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EXPLORING ALTERNATIVE PURCHASING STRATEGIES: JUST-IN-TIME OR JUST ENOUGH?

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What are the prevalent purchasing strategies used by manufacturing firms to purchase components that are critical to the quality of their most important products? This research reports the findings from data on purchasing strategies collected from 248 companies. The data indicate that although firms seem to be moving away from a transaction-based purchasing strategy towards "partnership" relations necessary for successful just-in-time strategies, firms are likely to embrace one of four hybrid purchasing strategies that on a spectrum would fall somewhere between the two "pure" strategies. These identified strategies offer purchasing managers viable alternatives to moving directly into a just-in-time environment.

INTRODUCTION

Effective purchasing strategy can contribute significantly to the success of most modern organizations. Surveys of U.S. manufacturing firms indicate that purchased materials account for an average of 57 percent of the sales dollar, while total labor costs (wages, salaries, and fringe benefits) consist of only one third of the purchase percentage (U.S. Bureau of Census 1989). Therefore, purchasing dollars must be managed strategically in order to improve the financial position of organizations (Reck and

Long 1988). It is also well understood that the overall quality and service capabilities of any manufacturing firm are heavily influenced by the performance of its suppliers. Research suggests that 50 percent of a company's quality non-conformances are caused by defective purchased materials (Leenders and Fearon 1993). Recognizing the importance of the purchasing functions and their overall effect on a firm's financial and quality performance, organizations are expanding the role of purchasing in the corporate strategic planning process (Fearon 1988).

Several strategic decisions under the discretion of purchasing managers in a manufacturing environment have been identified in the literature. Each of these decisions has the potential to influence a firm's competitive position (Waller 1993). The most frequently cited of these decisions are (1) the number of suppliers of critical components to use, (2) length and type of contract to use with suppliers, if any, (3) frequency with which to share production scheduling or forecasting information, (4) criteria to be used in selecting suppliers, and (5) the frequency of deliveries of critical components.

These five purchasing decisions are strategic in the sense that they have long-term consequences, pertain to the mutual sharing of critical information, and result in the selection and dismissal of suppliers. Reducing the number of suppliers of critical components has a long-term consequence because it can often take months or even years for new suppliers to be able to produce highly specialized, critical components. This can be due to the need for specialized manufacturing equipment or due to the capacity constraints of the supplier. A long-term contract has long-term consequences by definition. Frequent sharing of demand information with a supplier may eventually entail investment in EDI technology. The criteria that are used to select suppliers will have consequences for as long as those suppliers are used. Finally, moving toward more frequent deliveries may involve a change in the mode of transportation, additional investment in materials handling equipment, and changes in the receiving and inventory procedures—collectively implying long-term decisions.

These five decisions are discussed in the literature within the context of two general purchasing strategies: just-in-time purchasing (JITP) using cooperative buyer-supplier partnerships, and traditional purchasing (TP) in an open bargaining environment (Waller 1993). With respect to the five strategic purchasing decision variables, JITP vis-à-vis TP involves: using fewer suppliers for a given component (Ansari and Modarress 1988), longer term contracts with suppliers (Perry 1988), frequent

sharing of production schedule information (Trelevan and Schweikhart 1988), using many criteria—not just price—for selecting suppliers (Ansari and Modarress 1988), and taking frequent deliveries of components (Perry 1988).

Crosby (1984), Russell (1985), and Stundza (1984) suggested that U.S. manufacturing firms were moving away from open market supplier transactions toward closer buyer-supplier relations. Spekman (1988) described these emerging relationships as “alliances,” Johnston and Lawrence (1988) as “partnerships,” while Heide and John (1990) contrasted them with the more traditional “arm's length” type of interaction. A strategic partnership between a purchasing firm and a supplier has been defined as “a mutual, ongoing relationship involving a commitment over an extended period of time, and a sharing of information and the risks and rewards of the relationship” (Ellram 1990). More recently, Hendrick and Ellram (1993) indicated that strategic supplier partnerships have become an enduring purchasing initiative that may be necessary for competitive leadership and survival in the future.

