives up to its promises. Cooperation is the effort to meet the supplier halfway. The buyer is far more likely to obtain maximum contributed value through new ideas, suggestions, and extra efforts to meet the buyer's special needs in an atmosphere of friendly understanding rather than in a cold, forbidding one.

Community Relationships

Good community relations result when a company or a plant spends its money locally. Purchasing can often develop excellent local supplies by working with them in defining the company's needs and pointing out how they can go about meeting such requirements.

Plants often sponsor junior achievement activities, and in such cases it is rather common for members of the purchasing department to participate actively in the guidance of such groups.

Purchasing is also in a good position to open the door to minority group businesses that make small-dollar-value products but may not know how to market their products and services.

Active participation in local trade and professional associations as well as civic organizations also contributes to the company's reputation as a good citizen of the community. In each of these activities, purchasing can make its contribution.

Government Relationships

The purchasing department generally does not function as a direct party in communication between the company and the government's authorized representative, usually the contracting officer. When government contracts are contemplated, however, the purchasing manager functions as a vital subcontracting link and materials expeditor and a cost controller. The necessity for the purchasing department to be aware of corporate planning when venturing into government relationships is extremely important in periods when pricing changes are frequent and materials stockpiles minimal.

The purchasing manager operates on a daily basis within the vast context of law, government regulation, and company policy. To the degree that the company activity seeks direct government contracts or seeks them indirectly as a subcontractor or supplier, there is an absolute need to understand regulating provisions. Each level of government establishes its own procedures, but when expending public funds, a common thread throughout these systems is price competition, based upon firm specifications or systems negotiation. Understanding government contract terms and specifications is essential to the purchasing manager.

There is a continuing need to intermix company policies and goals with those of the government. This need is more compelling as government regulation expands to require the purchasing managers to incorporate and administer certain socioeconomic programs in their prime and subcontractor relationships. Each purchasing manager must develop a working knowledge of the types of government contracts, the use of government-furnished property and commodities, multiyear contract provisions, subcontract analysis and audit requirements, provisions for use of American-made products, and so forth.

It is essential to maintain a good working relationship with government personnel. The contracting officer and other authorized government representatives are vitally interested in obtaining the product or service in a timely manner; therefore, a smoothly functioning open line of communication is essential. There may be a tendency to view all government procurement activities with the same administrative burden, when in fact there are great differences depending on the branch of government, type of contract, agency regulation, degree of direct government intervention, contract administration, and so forth. The purchasing function becomes more difficult in attempting to pass government regulations on

to the subcontractor and suppliers. Advice, assistance, and cooperation from the lowest-tier supplier through the purchasing department to the government contracting party guarantees an effective working relationship with the government.

Competitive Advantages

Many areas of competitive advantage accrue to a company through the effective performance of the purchasing function, and both internal and external activities must be considered.

Internal Activities

Purchasing must be staffed with personnel who have technical and administrative training, intelligence, imagination, and enthusiasm. They must exercise initiative, judgment, and tact, and they must have the ability and willingness to assume responsibility. A buyer need not be an engineer to buy engineered products, a cost accountant to understand the meaning of cost, or a lawyer to write or interpret contracts; but in integrating activities of his or her own internal operations, the buyer must understand the principles of each of these as well as other areas. Only with such understanding and background can buyers effectively cooperate with departments inside their own company and effectively negotiate with suppliers.

The quality level of a company product is usually established by engineering or production. If the buyer has a broad and deep knowledge of the materials required and actively participates in establishing quality levels, he or she can substantially influence the cost of the product to the competitive advantage of the company.

Quantity and delivery decisions usually are made by the production group responsible for inventory control and scheduling. Their job is to bring together the people, materials, and machines to accomplish the desired production objective. However, through minor modifications in quantity and delivery schedules, there may be great opportunities to enable the supplier to produce the required materials at considerably lower costs and to sell them to the buyer's company at lower prices. Involving purchasing individuals in planning and scheduling decisions that result in more efficient use of the seller's facilities can also create competitive advantages through lower product unit cost for the buyer's company.

Technical assistance is available to every company from its suppliers. It is an important responsibility of a purchasing organization to obtain technical assistance in terms of highly specialized knowledge, research and development, and product application effort. This can be done only if purchasing is working closely in its own organization with product development or engineering to stay abreast of company plans and objectives. Purchasing can then effectively communicate with suppliers who are strong in research and development and are the innovators, the people who believe in progress.

Finally, if a purchasing manager has participated in the other significant decisions concerning quality, quantity, delivery, and level of technical assistance re

quired, he or she is in an excellent position to handle price negotiations. If the manager has the authority to make modifications in quality, quantity, and delivery through cooperation with and knowledge of the programs and needs of other internal departments, the ability to bring competition to bear on the requirements is enhanced. It should be clear that price can never be successfully separated from the other important elements of value in the buying decision. Therefore, if the buyer participates substantially in the other significant areas, he or she has greater negotiating leverage.

External Activities

Good buyers recognize that the maintenance of sound supplier relations enables them to secure valuable advance information concerning price movements and availability of materials. Such information is essential to the competitive position of their own company.

Good relations with the supplier, and particularly with sales representatives, provide a real opportunity to develop new ideas, new techniques, and better application of existing materials and supplies to the mutual benefit of both the buyer and the seller. The development of such a relationship takes place over a period of time and results in a gradually increasing exchange of information about the business of the buyer and the seller that brings out savings and profit opportunities for both parties.

The buyer-seller relationship should be held within the context of a business association; if it is extended into the social area, such a relationship can easily be self-defeating. Other potential suppliers will learn of it and tend to withhold helpful information, in the belief that it will not get business for them but merely contribute to the improvement of their competitor's position by being passed along through the buyer.

Good supplier relations with a broad range of suppliers in all the important categories of materials used in any business will enhance competition. There is no real substitute for true competition between suppliers for a company's business. Good supplier relations that maximize that competitive situation will inevitably create lower costs and greater profits for the buyer's company.

Effect on the Corporate Image

With the possible exception of the sales department, no department sees more people from outside the company than purchasing. Supplier representatives are required to call on purchasing in order to sell their products, providing purchasing with the opportunity to enhance its company's image through friendly reception, courteous treatment, promptness in keeping appointments, and a fair hearing.

Salespeople are usually realistic. They know that no salesperson can get every order. Even so, salespeople naturally feel disappointed when they fail to get an order, particularly one on which they have worked very hard. They will, however, bear no ill will toward a purchasing department that has a record for fairness to all suppliers. But if they feel that they have been given a brushoff or that

they are the victims of unfair treatment, the purchasing manager and his or her company will suffer damage to their reputations everywhere salespeople meet and compare notes.

Although a reputation for fairness does not appear on the balance sheet, it is a valuable asset to any company.

Effect on Sales

Good internal and external purchasing relations contribute to more efficient operations and more effective purchasing. Both of these favorable effects will show up in an end product that meets the corporate objectives on quality and cost. As a result, these favorable characteristics should place the company in a better overall competitive position to generate a sales volume that also meets the corporate objectives.

Most large multiproduct companies will find some of their best customers in the ranks of their suppliers. This will be true particularly where the supplier is itself a large multiproduct company. Under these circumstances a buyer's fair dealing will provide an extra dividend in opening the door for his or her own salespeople.

Equally important in its effect on sales and the ability to sell its product is the company's reputation throughout the trade for being fair, impartial, progressive and yet considerate in its dealings with suppliers.

Purchasing Manuals

It has become axiomatic that company policies must be put into writing, and many companies have not only spelled out their basic management and personnel policies, but have issued detailed manuals covering a number of other key management functions. Yet, surprisingly, purchasing seems to be an exception. A recent survey covering more than 600 companies showed that fully 77 percent had no written purchasing policies of any kind. The companies surveyed represented a good cross section of all types of industries, large and small, engaged in fabricating, processing, or service where purchasing was an important factor.

Assuming that it is desirable to put purchasing policies into writing—and this would seem unquestionable in view of the tremendous sums of money involved in the purchasing function, its broad range of contacts, and its key role in keeping company supply lines filled—what types of written purchasing policy manuals should a company consider issuing, and how should it go about developing them?

Purchasing manuals generally fall into two categories: the external, "welcome" type, which is distributed to suppliers, and the "procedural" kind, used for internal control.

External Manuals

A typical "welcome" brochure or manual given to suppliers includes information about the company's procurement policies, the names of buyers, commodities purchased, and other information that might be of use to salespeople—for example, a map of the area and turnpike and route information. Such material

clearly designed to fulfill the stated purpose of the manual—to ensure that the salesperson's visit will be an enjoyable one and that it will result in mutual benefits between the buyer's company and the supplier's.

Internal Manuals

The internal procedural manual should contain a detailed and thorough review of all operating systems and methods governing conduct between all departments in the company. Compiling such a reference source requires a great deal of work; it may take years to complete, and maintaining it up to date is a continuing task. A look at the contents of the manual provides a good idea of the type of material usually contained:

Organization of the purchasing divisions	Return of material
Responsibilities—generally stated	Small claims
Information on:	Rush orders
Authority for requisitioning	Standardization
Expediting	Acceptance of gifts
Coordination with other departments	Inventory policy
Quotations	Speculative buying
Blanket orders and local purchase orders	Government regulations
Product testing	Plant visits
Cash discounts	Personal purchases

The procedural manual is usually quite large and it contains a great deal of information on internal procedures that would be of little value to a supplier. For this reason, it is seldom used outside the company.

