NINETY-NINE PURCHASING PRACTICES IN PARTNERSHIP WITH DEMAND

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〈CONTENTS〉

I. INTRODUCTION

In view of gyrating costs and recurrent shortages among essential materials, administrators in many compaines are placing greater emphasis on the purchase function. Physical resources have become a crucial factor when executives screen ideas for new products, make go-no go decisions, allocate promotional support selectively, and retire items from the line. "We always assumed that if we could sell it, we could get the materials," says Robert C. Parker of International Harvester Company. "That is just no longer true. It's changing the style of our business plans. Now supply of materials is an equal consideration with finance and markets."

Hand-to-mouth buying, nurtured to near-perfection during the fifties and

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sixties is beginning to give way to a longer planning horizon. To forestall supply problems, numerous manufacturers now cultivate sources on a long-term basis, integrate backwards, or simplify their products. This is not to say that hand-to-mouth buying has been eliminated. Managers are continuing this practice whenever feasible. But the debacles of 1973~1975 and the prospects of similar upheavals in the future caution against its indiscriminate use.

In the wake of sudden unavailabilities of various commodities and components, doubling and trebling of some costs, rampant speculation, drain of cash necessary for operations, distress sales, and huge losses, managers seek ways of averting such threats to corporate survival. Hence a framework that dovetails the dynamics of supply with the dynamics of demand is timely. Discussions with thirty-five purchasing agents have elicited that the model to be presented summarizes an organized approach for which many had been groping. A few purchasing agents had previously instituted a similar set of guidelines. Some were skeptical. Clearly, the overall approach and the constituent details are not universals, but a point of departure for custom-tailoring to the conditions facing a particular firm. It is especially appropriate for companies in which a few products dominate managerial thinking or actual volume.

II. SALES TRENDS AS MANAGEMENT GUIDES

Unit sales of goods or services typically persist in a given direction for a long or short while. Production, finance, etc., prepare to fill the resultant needs. Of course, sales trends do not just happen. They result from marketing efforts. Hence marketers are familiar with the concept of distinguishable sales trends. They call it the product life cycle notion.

The practicality of forecasting distinctive unit sales trends (so-called, life-cycle stages or phases) has been demonstrated at Corning Glass works

and elsewhere. Surveys of consumers (one's own customers or one's customers' customers) and other methods enable researchers to forecast effectively the sales trends of a very wide variety of products. Such forecasts help coordinate all business functions. When applied to procurement, they need be only reasonably accurate. An indication of the likely direction and duration of sales trends of major products gives the purchasing agent lead time for external arrangements and internal organization affecting those matters that vary by life-cycle stage.

In practice, separate life-cycle stages require changes in most operations —and even in management styles. "...Different personnel skills, qualities, and motivations are optimum for the various phases of product and enterprise life cycles," explains John R. Moore, Corporate Vice President of McDonnell Douglas and President of its Actron Division. "Early phases require creativity and informality. Growth phases require emphasis on operational planning, staging, training, optimism, problem solving, and stamina. Mature phases demand emphasis on efficiency, administration, judgment, and conservatism. Whereas cutback phases place a premium on 'hard-nosed' decisiveness, objectivity, judgment, and courage...it is often necessary to change...management."

III. PRODUCT LIFE CYCLE STAGES

A five-stage model will be used for present purposes (Figure 1). The stages are not necessarily consecutive. Nor does each product necessarily experience all stages.

Design comprises all premarket activities. The company is developing goods or services that it has never sold with full-scale efforts. Except for revenues incidental to possible test-marketing, the developer realizes no sales in the Design stage. A wide variety of materials are needed in small, experimental quantities. Because of the embryo's uncertain future, the