While the use of supplier partnerships is no doubt growing in popularity, there appears to be a consensus in the literature that supplier partnerships develop over time, rather than being constructed overnight (Ellram 1991). Furthermore, although several characteristics have been identified as common among strategic partnerships when viewed as a whole, there is also evidence that firms engage in partnership relations for a variety of reasons and desired outcomes (Hendrick and Ellram 1993). Based on the long-term nature of partnership development and the lack of a single underlying strategic direction common to partnership relations, it seems logical to assume that many organizations do not adhere to a single pure strategy of JITP or TP, but rather some type that falls in between the two ends of the spectrum. Therefore, a primary objective of this research is to assess the use of pure JITP and TP strategies relative to other hybrid types of strategies.

BUYER-SUPPLIER PARTNERSHIPS

The purpose of this section of the paper is to present an overview of the buyer-supplier partnership concept and its relationship to JIT purchasing. First, various definitions of partnerships and recurring themes within those definitions are identified. The second part of this section provides the linkage between the buyer-supplier partnership concept and a JIT environment.

Buyer-Supplier Strategic Partnership Definitions

The concept of the buyer-supplier strategic partnership has numerous definitions and synonyms in the literature. Although each definition is unique, there are common "dimensions" of these relationships that can be identified by a careful review of the literature. Several recurring themes are suggested in the numerous definitions of buyer-supplier strategic partnerships, including (1) the presence of long-term commitments; (2) information sharing and open communications; (3) cooperative continuous improvements on cost reductions and increased quality; and, (4) the sharing of risks and rewards of the relationship (Gentry 1994).

Strategic partnerships require a long-term focus and relations with a limited number of suppliers (Shapiro 1985). Ohmae (1989) also points out that coalitions must be long-term, strategic relationships which must be carefully defined, developed, and understood to prevent unreasonable expectations.

A second partnership theme identified in the review of the buyer-supplier literature is information sharing and open communications. More casual and open lines of communication between the firms allows for increased flexibility and adaptability (Bevan 1989). Sharing of information is also essential to accelerating the product development cycle and speeding the introduction of new or altered products to the marketplace.

A third recurring theme found in numerous definitions of buyer-supplier strategic partnerships is a cooperative and continuous emphasis on cost reductions and quality improvements. Dwyer et al. (1987) suggest that a buyer's anticipation of high switching costs increases the buyer's interest in maintaining a quality relationship. Both buying and selling firms can enjoy a reduction in administrative costs since purchase orders, receiving reports, inspection duties, payment transactions, and sales calls are decreased (Landeros and Monczka 1989).

A fourth recurring theme found in the literature on buyer-supplier partnerships is the sharing of risks and rewards of the relationship. Companies seek to minimize their degree of technical or financial exposure, especially when entering new product markets or expanding the geographical coverage of an existing market (Williamson 1975). Technology and asset sharing are frequently cited as benefits in forming strategic partnerships (Landeros and Monczka 1989). Partnerships allow firms to share capital investment costs and the substantial learning costs of introducing new products or making technological advancements (Cavinato 1991). Maintaining close buyer-supplier relationships and sharing superior skills and resources increases the likelihood of successful product innovations (Landeros and Monczka 1989).

Use of Partnerships in a Just-in-Time Environment

The JIT concept has been adopted widely by purchasing management. To summarize the concept, its objective is to eliminate waste of all kinds from the delivery and production systems, using a method of drawing materials through the system on an "as needed" basis as opposed to a "push" system (Hall 1983). The benefits of JIT implementation include reduced inventory levels, higher product quality, increased flexibility, and higher productivity. To achieve the coordination necessary for effective JIT processes, buyer-

supplier cooperation must replace open market competition. Toyota's card control system, Kanban, is a prime example of this concept. In essence, the whole plant and suppliers act as progressive work centers where inventory is staged for production. The system relies on a set of cards, move and production cards, utilized to authorize the movement of parts between work centers and the production of new parts to replace those used. The card circulation is placed in motion by requiring the using work centers to request or retrieve needed parts from the supplying centers. Master Lock, a Milwaukee based manufacturer of padlocks, also utilizes the JIT concept in their pull system. Color-coded containers are placed in bins. Each color represents a lock type and each container holds a standard lot size of twenty units. Production needs are withdrawn from the containers and as a container drops below the lot size the units are combined with another container of identical parts and the empty is returned to the supplying area for replenishment.