Purchasing manuals have already proved their worth in many companies, and it is undoubtedly true that many more could profit by undertaking to state their policies clearly, consistently, and in writing. In a small company where purchasing, production scheduling, inside sales, and design engineering are handled by two or three individuals, or one department, a separate purchasing manual is probably unnecessary. But once a company has grown to a size where conflicts, either inside or outside the company, begin to develop, spelling out the policies and procedures of purchasing can effect a substantial savings of money, time, and supplier goodwill.

Ethics

Many years ago the National Association of Purchasing Management established its principles and standards of purchasing practice as a guide to ethical conduct of people involved in the purchasing function. The three principles set forth then were (1) loyalty to one's company, (2) justice to those with whom one deals, and (3) faith in one's profession. The standards derived from these principles follow:*

* National Association of Purchasing Management, Inc. Used by permission.

To consider, first, the interests of one's company in all transactions and carry out and believe in its established policies.

To be receptive to competent counsel from one's colleagues without impugning the dignity and responsibility of one's position.

To buy without prejudice, seeking to obtain the maximum ultimate value for each dollar of expenditure.

To strive consistently for knowledge of the materials and processes of manufacture, and to establish practical methods for the conduct of one's business.

To subscribe to and work for honesty and truth in buying and selling, and to denounce all forms and manifestations of commercial bribery.

To accord a prompt and courteous reception, so far as conditions will permit, to all who call on a legitimate business mission.

To respect one's obligations and to require that obligations to oneself and one's concern be respected, consistent with good business practice.

To avoid sharp practice.

To counsel and assist fellow purchasing managers in the performance of their duties, whenever occasion permits.

To cooperate with all organizations and individuals engaged in activities designed to enhance the development and standing of purchasing.

Everything a purchasing manager says or does is watched by his or her colleagues, others in the company, suppliers, and the general public. Because purchasing is a profession, its practitioners must reflect professionalism in their activities. Indeed, it is human nature for people to closely scrutinize any person who has the responsibility to spend someone else's money.

The integrity of people in the purchasing function must be beyond challenge or reproach in every business transaction.

□ *Duncan S. Gregg, Floyd D. Hedrick, John G. Kormos, and Leonard A. ...*

EVALUATION OF PURCHASING PERFORMANCE

Over the years purchasing departments have evolved into capable, efficient units within the companies they represent, but an effective measurement of purchasing performance has yet to be developed. Top management and purchasing managers alike would welcome some universal and reliable method of evaluation of both individual and departmental efficiency. A great deal of time has been spent on the subject by both purchasing managers and university business departments who feel that there is an opportunity to provide something meaningful to industry. Nearly every purchasing text or handbook addresses the subject, but none more than provide general guidelines for those who hope to develop an acceptable means of evaluation.

An easy error that must be guarded against in measuring purchasing performance

ance is oversimplification. The task is difficult even in the most fundamental cases because so little can be appraised adequately in quantitative terms. It is true that in the supporting clerical activities, where much of the work may be repetitive in nature, it has not been too difficult to develop workload data and performance criteria. But on the buyer level and within the areas of administrative responsibility, performance is not so easily appraised. When the work of an individual or a department is complex and largely of a mental nature, and when it involves a high degree of personal contact, it becomes far more difficult to develop measures of proficiency. Like salespeople, purchasing personnel must be highly effective in interpersonal relations. The inherent danger in evaluating those who deal with people, rather than things, is that there may be an attempt to measure subjective matters in physical terms. Similar difficulties are present for the financial and marketing functions. This section provides a review of some of the possibilities that permit the manager to develop whatever means of evaluation might be applicable to his or her particular situation.

Why Evaluate?

Purchasing in today's world represents an important part of the organization, because in most instances the cost of purchases has a heavy impact on a firm's costs and consequently on its profits. Many, in fact most, of these costs can be at least partially controlled. To do this effectively requires a high level of performance by purchasing.

Almost any part of any organization should be subject to evaluation. Some activities, like production or capital investment projects, lend themselves to quantitative measurement. In these areas measurement of results may be developed quite easily and simply. However, in other portions of the organization, like purchasing, evaluation is more qualitative and subjective and therefore more difficult. This should not deter the manager from evaluating the performance of the purchasing department or the individuals that make up the department. Performance is dynamic, that is, it tends to be always changing for better or worse. Performance ultimately will become clearly recognized as very good or very poor. It is therefore vitally important that responsible management be in a position to periodically monitor and adjust performance trends to avoid possible crisis and maintain continued improvement. Only by doing this can managers ensure a consistently high level of purchasing performance. Not only does the department manager need some means of evaluating results, but the manager's superior should have some method of determining the department's effectiveness.

A key element in purchasing performance is the morale of the various people that make up the purchasing department. Since any evaluation process tends to clarify goals and measure progress against those goals, morale tends to be higher as people perceive forward, positive progress and contribution. Of course, care should be taken to ensure that the evaluation is perceived by the employees as fair, or morale can be adversely affected. Thus, however difficult it may be, sound evaluation is not only desirable, it is essential.

What to Evaluate

Both in determining what to evaluate and later in using the selected criteria, it is important that management bear in mind that no single criterion or combination of criteria can be the complete answer on department or individual performance. Instead, they are at best good directional indicators that require subjective management adjustment to account for the changing circumstances—both within the firm and outside it—that impact on performance.

With that key point in mind, the first step in evaluating purchasing performance is to clearly define its mission. The general goal of achieving the best combination of cost and service levels must be broken down much more specifically before appropriate performance criteria can be determined. At the same time, hard choices about priorities must be made. In addition, these goals and priorities may not be the same for all items purchased.

For instance, a portion of the firm's purchases may be items whose cost is not as important as quality and availability to the firm's operations. In that case, evaluation would center on measures of quality and timeliness with secondary attention given to cost. Another portion of the firm's purchases could have more impact on product cost, competitiveness, and profits. There, the measures would be on criteria directly related to cost with possibly less attention given to other items.

In addition to tracking items that reflect *current* and *past* performance on the mission, purchasing should develop criteria that reveal probable future performance trends. Along with the effort devoted to direct buying of specific items, purchasing departments usually devote time in two other areas: developing and maintaining blanket orders; and improvement projects, for example, better inventory control systems, computerization, organization studies, new procedures, and budgeting. This time may be spent by management, by full-time staff, or by part-time personnel, or all three. Evaluation and control of these efforts should reveal what the future may hold.

How to Evaluate

Many of today's larger business organizations have systems designed to evaluate the performance of a whole department (objectives programs, budgets) and of employees (performance evaluations, career development plans). Most of these systems are general and qualitative in nature so that they can be applied across the board. Purchasing departments and people usually are included in such evaluation programs where they exist; in those cases purchasing is already evaluated or at least it is possible to do so. Many purchasing managers, however, feel that something further than the standard systems is both necessary and desirable when assessing performance of purchasing.

The measurement criteria listed below may be useful in specific situations. Once the appropriate criteria are selected for a given firm's situation and mission, they can be incorporated into the evaluation vehicles mentioned above, if they exist. Other criteria may be used outside the companywide systems as supplied.

ments for purchasing. Possible evaluation criteria can be divided into two groups—regularly recurring ones, which consistently repeat on a week-to-week or month-to-month basis, and periodic ones, which occur in much longer time cycles or as needed.

Recurring Criteria

Below are some of the criteria that may be compiled and used by purchasing for key portions (or possibly all) of the procurement functions.

Purchase dollars, total or per order.

Number of requisitions.

Number of orders placed.

Total department budget cost.

Number of employees.

Cost or number of employees in relation to purchase dollars.

Price versus published list.

Price versus last year's, last month's price.

Price versus general economic or specific indicators (for example, the PPI and the CPI).

Average time from requisition receipt to order placement.

Average time from requisition receipt to delivery.

Average time between order placement and delivery versus published lead time indicators.

Average time between promised delivery and actual delivery.

Percentage of off-spec items.

Inventory levels versus target.

These and similar criteria, which can be shown in tabular or graph form, generally indicate past performance. However, after several years of data accumulation, future targets could be developed as a means of evaluation. Again, they should not be used in a void as absolute measures. Combined with the periodic measures below, they are an aid in evaluating workload and performance and in forming sound judgment about the general situation inside and outside the firm.

Note that "savings" is not included in the above list. Unfortunately, the use of savings figures raises a question of the integrity of the numbers. Quite often the savings numbers are larger than are believable and thus they are found to be suspect. One of the more effective methods of evaluating savings is by relation to a standard cost. If such a system is in place, used regularly, and controlled so that standards are realistic, variances become obvious and can be used as one of the evaluation criteria.

Periodic Criteria

These performance measurement criteria could be used inside purchasing or for evaluations by outside parties. They are more often qualitative and subjective than the recurring items.