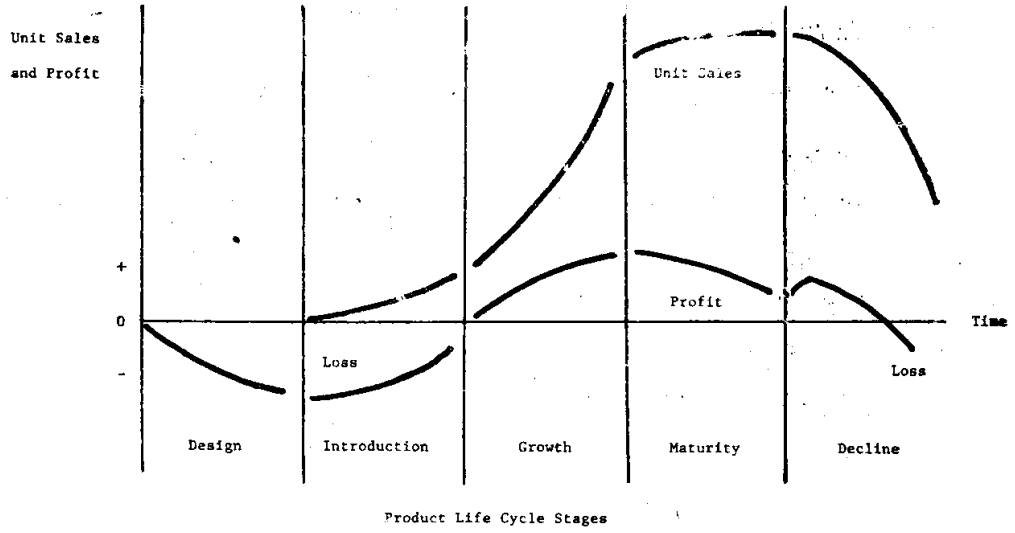

Fig. 1. Typical Unit Sales and Profit Trends

purchasing agent's paramount consideration is flexibility.

Introduction commences with full-scale marketing of new goods or services in their intended market or in a large section. Now the purchasing department focuses on adopted materials and suppliers. Procurement policy seeks to balance the high likelihood of an innovation's failure with the urgency of adequate resources if it succeeds. The Introduction phase ends when management decides either to withdraw the new product or to support it as part of its regular line.

When unit sales increase at an increasing rate or at more than one percent monthly, the goods or services are in the Growth stage. The purchasing department tries to enforce quality standards on vendors even while pleading with them for quicker deliveries. Eventually, unit sales level off—the hallmark of Maturity. Purchasing joins in a companywide quest for efficiency.

The fifth stage, Decline, sees unit sales decreasing at an increasing rate or at more than one percent monthly. Retrenchment (with respect to the goods or services in the Decline phase) is mandatory. Unless management has high self-discipline, a long delay may ensue until executive decision or

market erosion halts further efforts.

Purchasing Operations Across Product Life Cycle Stages

The foregoing description of five unit-sales phases serves as the basis for categorizing ninety-nine purchasing practices. The basic criterion is the purchasing department's contribution to companywide profitability. For example, instead of a narrow focus on each responsibility center, purchasing policy in the Design stage relegates unit costs in favor of prompt service on trial orders for a wide variety of items. During Introduction the purchasing agent favors subcontracting, whereas during Growth he or she reaches back for materials to be processed in the company's own facilities. Opting for variable costs when sales are low reduces losses and risks; shifting to fixed costs when sales are growing enhances profit. This is the familiar principle of operating leverage. The point is that this model slots purchasing in a systems perspective.

The structure of this model is aligned vertically and horizontally. Within each stage, all functions are mutually consistent. Across the five phases, departmental functions such as vendor relations follow a logical path, in conformance with the total-profitability criterion. For example, during the Design stage, the purchasing department evaluates new vendors. It builds, during the Introduction period, a list of preferred and standby suppliers. When the product's sales grow, the purchasing department selectively deepens supply sources without disrupting established arrangemets. Overdue purchase orders are cancelled as the product matures. And during the Decline stage, the purchasing department engages subcontractors as fast as the compan'y facilities can be converted to more lucrative production.

Thus far the need for a systematic model of purchasing operations has been established. An abbreviated explanation of product life cycle provided the point of departure. Some examples of procurement applications illustrated the general approach. Based on this background, a stage-by-stage

exposition of purchasing practices follows.