Given the critical nature of suppliers in a JIT environment, Bagchi (1988), Bookbinder and Dilts (1989), and O'Neal (1987) indicate that buyer-supplier partnerships are necessary for effective operations. It has been suggested that JIT relationships are the most cooperative buyer-supplier relations, due to the level of interdependence and long-term orientation that are required. In a comparison of market and JIT exchange relationships, JIT relations (1) have a longer term orientation; (2) necessitate frequent communication between firms; (3) involve moderate to high levels of specialized investments; (4) require a reduction in number of suppliers (with sole-sourcing optimal); (5) involve a high level of risk; and, (6) necessitate a high frequency of shipments (Frazier, Spekman and O'Neal 1988).

The purpose of this discussion is not to advocate the use of JIT relations, but rather to support the linkage between the buyer-supplier partnership and JIT concepts. Although it has been found that a JIT environment is not

necessary for a successful buyer-supplier partnership (Hendrick and Ellram 1993), it can be posited that buyer-supplier partnerships are necessary for a successful JIT system.

METHODOLOGY

Literature indicates two widely accepted pure purchasing strategies; traditional purchasing and just-in-time purchasing with supplier partners. Among the many distinctions, adopting one strategy over the other has been shown to dictate how purchasing dollars will be spent and how firms strategically influence their long-term direction. Research by Bagchi (1988), Bookbinder and Dilts (1989), O'Neal (1987), and others indicates that organizations are moving away from traditional purchasing and rapidly adopting the "win-win" philosophy commonly associated with strategic partnerships. The following research questions were identified in an effort to further establish the utility and consequences of the various strategic purchasing decisions made by firms:

1. Do firms tend to use either the pure JITP strategy or the pure TP strategy?
2. Are other identifiable strategies being used?
3. What decisions have firms made about the often-cited strategic purchasing variables, namely, length of commitments, information sharing, cooperative continuous improvements, and the sharing of risks and rewards?

Survey Instrument and Data Collection

To answer these questions, a mail survey was sent to 1,035 manufacturing firms in the fabricated metal products industry (SIC 34). While all of the firms in this study were involved in metal fabrication of some sort, a broad range of firm sizes and process technologies—ranging from job shops to assembly lines—were represented. For example, represented firms may include manufacturers of metal cans, hardware, metal forgings, cutlery, and other manufacturers of metal and wire products.

RESULTS

Consequently, having selected only one industry (SIC 34), industry specific variations are reduced, improving the internal validity of the study. Since a wide variety of process technologies are represented, external validity is enhanced, improving the general applicability of the findings.

Questionnaires were sent only to those firms with 100 or more employees and a purchasing manager in the manufacturing plant. The letters were addressed to the mid-level purchasing managers. After the first mailing, a reminder letter was sent to non-respondents. Then a third letter with a copy of the questionnaire was sent to the remaining non-respondents. After all three mailings, 248 questionnaires were returned, resulting in a 24 percent response rate. To rule out possible response bias, a difference of means test (T-test) between early and late respondents was conducted on various relevant variables and no significant differences were found.

JIT was not mentioned in the cover letter or questionnaire to help avoid biases in the answers to the items on the questionnaire. Neither were firms asked whether they use buyer-supplier partnerships; they were simply asked questions about the five strategic purchasing variables identified above. The respondents were asked to answer the questionnaires in reference to one critical component they purchase for a primary product since most firms using supplier partnerships only use it with components that are critical to quality (Freeland 1991). It was explained that "critical component" meant a component having a significant impact on the quality of the final product and that "primary product" meant one of the company's leading products in terms of sales revenue. Although we were interested in having some firms in the sample that use JITP, we wanted to have firms employing many strategies.

The next section deals with the results of the exploratory empirical investigation. This section is divided into five subsections, each dealing with a different strategic purchasing variable. These include (1) the number of suppliers, (2) the length of the contract, (3) the sharing of information, (4) the criteria used for supplier selection, and (5) the frequency of delivery. The data include all firms in the sample—not just those that might be classified as JITP.