- Departmental objectives and complementary individual objectives, annual or ongoing (these may include items listed below or a wide variety of improvement projects; they also may be directly related to an individual's work or completely unrelated).
- Supplier management activities: (1) upgrading of supplier base—for example, number of better qualified suppliers added or number of problem suppliers eliminated; (2) improving supplier qualification procedures; (3) number and impact of supplier product innovations; (4) inventory cost improvements—that is, any shifting of inventory to suppliers; (5) percentage of firm price versus cost at time of delivery agreements.
- Product or ingredient innovation by purchasing (value analysis). Number and quality of training programs and number or percentage of people affected.
- Improvement in policies and procedures—for example, efficiency, control, clarity, effectiveness.
- Amount of work mechanization pursued and implemented.
- Degree and nature of planning for future activities.

These and similar criteria are oriented toward determining and controlling future trends, whereas the recurring items are intended to measure today's situation. Some in each category may fit in the other category depending on the situation.

Another useful vehicle for these evaluation measurements is the audit function, which in today's business world is increasing in importance. Staff auditors, who are more capable and better trained than formerly, in many cases conduct regular reviews of purchasing departments. These reviews can provide meaningful evaluations of certain aspects of purchasing such as adherence to procedures, adequacy of records, and even the proper selection of suppliers. To make such audits effective, it is desirable for the purchasing manager to explain departmental activities before the audit commences.

It also is possible to retain an outside consultant to provide a one-time evaluation. If such a consultant is sufficiently qualified, he or she can review present activities and suggest guidelines by which to judge future results.

Setting up an evaluation system cannot be done overnight. Moreover, it requires continual adjustment as missions, priorities, and situations change, but it should be worth the effort in resulting purchasing performance improvement.

Managerial effort. The appraisal of purchasing managerial effort is the least tangible but very possibly the most meaningful to top management. Such an appraisal may include a study of procedures, policies, personnel, organization, records and reports, planning, and management controls. What the evaluator seeks is evidence of a well-planned program. Effective purchasing performance is no accident.

Proficiency. Purchasing proficiency pertains to the control of prices, quality standards, quantity and inventory levels, and timeliness of deliveries. The problem in evaluating these factors is that they are difficult to quantify or measure. Furthermore, improvement in one may induce deterioration in another; the sta-

tistics must therefore be examined carefully if their true meaning is to be properly assessed.

Setting Standards

Every well-managed purchasing department has some standards of performance against which it evaluates current levels of activity. The level of sophistication of the evaluation system and top management's interest in its application are frequently indications of purchasing's importance to the company.

Setting standards and then measuring performance against them can have a very stimulating effect on the purchasing department. This management technique can be used by the purchasing department administrator to monitor performance and induce improvement, and it can similarly be used by management service personnel or independent consultants. Often, the justification and review of activities help spot deficient practices, and the psychological effect alone is frequently beneficial.

Any department or functional area is likely to benefit from analysis and evaluation. Improvement is always possible. But management probably has most to gain from appraisal and subsequent improvement in purchasing. Although evaluation is inherently difficult and often regarded as an expense or nonproductive factor, purchasing can use an evaluation system to produce a greater impact on profit than any other functional area of management. Management expects this impact to occur, and purchasing must accept this responsibility.

Financial Statements and Reports

Typically, the purchasing manager and the marketplace evaluate a supplier on its ability to compete in such factors as price, product quality, service capability, and reliability. Although these are essential elements, the purchasing manager can enhance his or her perspective by viewing the supplier from the standpoint of the financial community. This new perspective will not only aid in ensuring security of supply, but also may lead to improved value through better preparation for negotiation.

This perspective may be gained through analysis of various financial statements and reports. There are three major types of financial reports that contain information that may benefit the purchasing manager: the annual report, the Securities and Exchange Commission Form 10-K, and the credit report.

The Annual Report

Annual reports may range in style from graphically appealing booklets to a simple multipage typewritten report. The differences in presentation depend primarily on the target of the report since its purpose is to sell the company. Annual reports generally are for appeal to shareholders, bankers, brokers, members of the financial community, suppliers, and employees.

There are three essential sections in an annual report: the report or opinion of the certified public accountant, the balance sheet, and the income statement. Other commonly included reports are the statement of retained earnings and

statement of source and application of funds. The statement of cost of goods sold, the statement of selling and administrative expenses, and the investment analysis may also be included and provide useful information in evaluating organizational structures.

The report or opinion of the certified public accountant. This essential element of the annual report indicates review of the report by independent auditors and should verify use of generally accepted accounting principles. Any exceptions to the report are highlighted in this section. The independent auditor certifies only adherence to accounting principles, not the accuracy of the report.

Balance sheet. The purpose of the balance sheet is to state the financial position of the firm as of the date of preparation. Assets, liabilities, and equity are listed in major categories; however, the subcategories provide the information that is most significant to purchasing. Of particular interest from a purchasing perspective are cash, receivables, inventories, current liabilities, and equity.

The balance sheet reflects position on a certain date and provides no assurance that a strong or weak position will endure. To be meaningful for analysis, historical balance sheets and like information on competitors and/or the industry are essential for comparative purposes.

Income statement. The income statement is simply a statement of operating results (profit or loss) for a period of time. Major categories include revenue, cost of goods sold, operating expenses, and net profit (or loss). Although each of these is helpful in analysis, any detailed breakdown (such as salaries, depreciation, taxes, and the like) is of great benefit in an analysis for purchasing.

Form 10-K

Annually, most corporations are required to file certain information with the Securities and Exchange Commission. The information is submitted on Form 10-K and is a public record. It is essentially an annual report and contains much of the same information; however, it must illustrate two consecutive years in all categories of reports.

The advantage of the 10-K is that it requires "Line of Business Report" information. This is of benefit to purchasing in studying a particular division of a major corporation, such as the chemical operations of a steel company.

The shortcoming of the 10-K is that small corporations, partnerships, and proprietorships are not required to file with the Securities and Exchange Commission. Only larger corporations exceeding certain levels of assets and number of shareholders must submit the report.

The Credit Report

The credit report, such as that published by Dun and Bradstreet, is generally prepared for banks or businesses to assess ability to pay for goods and services and to repay debts. Items normally addressed in the report include:

Payments—a record of payment history to indicate fast or slow pay.

Financial information—usually a balance sheet and income statement.

History—a background of the company including year established, initial capital, and major changes in operation.

Operations—a description of the lines of business and scope of each.
Management background—experience of key executives of the firm.

Almost all information in the credit report is of some use to purchasing.

Use of Financial Reports in Purchasing

Although none of the reports discussed are targeted for or prepared for purchasing, the information included may be extremely useful to the purchasing manager. The reports and analysis of information included in them are commonly used for two major purposes: assessing financial stability of suppliers, and preparing for negotiations.

Assessing financial stability. The tool most commonly employed to assess financial stability is the credit report. Although the credit report is informative in determining payment history, further study of other reports may provide better focus on financial stability and the long-range outlook for the firm. Assessment of the long-range potential of the firm is vital to ensure continuity of supply of both the primary product and replacement parts.

To assess viability of a firm in the long run, it is necessary to examine its history. Many annual reports include historical balance sheets and income statements; however, additional research may be needed.

There are a number of meaningful tests and ratios that may be applied to the balance sheet to assess financial stability. Calculation of current ratio, working capital, and quick assets over time will illustrate cash-flow management and may identify any problem trends. The debt-to-equity ratio is a very informative tool in assessing any changes in the capitalization of the firm.

Some degree of caution must be employed in using ratios and other tests of financial statements. They should not only be examined over time but also compared with others in the same business. Ratios may vary significantly among industries, and proper interpretation must be based on a norm for the industry. Caution also must be exercised in examining ratios internationally as capitalization requirements vary significantly among major industrial countries.

Examination of the income statement over time will reveal trends in profitability in varying economic environments. Use of data from the income statement and balance sheet in tandem will enable calculation of trends of key measures, such as return on equity and return on capital employed.

For subsidiary operations of larger corporations, the 10-K is extremely beneficial in this area. Trends identified in the analyses mentioned above may be compared with the overall results of the corporation to ascertain whether the line is providing an equitable contribution to the parent company. Potential divestment may be identified in such a comparison.

Having examined historical performance as outlined above, assumptions may be made regarding future economic and market environments to estimate the supplier's financial condition in coming years.

Preparing for negotiation. Most commonly, financial reports are used in assessing financial stability of new suppliers only. It is less common to analyze such data for established suppliers. Unfortunately, it is indeed rare for information contained in financial reports to be used in preparing for negotiations. By exam-

ining the seller's costs rather than the market price, the purchasing manager has an opportunity to be aggressive and creative in formulating strategy for an arrangement beneficial to both buyer and seller.

Price is the most common topic in a negotiation and is generally considered to be a function only of cost and market conditions. Close scrutiny of financial reports will aid the buyer in viewing price from the position of the supplier's controller, treasurer, chief executive, creditors, and shareholders.