IV. DESIGN

Ideas for new products come from many sources. An increasingly important source is the purchasing department. "Suppliers frequently present new ideas for consideration which will influence what motor vehicle manufacturers will be making years hence," notes David H. Newbury-Ecob, Manager, Purchasing Service, Vauxhall Motors, Ltd. Procurement analysts identify trends in materials and processing that will lead to new product designs.

Of course, many projects in the Design stage will never materialize. Yet the purchasing department cooperates by obtaining a wide diversity of materials for testing, etc. Its policy is to de-emphasize unit costs because vendors' cooperation in furnishing small quantities is more important. Much of this buying can be delegated to a junior member of the department, while an analyst assesses make-or-buy alternatives. Meantime, senior purchase administrators monitor the progress of the new-product effort. If the new item will supplant existing goods or services, they pare commitments to present vendors.

Each project carries its peculiar challenges in interdepartmental relations. Purchasing executives urge the design department to formulate new-product specifications that will reduce future supply problems. They try to have the developing article incorporate materials and components already in satisfactory use on existing lines. Inevitably, there are many meetings and reviews in which representatives from the purchasing department contribute their expertise. For example, they get quotations and estimates of lead times for design engineer.

Further, the purchasing department assists in screening the nascent product for compliance with regulations on ecology, health, safety, etc.

"Product changes to meet legislative regulations are increasingly pervasive and important in the structuring of product programs and have in many ways become the most important parameter of market response," reveals Dr. Thomas A. Staudt, Director of Marketing, Chevrolet Motor Division of General Motors Corporation.

At the request of the marketing department, purchasing analysts find exotic materials that can be romanced in promotional efforts. Finally, the purchasing department approves the emergent product's specifications on the basis of expected materials' availability and stable cost. In a few firms, for example The 3-M Company, a project group takes over these purchasing functions for developing products.

Here are some other tasks of the purchasing department during the Design phase. Purchasing executives suggest in-house manual assembly of original devices to prevent disclosure to competitors. They also help prepare a materials management plan. If toxic or other dangerous materials must be used, the purchasing department makes sure that the company has the required permits. It joins others in financial planning for the prospective innovation and in evaluating proposals for the purchase of equipment. With respect to the latter, the purchasing department uses life-cycle costing-it considers the initial outlay plus the expenses of maintenance and service over the asset's useful life. A related task is to assess capital requirements of new vendors that the innovator may have to finance. Vendors may be unwilling or unable to risk their own funds in an unproven product idea.

Vendor relations, as noted, emphasize flexibility. During the Design stage the purchasing department evaluates custom shops and supply houses as prospective sources of components and services that, heretofore, it has bought never or only in small quantities. It obtains samples for testing purposes. Anticipating that requirements will change as its product's sales trend varies, purchasing executives insist on various options in early supply contracts. Some specific examples are: buyer's right to change specifications;

shipment acceleration or delay; cancellation or return; vendor's performance bonds or liquidated damages; and a schedule of declining unit costs reflecting the supplier's learning curve. In some companies the purchase department uses PERT or similar tools to assemble all essential raw materials and components for new products. Thanks to these practices, the purchasing department is in an effective position to support the fledgling's launch.

1. Introduction

Despite much laboratory and market testing, a new product typically harbors many problems that only larger-scale distribution and actual use reveal. The purchasing department's policy during Introduction is close cooperation with vendors to rectify product defects and implement engineering changes. Field reports from customer-service personnel and other direct inputs to procurement pinpoint specific complaints. The department has prepared itself to handle an avalanche of modifications. It also monitors sales research reports for clues about eventual growth or disconntinuance.

Until the recently introduced product's market acceptance has been confirmed, the purchasing department uses subcontractors and rents facilities. Where feasible, it arranges for leases with options to buy. Of course, many parts, components, and technical services are bought, but only in small quantities. These small orders are consolidated with other incoming materials.