Number of Suppliers

Advocates of JITP and supplier partnerships encourage firms to use fewer suppliers for critical components, sometimes even suggesting single sourcing (Deming 1982). It is easier to manage, for example, two suppliers than it is twenty; more resources can be expended per supplier for supplier development when fewer suppliers are used. Furthermore, when fewer suppliers are used it is easier to develop closer relationships with the suppliers, resulting in better buyer-supplier communication, enhancing the supplier's ability to meet the demands of the buyer more accurately. Also, a firm using fewer suppliers needs each supplier to provide a higher volume of production of the component that is being procured than would otherwise be the case. This facilitates the supplier's path down the learning curve in terms of cost and quality.

In this survey, respondents were asked how many suppliers they used over the past year for the critical component they selected for answering the questionnaire; Figure 1 shows the results. As can be seen, 58 percent used five or more suppliers and 19 percent used only one supplier. Only 4 percent used dual sourcing, an often-cited approach to reaping the benefits of JITP while reducing the possibilities of the negative outcomes such as disruption of supply

(Juran and Gryna 1980). Even using a broad definition of JITP, which allows for the use of dual sourcing, only 23 percent of the firms used this strategy—the majority of the firms used five or more suppliers over the past twelve months.

Length of Contract

The requirements of a strategic partnership include the need to view the relationship as a series of exchanges without an endpoint, and the need to establish various mechanisms to monitor and execute the operations of the partnership (Henderson 1990). Perry (1988) found that companies successful with JITP used long-term contracts. In a recent study, Helper (1991) found that the average length of a contract between a parts supplier and an automotive manufacturer almost doubled between 1984 and 1989.

This research addresses two primary areas: the use of contracts and their duration. Figure 2 summarizes the results. Over half of the respondents indicated they used contracts of less than one year, with only 14 percent indicating the use of contracts for a period beyond two years.

Sharing Information

Another characteristic of JITP and strategic partnerships is the sharing of production scheduling or forecasting information with supplier partners. The sharing of scheduling information allows the supplier to better plan production, allowing higher productivity and quality levels. If a company shared scheduling information on a weekly basis but it was for a 13 week planning horizon, for example, then that would be counted as weekly sharing of production scheduling information. In a JITP supplier partnership environment, having fewer suppliers makes it easier to share information and have more open lines of communication. Intuitively, if a buyer is willing to reduce its supplier base, it seems likely that it would attempt to fully exploit the potential benefits by sharing scheduling and forecasting information.

As can be seen from Figure 3, almost half of the companies never share production scheduling or

forecasting information with their suppliers. Firms are not taking full advantage of a reduced supplier base.

Criteria for Selecting Suppliers

When utilizing a TP strategy, price is the predominant supplier selection criterion for evaluation. In this traditional open market bargaining environment, price-driven tactics such as competitive bidding, positional negotiations, and value analysis are used. Most of these tactics force suppliers to base their supplier selection decisions on short-term considerations. Often the result of this operating environment is, ironically, lower quality products and ultimately higher product costs to the buyers (Hahn, Kim and Kim 1986).

Typical supplier selection criteria include price, delivery performance, and quality considerations. Since supplier partnerships are more strategic in nature and require a longer-term planning horizon, the argument has been made that these relationships require the consideration of additional factors for selecting suppliers (Ellram 1990). These include (but are not limited to) organizational issues such as cooperation, availability of technology and financial resources, and other unique factors that may include safety, location, and a supplier's existing customer base.

In this study, the respondents were given a sample list of criteria that might be used for selecting suppliers: quality, price, delivery performance, financial resources, cooperation, geography (location), and engineering capability. They were asked to check each one that they used in selecting the supplier(s) of their critical component. Figure 4 summarizes the findings, showing what percentage of firms used various numbers of the criteria in selecting suppliers. Only 4 percent of the firms used two or fewer of the criteria, and 21 percent used all seven criteria.

Frequency of Deliveries

To realize the full benefits of JIT, a firm must receive frequent and reliable deliveries of high quality parts in small sizes and exact quantities (Schonberger 1982). This requires efficient, reliable communications and information sharing, which was emphasized in the earlier section defining the common themes of buyer-supplier partnerships. Similarly, another theme found in partnering relations is a cooperative and continuous emphasis on cost reductions. The

underlying goal of small, frequent deliveries is an overall reduction of inventory and associated costs.