Financial statements may aid in identifying inventory imbalances. If such imbalances are severe, a favorable price may be negotiated to correct the imbalance and benefit both buyer and seller. Excesses may be identified in absolute terms from a series of balance sheets or in examining inventory turnover ratios over a period of time.

Inventories also may be addressed from a systems contracting perspective. In such an analysis, the impact of higher inventory cost to the potential supplier may be assessed more accurately and, as a result, affect the price negotiation.

Although the assessment of financial stability may fail to identify risk in entering an agreement, the analysis may identify opportunities to improve the supplier's financial condition. For example, payments may be accelerated in exchange for discounts to aid the supplier's cash flow. On the other hand, a supplier's request for advance or progress payments may be avoided if a strong current ratio is identified.

The examples above represent only a few opportunities for use of a supplier's financial statement to benefit both parties. Examples of other opportunities include lease versus purchase of the supplier's capital products; long-term purchase contracts to aid the supplier in securing financing; and accepting large shipments with deferred payments to reduce warehousing costs. The opportunities are limited only by the diligence of the analysis and creativity of the purchasing manager in matching the financial needs of the supplier with the capabilities of the buyer for a mutual benefit.

Benefits of Financial Statement Analysis

Although the various financial statements and reports are not written for the benefit of purchasing, the purchasing manager's working knowledge of their contents can ensure that benefits accrue. Examination of a firm from both the perspective of the marketplace and the perspective of the firm's creditors and shareholders aids the purchasing manager in buying total value from a financially stable supplier. □ *James E. Ahrens and J. M. McLaughlin, Jr.*

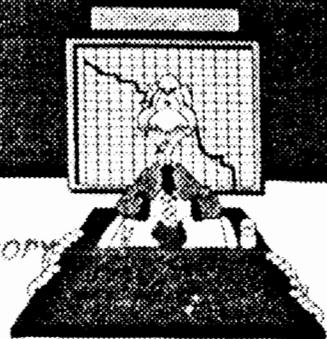
PHYSICAL DISTRIBUTION

Physical distribution is the field of management activities that get the finished product to the right place, at the right time, in the right condition, and at the right cost for customer sales. Too often it is incorrectly viewed as an unavoidable *indirect* expense. However, many companies have revised their concept and conclude that physical distribution costs are a *direct* cost of business.

Importing US Commodities Under The PRCI

The Process:

- Get quotations from a reasonable number of U.S. suppliers, or one offer can be submitted if you are an agent, representative or distributor for the supplier.
- Fill in the application form.
- Submit the application to any of the Egyptian participating banks.
- Fulfill all the bank requirements for the credit.
- After approval of your credit facilities by your participating bank and once the bank and USAID/Egypt are assured that all requirements have been fulfilled a letter of credit is opened by your bank and advised by the U.S. correspondent bank to the U.S. supplier.



NOTES :

- Only private sector importers are eligible.
- The interest-free grace period starts from the date the payment is made to the U.S. supplier.
- The exchange rate is fixed at the time the letter of credit is opened.
- The minimum transaction amount is \$10,000.
- You can qualify for a maximum limit of \$ 8 million per year, according to the type of transaction.
- Information about U.S. Suppliers is available from the Foreign Commercial Service at the American Embassy.

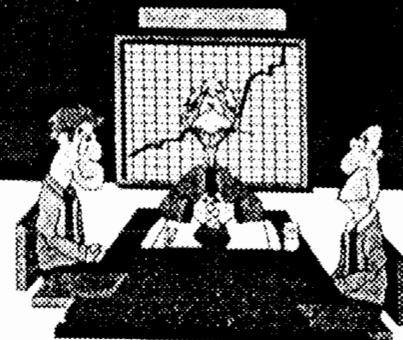
CREDIT TERMS OFFERS UNDER THE PROGRAM

	Trader	Enduser	Enduser located in, outside Egypt	Enduser located in Egypt	Enduser importing agricultural products
Maximum interest free grace period					
- for non-capital equip.	9 Months	9 Months	12 Months	12 Months	
- for capital equipment	9 Months	18 Months	24 Months	24 Months	28 Months
Maximum repayment period (after the interest free grace period)					
- for non-capital equip.	6 Months	18 Months	18 Months	18 Months	
- for capital equipment	6 Months	3 Years	5 Years	5 Years	5 Years

ANNUAL LIMITS FOR INDIVIDUAL IMPORTER

- The minimum transaction size for both capital equipment and non-capital equipment is \$ 10,000
- The maximum use of the program per importer during a calendar year is as follows :
 - 1) Trader \$ 5 million
 - 2) Enduser importing non-capital equipment \$ 4 million
 - 3) Enduser importing capital equipment \$ 8 million

- The United States Agency for International Development (USAID) acts only as a financier of import transactions. Neither USAID nor the Government of Egypt has any responsibility for the performance of a supplier or for the quality, suitability or reliability of a supplier's products.



1. AlWatany Bank of Egypt
2. American Express Bank
3. Arab African International Bank
4. Arab Bank
5. Bank of Alexandria
6. Bank of Commerce and Development
7. Banque du Caire
8. Banque du Caire Barclays International
9. Bank Misr
10. Commercial International Bank
11. CitiBank
12. Credit Internationale d'Egypte
13. Delta International Bank
14. Egypt Arab African Bank
15. Egyptian American Bank
16. Egyptian British Bank
17. Egyptian Commercial Bank
18. Egyptian Gulf Bank
19. Export Development Bank
20. Industrial Development Bank of Egypt
21. Misr American International Bank
22. Misr Exterior Bank
23. Misr International Bank
24. Misr Iran Development Bank
25. Mohandes Bank
26. National Bank of Abu Dhabi
27. National Bank of Egypt
28. National Bank for Development
29. National Societe General Bank
30. Suez Canal Bank
31. United Bank of Egypt

**You have all the support you
need !**

HOW TO FIND US :

• United States Agency for International
Development.

Commodity Management Division.

Zahraa El-Maadi

Cairo, Egypt.

Tel: (20-2) 516-5505 ext. 2143, 3789

Fax: (20-2) 516-4652

• United States Agency for International
Development, Alexandria.

36. Beny El Abbas Street , behind
National Security

Tel.: (20-3) 482-8458 , 482-9301

Fax: (20-3) 483-8830 , 482-8458

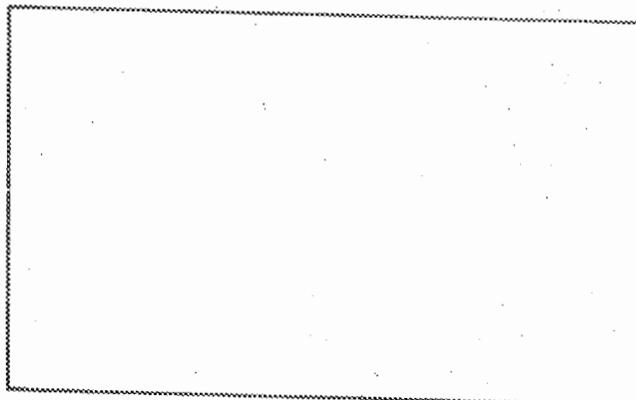
• Ministry of Economy and International
Cooperation.

Department of Economic Cooperation with U.S.A.

48-50 Abdel Khalek Sarwat , Cairo.

Tel.: (20-2) 390-5100 , 390-5125

Fax: (20-2) 393-8187



**What you want
to know about
USAID's...**

**Private Sector
Commodity Import
Program**



is all here..!

MINISTRY OF INTERNATIONAL COOPERATION

GENERAL CIRCULAR NO. 1

Issued June 15, 1999

Rules and Procedures for Utilization of Funds under the Private Sector Commodity Import Program

- 1. To encourage the Egyptian Private Sector to participate in the development of the country in accordance with the priorities of the State, funds from the United States Agency for International Development (USAID) economic assistance program are provided to the private sector to finance the importation of capital goods, intermediate commodities and raw materials from the U.S.A. The rules and procedures set forth in this Circular shall apply to all funds advanced to the private sector under the Private Sector Commodity Import Program. In addition, all import transactions to be financed under this program must comply with USAID Regulation 1.**
- 2. All Egyptian private sector entrepreneurs and firms are eligible to participate in this program. Entities which are established in a free zone or which have Public Sector ownership exceeding 40% are excluded from this program. However, in some cases where the project is determined to be specially serving the national economy, an increase in the percentage of the Public Sector ownership could be considered upon mutual agreement between the Ministry of International Cooperation, Department of Economic Cooperation with USA (MIC, DEC/USA) and USAID/Cairo. Importers must have a commercial or industrial registry and a taxation card (unless legally exempted), with the latter to suffice in the case of a private entrepreneur working in non-commercial or industrial fields (unless legally exempted).**
- 3. Primary implementation responsibility for this program shall rest with the Participating Banks listed in Attachment No. VI to this Circular. Allocations of funds will be made available through Letters of Commitment in favor of the Participating Banks' named U.S. Correspondent Banks and will be based on proper and prompt utilization and timely reporting. MIC, DEC/USA and USAID/Cairo must approve all proposed allocations to the Participating Banks.**