A purchasing analyst, along with engineers and accountants, develops preliminary standards for cost, quality, yield, and other factors pertaining to the new item. Based on experience with the new vendors and on signals future product sales growth, procurement develops a list of preferred and standby sources; a senior purchasing executive makes the final decision. Many companies give special consideration to small businesses. In some cases the purchasing department orders their raw materials for them. When

signals of impending sales growth have been confirmed, the department institutes an orderly shift from subcontractors to owned facilities.

2. Growth

During the Growth period the purchasing department is liable to be plagued with temporary shortages, shipping delays, and similar problems. But, as a matter of policy, the department maintains reasonable quality standards despite pressures form others in the campany for speedy deliveries. It furnishes and monitors replacement tooling, a special arranagement with small vendors and some others. A purchasing executive enlists his/her high-level contacts at suppliers and transportation companies to obtain needed goods promptly. He/she also urges the treasurer's office to discount vendors' invoices.

The department expands its office staff to process an increasing volume of requisitions, follow-ups, etc. It is building substantial inventories of raw materials and components. Yet it aviods overbuying when some managers extrapolate or exaggerate steep sales increases. "The difference between a shortage and a surplus is just 1 lb.," notes E. F. Andrews, Vice President of Allegheny Ludlum Industries, Inc.

In fact, the purchasing department phases out some subcontractors in favor of in-house production. This strategy can contribute to its company's profit in three ways. The department saves "exchange" costs: its own buying and liaison efforts as well as the subcontractors' selling and follow-through expenses. Most important, in this Growth period, the company benefits from operating leverage. On the other hand, in-house production raises the purchasing department's "transaction" costs of contacting materials' vendors, processing orders, coordinating inbound shipments, and so forth. Elimination of subcontractors requires development of more basic sources.

Procurement shifts to suppliers with large capacity. Much effort is devoted

to expediting vendors' shipments. An "outstanding supplier" award and incentive, as Norton Company gives, can be effective. If necessary, the department uses brokers to find scarce articles for immediate delivery. When extraordinary circumstances make concessions to vendors expedient, the purchasing agent gets legal advice to ensure that his/her company's rights are not waived for any future disputes. Most of these problems subside, or are replaced by a new set of challenges, when the company's product matures.

3. Maturity

The purchasing department's policy in the Maturity period is to stabilize materials' commitments. Under this policy the department designates regular and alternate sources, installs automatic reordering of standard quantities, provides for product variants, and enforces vendor's adherence to quality standards, consistent customer service levels, and so forth. Overdue orders from the Growh period are cancelled. Pressure for cost reduction is intense. Occasionlly the department picks up bargains for insolvent competitors. But the main emphasis is on reducing costs from long-term vendors.

Procurement encourages its suppliers to propose simplifications of components and other opportunities for cost savings. It is also alert to gossip about aggressive competitors, which vendors' representatives are volunteering. Additional tidbits are gleaned at meetings of professional associations, from trade journals, and other sources. Along with their appraisals, purchasing executives forward these data to the company's intelligence section.

Purchasing analysts perform make-or-buy appraisals of remaining subcontracted jobs and new product extensions. They also conduct research into substitute materials and sources. At 3-M Company and at the Pillsbury Company, commodity specialists trace the availability of a given item all the way back to its primary source. Other investigations ascertain the

feasibility of long-term contracts with fewer sources.

Stabilization of demand opens new opportunities for administrative improvements. Whatever work is routine the director of purchasing delegates to junior executives or uses as a model in on-the-job training programs. An internal suggestion system elicits ideas to make operations more productive. Systematic cost-reduction efforts raise efficiency. "Paperless" purchasing for small orders is one example. The director of purchasing evaluates the usefulness of reports for controlling departmental functions and for informing top management.

Organizational parallelism may be desirable. If production operations are decentralized, the director of purchasing may split up buying assignments the same way. But some procurement (e.g., for national contracts) is centralized at headquarters. One purpose of these organizational realignments is promotion of closer interdepartmental cooperation. The department participates in the revisions of standards, for instance. The purchasing agent urges the design engineers to specify interchangeable parts on new sizes, attachments, and other modifications of the product. This is especially important during Maturity when uncontrolled proliferation in models, sizes, etc., would fractionate purchasing requirements.