In this study, firms were asked how often they received deliveries from suppliers of their critical component. Figure 5 summarizes the findings. Only two of the 248 companies took delivery of critical components on an hourly basis. However, 74 of the 248 companies (30 percent) took deliveries daily, while 75 percent indicated that their firms took deliveries monthly or less frequently.

FIGURE 1
NUMBER OF SUPPLIERS OF CRITICAL COMPONENTS

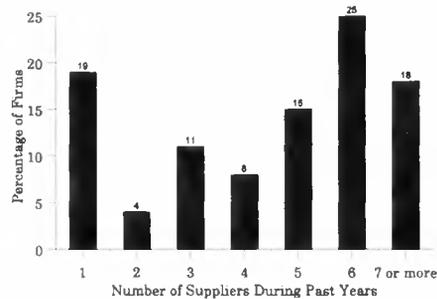


FIGURE 2
LENGTH OF CONTRACT USED WITH SUPPLIER OF CRITICAL COMPONENT

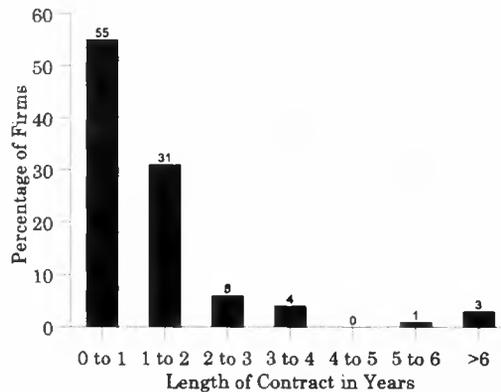


FIGURE 3
FREQUENCY OF SHARING PRODUCTION SCHEDULING OR FORECASTING
INFORMATION WITH SUPPLIERS OF CRITICAL COMPONENTS

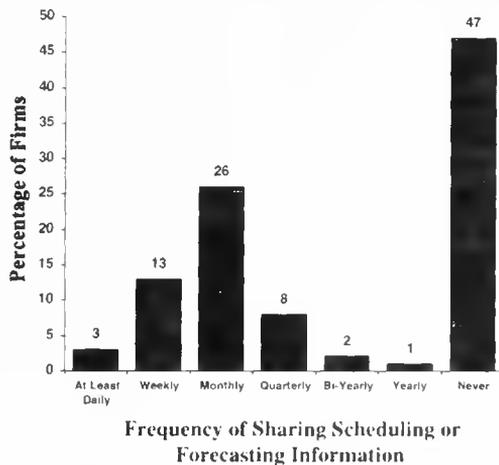


FIGURE 4
NUMBER OF THE FOLLOWING CRITERIA USED IN
SELECTING SUPPLIERS OF CRITICAL COMPONENT:
QUALITY, PRICE, DELIVERY PERFORMANCE, FINANCIAL RESOURCES,
COOPERATION, GEOGRAPHY, AND ENGINEERING CAPABILITY

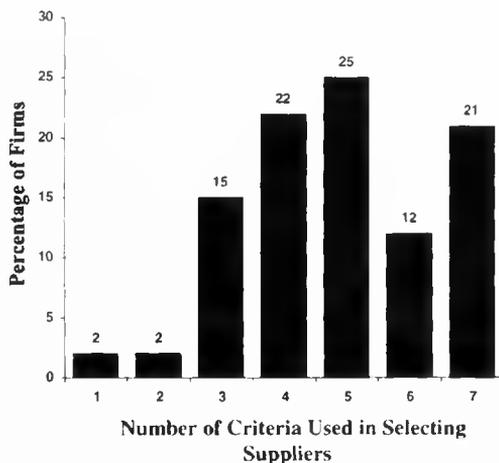
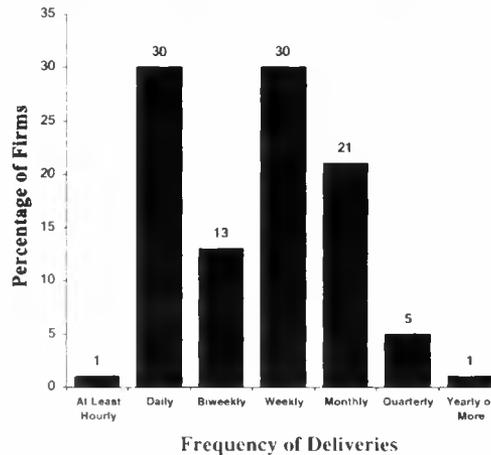