4. Funds advanced pursuant to this program may be used to import only those items which are eligible in accordance with the USAID Commodity Eligibility Listing which does not include luxury, consumer, used or reconditioned goods. Additionally, erection, training and installation services associated with the commodity purchase are not eligible for financing under this program. Funds advanced under this program are not to be used to import items which are prohibited under Egyptian importation law. Furthermore, commodities imported under this program are prohibited from being resold to the military or police forces and/or their organizations.
5. Any importer, importing as an end-user, may sell capital equipment imported under this program after final payment has been made to the Participating Bank. Imported items must relate to the importer's business field as stated on both the commercial/industrial registry and tax card (unless legally exempted). Further, commodities imported under this program cannot be re-exported in their same condition unless they constitute a basic component of a new end product.
6. The minimum transaction size shall be \$10,000 unless USAID/Cairo and MIC, DEC/USA otherwise agree in writing.
7. The maximum amount of financing that can be utilized by an individual importer during a calendar year is as follows:
 - A. END-USER:
 - Importer who is importing non-capital equipment for its own use may utilize up to \$4,000,000
 - Importer who is importing capital equipment for its own use may utilize up to \$8,000,000
 - B. TRADER:
 - Importer who is importing commodities for resale purpose may utilize up to \$5,000,000

8. Private sector importers who desire to use funds provided under this program shall make application at any one of the Participating Banks. Alternatively, a potential client may apply through any other local commercial bank. In this case the application will be forwarded to one of the Participating Banks for action. Each application must include:

- A. Completed transaction form signed by the importer (Attachment I);
- B. Evidence that the importer has followed negotiated procurement procedures. These procedures require the importer to follow good commercial practice in soliciting quotations or offers in a uniform manner from a reasonable number of prospective U.S. suppliers and that all quotations or offers received, whether or not specifically solicited, shall be given consideration before making an award. A reasonable response time must be given to potential suppliers. If an importer obtains only one offer, the importer's request for financing must include a letter stating the reasons that only one offer was obtained. Justification for approving financing under these circumstances must be based on one of the following reasons:
 - (1) The importer is purchasing for resale or processing, as the supplier's regularly authorized distributor or dealer, a commodity which, under the terms of the distributorship or dealer agreement, the importer is precluded from buying from another supplier. USAID/Cairo requires that the importer submit a valid copy of the agency/dealer/distributorship agreement with the request for financing. In addition, a statement is required from the supplier that prices are net and do not include any commissions.
 - (2) The importer is purchasing for resale a registered brand-name commodity from a supplier who is the exclusive distributor of that commodity to the area of the importer.
 - (3) Proprietary procurement is justified and the necessary equipment, materials, or spare parts are available from only one source, taking into account any special requirements such as the need for in-country service capability. Standardization on a particular brand or proprietary procurement may be justified by the importer obtaining:

- (a) Substantial benefits, such as economies in maintenance of spare parts inventories, stronger local dealer organization, better repair facilities, or greater familiarity by operating personnel; or
- (b) compatibility with equipment on hand; or
- (c) special design or operational characteristics.

C. Each pro forma invoice submitted must show:

- i. the name and address of the importer;
- ii. the quantity, description and unit price of each item in sufficient detail for ready identification;
- iii. the U.S. Department of Commerce Schedule B Number (Harmonized Number) for all items;
- iv. the delivery terms (FAS, FOB, CFR, CIF or CIP) and named place of delivery. USAID will not finance Ex Works transactions;
- v. U.S. source and origin;
- vi. if the commodity is financed on a CFR, CIF or CIP basis, the proforma invoice must:
 - (a) state that transportation will be effected on a U.S. flag carrier;
 - (b) state the FAS or FOB commodity cost at named U.S. port offering regular liner service to named Egyptian port or bulk cargo service to named Egyptian port as appropriate;
 - (c) state the estimated insurance cost for CIF or CIP quotations;
 - (d) state the estimated freight costs.

D. A summary of offers, the importer's selection and basis of selection, such as lower price, better delivery terms, etc.

9. Transactions financed pursuant to this Circular are commercial transactions between the importer and supplier. Thus, in case of any dissatisfaction or dispute with the supplier, the importer's remedies shall be solely its normal commercial remedies with the supplier. In no case shall the importer have any recourse to USAID or the Government of Egypt, nor do they bear any responsibilities for the commercial transaction.
10. Participating Banks may open letters of credit without collecting any down payment from the importer. The bank may extend to its clients the following interest free grace periods following the date of negotiation of documents (the date payment is made to the U.S. supplier by the U.S. Correspondent Bank). For the purpose of implementing the following interest free grace periods, the definition of capital equipment is "equipment used in producing commodities or services." Spare parts are to be considered as capital equipment if they are imported with the capital equipment in the same transaction; however if the spare parts are imported on their own, they must be considered as non-capital equipment. Participating banks are not authorized to issue letters of credit which allow for any portion of the letter of credit value to be withheld for the purposes of final acceptance or local inspection of the commodity as a performance guarantee, or any other reason.

A. GRACE PERIODS

A.1 END-USER:

- up to 9 months if the importer is importing non-capital equipment for the importer's own use
- up to 18 months if the importer is importing capital equipment for the importer's own use

A.1(1) END-USER OPERATING BUSINESSES IN UPPER EGYPT:

- up to 12 months if the importer is importing non-capital equipment for the importer's own use in Upper Egypt
- up to 24 months if the importer is importing capital equipment for the importer's own use in Upper Egypt (for the purpose of implementing the above incentives, businesses located in the following Governorates in Upper Egypt are eligible for these terms: El-Fayoum, Beni Suef, El-Menya, Assiut, Sohag, Qena, Aswan and New Valley)

A.1(2) END-USER HAVING AN INCREASE OF AT LEAST 10% IN EXPORT SALES:

- up to 12 months if the importer is importing non-capital equipment for the importer's own use
- up to 24 months if the importer is importing capital equipment for the importer's own use

For the purpose of implementing the above incentives, the importer must submit with the application a detailed list indicating the total value of the importer's exports during the 24 month period immediately preceding the application date. The list must indicate the value, quantity, type of goods exported, and the foreign country of export. The importer will be eligible for the above incentives if the presented list demonstrates an increase of 10%, by value, between the total of the first 12 months and the total of the last 12 months.

A.1(3) END-USER IMPORTING ENVIRONMENTAL EQUIPMENT LISTED IN ATTACHMENT VII OF THIS CIRCULAR:

- up to 36 months

A.2. TRADER:

- up to 6 months if the importer is importing non-capital equipment for resale purposes
- up to 9 months if the importer is importing capital equipment for resale purposes

B. REPAYMENT PERIODS:

Credits beyond the interest free grace period may be extended by the Participating Bank up to a maximum period of:

- 6 months for an importer who is importing commodities for resale purposes
- 18 months for an importer who is importing non-capital equipment for the importer's own use
- 8 years for an importer who is importing capital equipment for the importer's own use

Banks shall charge a fixed interest rate on the outstanding balance beginning the first working day after the expiration of the interest free grace period in accordance with the prevailing interest rates specified by each Participating Bank for similar transactions. The local currency amount of all repayments for a specific transaction shall be calculated and fixed at the rate of exchange specified in Article 20 of this Circular. The importer may pay up to 100% of the transaction value up front in cash if desired.

Participating Banks shall request U.S. Correspondent Banks to advise them without delay of the date that payment is effected to U.S. suppliers to allow calculation of the interest free grace period and the dates on which interest and installments fall due. Participating Banks shall be entitled to collect from importers the normal fees and commissions on transactions financed under this program. In addition, Participating Banks are entitled to retain 2 points of the charged interest rate earned for non-capital equipment transactions and 4 points of the charged interest rate earned for capital equipment transactions.

- 11. Participating Bank shall be indebted to the Central Bank of Egypt for (a) the local currency equivalent of each Letter of Credit opened under this program, calculated and fixed at the rate of exchange specified in Article 20 of this Circular, and (b) the interest charged (minus the interest it is permitted to retain per Article 10). Participating Banks shall pay immediately into a special account at the Central Bank of Egypt all payments of principal and interest due (regardless of whether the amount is collected) for transactions financed under this program.**

Participating Banks shall authorize the Central Bank to draw down their account by the amount of interest and principal due on the funds advanced under this program and to furnish the Ministry of Finance, Central Administration for Financing and Loans, with a copy of the required authorization.