Mounting competitive pressures trigger various reviews of objectives and operations. Insistence on reciprocity recurs with increasing frequency. The purchasing department is also asked for suggestions about recycling or other disposal of residues. The purchasing department adjusts quality standards to conform with customers' buying criteria(subject to societal requirements).

It also participates in production decisions. One offshoot of such intra-company cooperation is a joint project to install ABC Analyses, Economic Order Quantities, or Materials Requirements Planning. 'Another is a series of broad-scope efficiency studies and value analyses. The department's proposals of substitute materials or new features may open new markets or give the company a competitive advantage. These projects also lead to

exploring possible importation of labor-intensive parts or acquisition of vendors.

The purchasing department arranges for a suitable mix of geographically dispersed sources. It monitors vendors' possible absorption by rival firms or possible shutdown due to ecological restrictions, strikes, etc., with consequent threat to continuity of its supply. Foundries are a case in point. As a safeguard, the purchasing department awards orders regularly to several medium-sized suppliers. A monthly "lead time list" summarizes for each commodity the current outlook for delays, possible strikes at suppliers and transportation companies, recent accidents, fires, and so forth, for use by inventory control and production scheduling.

Procurement also supports the efforts of a shippers' association to lower freight rates on incoming shipments. Purchasing executives visit trade shows to establish new contacts and examine new ideas. New buying techniques reduce lead times or eliminate the need to stock maintenance items. In general, the department tries to shift inventories to vendors. It presses for systematic price reductions based on vendor's experience. Yet, despite all drives for lower total cost, the purchasing department insists on preserving the quality standards adopted in this period. In any disputes, it defends, more vigorously than before, the company's rights.

The stress on lower costs also spurs creative exploitation of trade asssociations and other neutral facilities. They are enlisted as clearing houses for excess or needed materials. Moreover, they compile and disseminate industry statistics. The latter signal the purchasing agent when Decline of the product is imminent.

4. Decline

As the product's sales trend turns down drastically, most of the foremention pressures intensify. The purchasing department reduces inventories

and services. Most specialists are transferred to other duties or newer products.

Economic order quantities are no longer serviceable. Accurate forecasts of production and sales are especially important; in the Decline period ordered materials may lack alternative uses. A cautious controllertype of purchasing executive screens all requisitions. As cut-throat competition for decreasing volume makes some vendors desperate, the department enforces quality standards strictly.

If the company's equipment can be exported or converted to burgeoning items, the purchasing department reverts to subcontracting. It maintains adequate sources for spare parts to serve users of the product. Other regular suppliers are notified and perhaps helped as quickly as new arrangements are assured. The purchasing department is instrumental in obtaining finished goods from abroad or from competitors. Together with the house counsel, it reviews and transfer purchase commitments. It also spearheads a companywide effort to dispose of surplus articles. After the firm retires the product, liability for personal or ecological harm continues. The purchasing department stores its records so that they can be retrieved in case of lawsuits or legislative proceedings.

5. CONCLUSION

Adoption of a purchasing-activities classification system of the type discussed above, can proceed piecemeal. Most urgent is procurement management's attention to goods or services in their early phases. These are more volatile and often require more radical departures from operational routines. During a stable Maturity period, seasonal patterns may be more decisive on procurement practices. When the product declines, management's attention passes to successor entries.

The life-cycle concept does not apply to organizations whose output has

a steady long-term trend (e.g., unbranaded hardware) or has balanced diverstiy such that no one product line's sales and purchase patterns justify special attention. The biggest obstacle to product life cycle adoption encountered in paractice has been a lack of products or productline sales forecasts. Some purchasing departments use production schedules. Most work from requisitions. But wherever the above framework can be serviceable, it validates a department's "need to know" sales forecasts. After some trial adoptions, if results argue in favor of more extensive use of this tools, procurement executives can integrate it into departmental objectives, position descriptions, and work schedules. If other departments' activities follow the same guide, its effectiveness is maximum.