- 12. Suppliers will be paid by the U.S. Correspondent Bank up to the CFR, CIF or CIP quote amount against the actual invoiced insurance cost per the insurance certificate; actual invoiced freight cost per the bill of lading; and the FAS/FOB commodity cost per the supplier's invoice.**

13. The Participating Bank shall not issue Letters of Credit to any party other than the one named in the pro forma invoice, nor is the Participating Bank authorized to amend any Letter of Credit in a manner contrary to the contents of the pro forma invoice. All Letters of Credit must reference the USAID/Cairo transaction number.
14. Completed transactions which have been approved by the Participating Banks shall be forwarded to USAID/Cairo. Upon issuance of the USAID/Cairo no-objection letter, an administrative reservation of funds will be made and a transaction number assigned by USAID/Cairo. The importer shall have 30 days from the date of the no-objection letter to open a Letter of Credit to the named supplier. Extension of this time limit may be considered on a case-by-case basis provided that the client's written request is forwarded to USAID/Cairo, through the Participating Bank, at least 10 working days prior to the deadline for establishing the Letter of Credit.
15. All U.S. banking charges, except extensions, amendments and confirmation fees charged by the U.S. Correspondent Banks, shall be paid from the Letter of Commitment issued to the U.S. Correspondent Banks. The Egyptian importer shall not be required to pay the equivalent in local currency of such fees and commissions. Participating Banks may not request their U.S. Correspondent Banks to confirm the letters of credit opened under this program.
16. Funds under this program shall not be used to finance consular fees, including legalization fees. All Letters of Credit shall state that consular and legalization fees are not to be paid from USAID Letters of Commitment. Consequently, if an importer desires legalization of documents, legalization costs will be for the importer's account.
17. USAID/Cairo will furnish to MIC, DEC/USA and the Ministry of Finance on a monthly basis a report showing all approved transactions. The report will be prepared and sent not later than the 10th of the following month.
18. All Participating Banks shall provide the following information on a timely basis. Any bank which repeatedly fails to meet these requirements may be suspended or terminated from the program.
 - A. a copy of all relevant documents related to each transaction approved by the bank shall be forwarded to USAID/Cairo to be received not later than five business days after the bank's approval;

- B. a copy of all Letters of Credit issued under the program shall be forwarded to USAID/Cairo, the Ministry of Finance and the Central Bank of Egypt not later than five business days after the issuance of the Letter of Credit. Each Letter of Credit shall be submitted with a completed Letter of Credit Form, shown as Attachment II to this Circular;
 - C. a copy of all amendments to Letters of Credit issued under the program, shall be forwarded to USAID/Cairo, the Ministry of Finance and the Central Bank of Egypt attached with the Letter of Credit amendment form shown as Attachment III to this Circular not later than five business days after the issuance of the amendment.
 - D. a copy of the bill of lading or air waybill and the supplier's invoice shall be forwarded to USAID and the Ministry of Finance attached with the completed "Statement of Principal and Interest Due" form which is shown as Attachment IV to this Circular.
 - E. A copy of the authorization to the Central Bank of Egypt to draw down the local bank account by the amount of principal and interest due on the funds advanced under this program, shall be forwarded to the Ministry of Finance as referred to in Article 11 above.
 - F. a monthly report on activity under the program to be sent to USAID/Cairo, MIC, DEC/USA the Ministry of Finance and the Central Bank of Egypt not later than the 10th of the following month. The report format is shown as Attachment V to this Circular.
19. Participating Banks which issue Letters of Credit under this program shall be responsible for executing the rules and regulations contained in this operating Circular without contravening applicable Egyptian import rules and regulations. In all cases, the Participating Bank must ensure that each transaction is in conformance with USAID Regulation 1, the USAID Commodity Eligibility Listing, and this Circular.

Importers are responsible to ensure that proformas submitted to USAID disclose all discounts and side payments whether paid in Egypt or overseas.

In accordance with section 201.41 of USAID Regulation 1, banks and importers shall establish and maintain accurate records concerning arrivals, custom clearance and utilization of all commodities financed under this program. These records and supporting documentation shall be kept available for USAID's review for three (3) years from the date of the last disbursement by USAID. Copies of such records shall be provided by the importers to USAID or its representative upon request. Site visits shall be made by USAID or its representative to the importer's location to examine the receipt and utilization of commodities financed under the program.

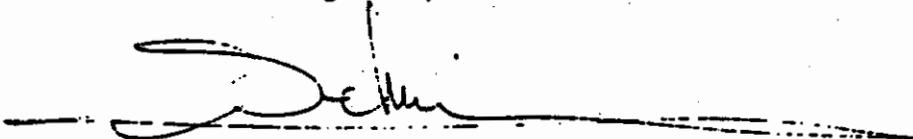
In the event of a violation of any of the rules of the Circular, or applicable USAID regulations, on the part of an Egyptian importer, agent, distributor, or representative of a U.S. supplier:

- A. Such person or entity may be prohibited from participating in the program for a specified period of time, and/or,
- B. Such person or entity may be required to reimburse USAID in U.S. dollars for the amount of funds advanced under the program.

In the event of a violation of USAID regulations on the part of the U.S. supplier, USAID may require reimbursement of the U.S. dollar transaction amount.

- 20. The exchange rate applicable to this program, referenced in Articles 10 and 11 above, shall be the daily average closing selling rate for transfers as determined and published by the Free Market Central Chamber for the last business day which immediately precedes the opening date of the Letter of Credit or the last business day which immediately precedes any increase to an existing Letter of Credit.
- 21. Amendments to this Circular shall be issued by MIC from time to time as needed when MIC, DEC/USA and USAID/Cairo mutually agree.

Signed by,



Dr. Hassan Selim
Administrator
Department of Economic Cooperation with USA
Ministry of International Cooperation

Attachment No. I

Transaction Form

Private Sector Commodity Import Program

Bank: _____

Transaction No.: _____

this transaction is being forwarded on behalf of another bank in accordance with Article 8
of the Circular, please specify which bank: _____

Importer's Name: _____

Address: _____

Governorate: _____

Phone No: _____ Fax No.: _____

Contact Person Name: _____ Direct Phone No.: _____

Address of Production Facility (Farm, Factory, etc.), if different than No.1 above

Nature of establishment:

Sole proprietorship, Partnership, Limited liability stock company etc.

Provide name of principal, major partners or major stockholders:

Established under Law: _____ (Commercial Law, 32, 43, 159, 230 etc.)

Tax Card No.: _____ Commercial Registry No.: _____
(state if legally exempted)

Business Field: _____
(e.g. hospital, farm, plastics factory, trading ect.)

Paid in Capital: _____ Woman's Ownership Percentage _____

Public Sector ownership: _____

Number of Employees: _____

8. Information regarding United States businesses:

A. Does the importer or any owner of the importer or any business enterprise affiliated with the importer or its owners, own or operate a business of any kind which is located in the United States? Yes ___ No ___

B. If yes, does this business have a production facility or operation in the United States? Yes ___ No ___

C. If the answer to B above is yes, describe the operations of this business in the United States. _____

9. Has importer previously used this program? Yes ___ No ___ If yes, provide value of all Letters of Credit opened for this importer under the program during this calendar year, \$ _____

10. Is the importer operating a business for which the commodities being imported is located in Upper Egypt as stipulated in the General Circular No.1 of 1999? Yes ___ No ___
If Yes, please indicate the name of the Governorate _____

11. Has the importer increased exports more than 10% of sales during the most recent 12 month accounting period? Yes ___ No ___

12. Commodity to be imported: _____
Is it a Capital Equipment? Yes ___ No ___
Is it an Environmental Equipment listed in Attachment VII? Yes ___ No ___

13. Purpose of importation: a) own use _____
b) reselling _____

14. U.S. Department of Commerce Schedule B No.(s) [Harmonized System No.(s)]

15. U.S. Supplier Name: _____
Address: _____

6. By signing below, I hereby certify that to the best of my knowledge the information provided above is accurate and true and that all pro forma offers submitted with this transaction are true and accurate originals provided by the suppliers named therein or true and accurate photocopies of originals.

All attached pro forma offers are bonafide and have been requested publicly or directly by me or an official of my company and received directly by me or an official of my company from the U.S. suppliers or their official agents. None of the suppliers has had any involvement in obtaining offers from any other supplier.

Banks and USAID reserve the right to contact any or all potential suppliers to verify the authenticity and accuracy of the pro forma offers.

I have read and agree to comply with Item #19 of General Circular No.1 of 1999 which includes the requirement that transaction records and supporting documentation be kept by the importer for USAID's or its authorized representative's review for three (3) years from the date of the last disbursement by USAID, and allows USAID or its representative to make site visits to examine the receipt and utilization of commodities financed under the program.

Importer's Name: _____
Signature: _____
Title: _____

We find this transaction valued at \$_____, in compliance with General Circular No. 1 of 1999, and USAID regulations, and request USAID/Cairo concurrence to finance the transaction.

Signature of Authorized
Bank Official

Date

Attachment II

Letter of Credit Form

1. Local Bank Name: _____
2. Letter of Commitment No.: _____
3. Transaction Number: _____
4. Letter of Credit No.: _____
5. Letter of Credit amount: _____
6. Letter of Credit issuance date: _____
7. Rate of exchange applicable to this Letter of Credit: _____ L.E./\$
8. Down payment:
 - a) amount in L.E. _____
 - b) date collected _____
 - c) date transferred to Central Bank of Egypt _____
9. Repayment period for balance: _____

Signature of Authorized Bank Official

Date

Attachment III
Letter of Credit Amendment Form

Local Bank Name: _____

Letter of Commitment No.: _____

Transaction No.: _____

Letter of Credit No.: _____

Letter of Credit Amount: _____

Dear Sirs:

With respect to the L/C referenced above please find enclosed herewith copy of our telex/letter dated _____ regarding the following amendment(s) marked(*):

- Increase value of the L/C by \$ _____ exchange rate _____
- Decrease value of the L/C by \$ _____ exchange rate _____
- Cancel unutilized balance of \$ _____ exchange rate _____
The new L/C balance is \$ _____
- Extend validity of the L/C until _____
- Shipment condition to be FOB/FAS/CFR/CIF/CIP _____
- Other amendments: _____

Signature of Authorized Bank Official

Date

Attachment No. VI
List of Participating Banks

1. AlWatany Bank of Egypt
2. American Express Bank
3. Arab African International Bank
4. Arab Bank
5. Bank of Alexandria
6. Bank of Commerce and Development
7. Banque du Caire
8. Banque du Caire Barclays International
9. Bank Misr
10. Commercial International Bank
11. CitiBank
12. Credit Internationale d'Egypte
13. Delta International bank
14. Egypt Arab African Bank
15. Egyptian American Bank
16. Egyptian British Bank
17. Egyptian Commercial Bank
18. Egyptian Gulf Bank
19. Export Development Bank
20. Industrial Development Bank of Egypt
21. Misr American International Bank
22. Misr Exterior Bank
23. Misr International Bank
24. Misr Iran Development Bank
25. Mohandes Bank
26. National Bank of Abu Dhabi
27. National Bank of Egypt
28. National Bank for Development
29. National Societe General Bank
30. Suez Canal Bank
31. United Bank of Egypt

Other banks, whose charter/authorization enables them to transact business in a manner compatible with the provisions of this program, may work through the above specified Participating Banks. For more information contact:

Ministry of International Cooperation
Department for Economic Cooperation with U.S.A.
48-50 Abdel Khalek Sarwat Street, 5th floor, Cairo
Tel: (202) 390-5100, 390-5125, 390-8124 and 391-0278, Fax: (202) 393-8187

United States Agency for International Development, Office of Commodity Management
Zahraa El Maadi, Cairo, Tel: (202) 516-5505, Ext. 2143, Fax: (202) 516-4652

United States Agency for International Development
36 Beni El Abbas street, Alexandria, Tel: (203) 482-9301, Fax: (203) 482-9301

To obtain copies of A.I.D. Regulation 1, please contact the above listed USAID offices.

June 1999

Attachment No. VII

Environmental Equipment

Item No.	Equipment Description	Usage	Schedule B No.
A	MONITORING EQUIPMENT		
1	Conductivity Meters	Water Quality Permanent installations or portable Plant Discharges	9027.80.3200
2	PH Meters	Water Quality Plant Discharge Permanent installations or portable	9027.80.3200
3	Water Sampling Kits	Water Quality Portable for field testing.	9027.80.3200
4	Spectrometer	Water Quality	9027.30.4040
5	Ambient Air Analyzer	Low level detection of registrar pollutants, such as SO ₂ , NO-NO ₂ , O ₃ , and CO.	9027.10.0000
6	Stack Monitoring System for Source Pollution	Measure levels of registrar pollutants and CO ₂ , opacity, and flue gas flow	9027.10.0000
7	Total Dissolved Solids (TDS) Meter	Water Quality Permanent installations or portable	9027.10.0000
8	Water Flow Meters	Water Quality	9026.10.5000
9	Gas Chromatographs	Air Quality	9027.20.2000
10	Liquid Chromatographs	Water Quality	9027.20.5000
11	Gas Analyzer	Air Quality Plant emissions	9027.10.0000
B	TREATMENT OF PLANT DISCHARGES		
1	Oil Water Separators	Water Quality	8421.21.0015
2	Filters	Water Quality	8421.21.0000
3	Baghouses	Air Quality Stack Discharge, Removal of Solids Industries such as steel, lead, power generation	8421.39.8015
4	Filters for Baghouses	Replace existing filters Air Quality Stack Discharge, Removal of Solids Industries such as steel, lead, power generation	8421.99.0040
5	Scrubbers	Air Quality Stack Discharge, Removal of solids Industries such as steel, lead, power generation	8421.39.8030
6	Electrostatic Precipitators	Air Quality Stack Effluent Industries such as steel, lead, power generation	8421.39.8020

7	Cooling Towers (Evaporative)	Reduce Plant Discharge Water Temperatures Reduces Water Intake	8419.89.5040
8	Cooling Towers (Dry)	Eliminates Hot Water Discharges and Minimizes Water Intake.	8419.89.5040
9	Neutralization Basins or tanks	Water Quality Treat Caustic or Acidic discharges prior to discharge. Basins are civil construction.	7309.00.0030
10	Air Filters	Air Quality	8421.39.8030
11	Automatic Industrial Process Control Systems (complete)	Air Quality Water Quality	9032.81.6030
12	Automatic Control for Feed Viscosity	Starch & Glucose industry	9032.81.0040
13	Automatic Control for Cooling or Heating Systems	Air & Water Quality	9032.89.6020
14	Chemical Injection Systems	Neutralization of discharges Water, Stack Gases	8421.21.0000
C	WASTEWATER TREATMENT AND SLUDGE MANAGEMENT SYSTEMS		
1	Screens	Water Clarifying	8479.82.0080
2	Dissolved Air Flotation	Pretreatment of Wastewater Water Clarifying	8421.21.0000
3	Vacuum Filter	Water Clarifying Dewatering	8421.21.0000
4	Gravity Belt Thickener	Thicken waste	8421.21.0000
5	Filter Press	Water Clarifying Dewatering	8421.21.0000
6	Belt Filter Press	Dewatering	8421.21.0000
7	Paddle Dryer	Dewatering Drying	8421.21.0000
8	Clarifiers	Water Clarifying	8421.21.0000
9	Sand Filters	Water Filtering	8421.21.0000
10	Carbon Filters	Removal of pollutants	8421.21.0000
11	Positive Displacement Pumps Rotary or Reciprocating	Process pump for sludge, slurry, scum	8413.60.0090 8413.50.0090
12	Submersible Waste Water Pumps		8413.70.2004
D	VEHICLES		
1	Catalytic Converters	Air Quality Removal of contaminants.	8421.39.4000
2	Bus and trucks chassis. Complete with fuel supply (natural gas, electric and /or other alternative fuels), engines, transmission, brakes & steering system	City transportation, tourism, company transportation.	8706.00.1040

3	Bus and trucks complete unit powered by (natural gas, electric and /or other alternative fuels)	City transportation, tourism, company transportation.	8707.90.5040
4	CNG Fueling Station Including: fueling dispensers, Hoses & nozzles, fueling dispenser, ASME storage vessels, mounting frames, compressor station w/compressor, drivers & controls and assembly hardware.	City transportation, tourism, Company transportation	8414.80.2055
5	Engine Analyzer	Vehicle engine tune-up-emissions reduction	8479.89.9060
6	Automotive Engine Maintenance Equipment	Provide routine and other vehicle maintenance	8479.89.9060
E SOIL CONTAMINATION PREVENTION AND CLEAN-UP			
1	Regenerative Thermal Oxidizer	Volatile Organic Compound Removal Soil Vapor, Groundwater	8421.39.8030
2	In Situ Groundwater Flow Sensors	Monitoring groundwater during remediation in landfills.	9026.26.5000
F ENVIRONMENTAL LABORATORY CONSISTING OF:			
1	PH Meters		9027.80.3200
2	Water Baths		9027.80.3200
3	COD Instruments		9027.80.3200
4	BOD Instruments		9027.80.3200
5	Gas Chromatograph/Mass Spectrometer		9027.20.9000
6	Gas Chromatography		9027.20.2000
7	Liquid Chromatograph		9027.20.9000
8	Water Tester (DO, Turbidity, Conductivity, Salinity, pH)		9027.80.3200
9	Potentiometers w/ Ion Selective Electrodes		9027.80.3200
10	Spectrophotometers		9027.30.4040
11	Fluorimeters		9027.80.3200
12	Total Organic Carbon (TOC) Measurement Instruments		9027.80.3200
13	Flame Photometer		9027.50.4050
14	UV/Visible Spectrophotometers		9027.30.4040
15	Mercury Analyzer		9027.80.3200
16	Gas Analyzer		9027.10.0000
17	Auto Analyzer for Inorganic Nonmetals		9027.80.8000
18	Drying Ovens		8417.80.0000
19	Muffle Furnaces		8417.80.0000
20	De-ionized Water Production Station (350 l/hr)		8421.21.0000
21	Turbidity Meters (Bench Top)		9027.80.3200
22	Conductivity Meters (Bench Top)		9027.80.3200

23	Oxygen Meter (Bench Top)		9027.80.3200
24	CO/NH ₃ /SO ₂ /NO _x /HCN/Cl ₂ Detectors		9027.80.3200
25	Noise Meter		9027.30.4040
26	Flow Meter		9026.10.5000
27	Vacuum Pump		8414.10.0000
28	Atomic Absorption Spectrometer (AAS)		9027.30.4040
29	Bench-Top Centrifuge		8421.19.0000
30	Ultrasonic Processor (Homogenizer)		9027.80.8000
31	Rotary Evaporation		8421.21.0000
32	Moisture Analyzer		9027.80.3500
33	Water Purification (By UV)		8421.21.0000
34	Solid State Flow Meter		9028.20.0000
35	Total Nitrogen Analyzer		9027.10.0000
36	Oil Content Analyzer		9027.80.3500
G	ALTERNATIVE ENERGY SYSTEMS		
1	Tracking photo-voltaic concentrators (parabolic trough or point focus)	Convert sunlight directly to electricity Create mini-utilities as alternative power plants	8541.40.6020
2	Solar-thermal power module (for electric power or industrial steam generation)	Convert sunlight to steam or electricity using a water/oil management system and a steam engine	8402.19.0000
3	Solar tracker system (support structure, instrumentation, and controls)	Operation of photo-voltaic concentrator systems	9032.81.0040
4	Photo-voltaic modules (solar panels)	Convert sunlight directly to electricity Alternative power source	8541.40.6020
5	Solar cells (not assembled into modules)	Convert sunlight directly to electricity Alternative power source	8541.40.6030
6	Wind Turbines (electric)	Alternative power source for generation of electricity	8412.80.9000
7	Windmills (mechanical), windmill pumps	Alternative power source (mechanical) for water pumping, grinding, etc.	8413.81.0030
8	Solar batteries (multi-cycle, deep discharge)	Storage medium for solar and wind electric systems	8507.80.0000
9	Multi-fuel boilers (using refuse-derived fuel, wood, municipal solid waste, or agricultural waste)	Hot water and/or steam generation	8402.19.0000
10	Waste-to-energy incineration system	Generation of heat from burning a wide range of materials, such as rubber tires, municipal solid waste, biomass (wood) and agricultural residues.	8403.10.0000
	Aux. Equipment (including materials handling systems)		8404.10.0050
11	Fluidized-bed combustion systems	Generation of heat from burning a wide range of materials, such as rubber tires, municipal solid waste, biomass (wood) and agricultural residues.	8403.10.0000
	Aux. Equipment		8404.10.0050
12	Gasification/combustion system with turbine generator	Generation of process steam, heat and electric power by burning agricultural residues (rice husks, peanut shells, straw, cottonseed hulls, wood waste, etc.	8402.19.0000

13	Stirling cycle heat engines (bio-mass-fueled, external combustion)	Generate electricity from heat resulting from burning wood, wood pellets, sawdust, rice husks, peanut shells, and coffee hulls	8402.19.0000
H.	SOLAR SYSTEMS		
1	Solar water heater (storage tank, piping and controller)	Commercial hot water Industrial process heat	8419.19.0040
2	Stand-alone photo-voltaic lighting system (PV panels, fluorescent bulbs, batteries, controller, and monitoring instruments)	Street lighting or security lighting, hazard warning lights, remote residential or commercial building lighting	8513.10.0000
3	Solar-powered refrigeration system (PV panels, battery bank, controller, refrigerator/freezer)	Remote refrigeration	8418.10.0090
4	Solar water pumping system – PV (PV panels, batteries, controller, piping, surface or submersible pump, water storage tanks)	Water pumping for irrigation, domestic or commercial use, or use with livestock	8413.81.0040
5	Solar water pumping system – Wind Electric (wind turbine, batteries, controller, piping, surface or submersible pump, water storage tanks)	Water pumping for irrigation, domestic or commercial use, or use with livestock	8413.81.0030
6	Solar oven	Cooking or boiling water for sterilization	8417.80.0000
I	OTHER ALTERNATIVE EQUIPMENT OR SYSTEMS		
1	Anaerobic digester	Biogas generation, treatment of agro-industrial wastewater	8405.10.0000
2	Environmental data collection systems (anemometers, wind vanes, pyrometers, data loggers, etc.)	Measurement of wind characteristics and solar radiation	9026.80.0000
3	DC/AC inverter, switchgear, and load distribution transfer switches	Convert direct current from PV panels to alternating current and distribute loads	8548.00.0000
4	Bio-mass material handling systems (debarkers, chippers, loaders, chip screens, feeders and cutoff saws)	Handling of biomass feedstock for incineration systems.	8428.90.0006
5	Pyrometers	Measure temperature and heat content	9025.19.4000
6	Barometers	Measure atmospheric pressure	9025.20.0000
7	Thermometers	Measure temperature	9025.11.4000
8	Psychrometer	Measure wet bulb temperature	9025.80.0000
J	RED SEA ENVIRONMENTAL EQUIPMENT		
1	Mooring Bouys and installation equipment		8907.90.0030 8905.20.0010 8430.41.0000
2	Anchors for Mooring Bouys	Low impact category	7316.00.0000
3	Sewage Holding Tanks	Boats Greater than 80 liters	3925.10.0000

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INELIGIBLE COMMODITIES
PRIVATE SECTOR COMMODITY IMPORT PROGRAM

1- EQUIPMENT :

- MILITARY EQUIPMENT; SURVEILLANCE EQUIPMENT; COMMODITIES FOR SUPPORT OF THE POLICE AND OTHER LAW ENFORCEMENT ACTIVITIES .
- ABORTION EQUIPMENT AND SERVICES; LUXURY GOODS AND GAMBLING EQUIPMENT; WEATHER MODIFICATION EQUIPMENT; AND, IN GENERAL, CONSUMER GOODS .
- SPACECRAFT AND PARTS THEREOF .
- ARMS AND AMMUNITION; PARTS AND ACCESSORIES THEREOF .
- USED OR RECONDITIONED GOODS .

2- WOVEN FABRICS & TEXTILES :

- SILK .
- CARPETS AND OTHER TEXTILE FLOOR COVERINGS .
- SPECIAL WOVEN FABRICS; TUFTED TEXTILE FABRICS; LACE; TAPESTRIES; TRIMMINGS; EMBROIDERY .
- KNITTED OR CROCHETED FABRICS .
- ARTICLES OF APPAREL AND CLOTHING ACCESSORIES, KNOTTED OR CROCHETED .
- ARTICLES OF APPAREL AND CLOTHING ACCESSORIES, NOT KNITTED OR CROCHETED .
- OTHER MADE-UP TEXTILE ARTICLES .

3- FOOD PRODUCTS :

- MEAT AND EDIBLE MEAT OFFAL .
- FISH AND CRUSTACEANS .
- PREPARATIONS OF MEAT, OF FISH OR OF CRUSTACEANS; MOLLUSKS OR OTHER AQUATIC INVERTEBRATES .
- EDIBLE FRUITS AND NUTS; PEEL OF CITRUS FRUIT OR MELONS .
- COFFEE, TEA, MATE, SPICES AND COCOA & COCOA PREPARATIONS .
- PREPARATIONS OF CEREALS, FLOUR, STARCH OR MILK .
- PREPARATIONS OF VEGETABLES, FRUITS, NUTS OR OTHER PARTS OF PLANTS .
- BEVERAGES, SPIRITS AND VINEGAR .
- BAKER'S WARES .

4- AGRICULTURAL PRODUCTS :

- LIVE TREES AND OTHER PLANTS; BULBS, ROOTS AND THE LIKE; CUT FLOWERS AND ORNAMENTAL FOLIAGE .
- VEGETABLE PLAITING MATERIALS .
- RESIDUES AND WASTE FROM THE FOOD INDUSTRIES: PREPARED ANIMAL FEED (FODDER) .
- TOBACCO AND MANUFACTURED TOBACCO SUBSTITUTES .

5- LEATHER PRODUCTS :

- ARTICLES OF LEATHER; SADDLERY AND HARNESS; ARTICLES OF ANIMALS GUT .
- FURSKINS AND ARTIFICIAL FUR; MANUFACTURES THEREOF .
- FOOTWEAR, GAITERS AND THE LIKE .
- SEAT STICKS; WHIPS; RIDING CROPS AND PARTS THEREOF .

6- MISCELLANEOUS :

- MUSICAL INSTRUMENTS, PARTS AND ACCESSORIES OF SUCH ARTICLES .
- TOYS, GAMES, AND SPORTS EQUIPMENT, PARTS AND ACCESSORIES THEREOF .
- EXPLOSIVES, PYROTECHNIC PRODUCTS; MATCHES; PYROPHORIC ALLOYS; CERTAIN COMBUSTIBLE PREPARATIONS .
- HEADGEAR AND PARTS THEREOF .
- UMBRELLAS; WALKING STICKS .
- PREPARED FEATHER AND DOWN AND ARTICLES MADE OF FEATHERS OR OF DOWN; ARTIFICIAL FLOWERS, ARTICLES OF HUMAN HAIR .
- NATURAL OR CULTURAL PEARLS; PRECIOUS OR SEMI-PRECIOUS STONES; PRECIOUS METALS; METALS CLAD WITH PRECIOUS METAL, AND ARTICLES THEREOF; IMITATION JEWELRY; COINS .
- WORKS OF ART; COLLECTORS PIECES AND ANTIQUES .

NOTE :

A commodity transaction may be eligible or ineligible for USAID financing based not only on the nature of the commodity but also based on its source, end use, price, supplier, etc... . Please see your participating bank or this office to discuss matters concerning commodity eligibility .