FIGURE 5
FREQUENCY OF DELIVERIES OF CRITICAL COMPONENTS



CONCLUSIONS AND MANAGERIAL IMPLICATIONS

The survey results indicate that most firms are not using either a pure TP or JITP strategy. Rather, firms appear to employ different purchasing strategies for different components. Based on the significant correlations from data shown in Table 1, four alternative strategies seem present: the frequent sharing of information (X3) with long term contracts (X2) indicates a commitment strategy; selectivity in choosing suppliers (X4) with frequent sharing of information (X3) suggests an information strategy; frequent deliveries (X5) with selectivity in choosing suppliers (X4) implies an interaction strategy; and, few suppliers (X1) with infrequent deliveries (X5) suggests an efficiency strategy. Each resultant strategy has different managerial and strategic implications for firms employing them as discussed in the following sections.

Commitment Strategy

The commitment strategy involves firms that frequently share information and engage in long-term contracts with suppliers (refer to Table 1, X3

and X2 respectively). Both elements of this strategy involve a commitment on the part of the buyer. The long-term contract reduces the buyer's flexibility to some extent, although this is dependent on the details of the specific contract. The buyer's demonstrated commitment can facilitate the development of a potentially successful relationship. The supplier will be more willing to invest in machines and labor to enhance its ability to meet or exceed the buyer's expectations.

Sharing information results in commitment in two ways: it develops human asset specificity and physical asset specificity. Human asset specificity arises due to "learning by doing." This occurs on both sides of the dyad, since good communication takes time to develop. Physical asset specificity can develop as a result of the implementation of EDI. Additionally, frequent sharing of information can be both time consuming and expensive.

Both elements of the commitment strategy—frequent sharing of information and long-term contracts—are consistent with one another in that they both represent a commitment on the part of the buyer to the supplier.

TABLE 1
CORRELATION COEFFICIENTS

	Fewer Suppliers (X1)	Length of Contract (X2)	Frequency of Sharing Scheduling Information (X3)	Number of Criteria Used (X4)	Frequency of Deliveries (X5)
Fewer Suppliers ^a (X1)					
Length of Contract (X2)	-0.03				
Frequency of Sharing Scheduling Information (X3)	0.11	0.27*			
Number of Criteria Used (X4)	0.04	0.09	0.16*		
Frequency of Deliveries (X5)	-0.27*	0.04	0.11	0.22*	

* Statistically significant at $p < .01$.

^a The number of suppliers reported was reverse coded; higher levels of X1 implies fewer suppliers

Therefore, this strategy is most appropriate in situations where such a commitment is important for the successful procurement of the component. This would be the case, for example, when it is necessary for a supplier to buy specialized assets or develop specialized skills in order to manufacture the component. Another example would be a situation where a component's specifications are frequently changed, making close communications imperative. A buyer's commitment to a supplier can enhance a supplier's willingness to cooperate with such frequent changes.

Purchasing managers must assess their critical component manufacturing needs and the capabilities of suppliers with respect to fulfilling such requirements. Those firms requiring very specialized inputs that may not be easily reproduced, for example, must protect their sourcing interests by fostering long-term relationships with willing suppliers. Buyers must assure that suppliers possess the strategic and structural ability and willingness to make the modifications necessary for providing exact component specifications. Commitment strengthens as parties become secure in exchanges based on long-term

contracts. Trust is manifest by investment in the tools necessary to completely fill the expectations of the buyer. Procurement officers must see that partnering firms' information systems are adequately integrated so as to ensure the sharing of important, sensitive, and timely exchanges.

Information Strategy

The information strategy is composed of two facets: (1) selectivity in choosing suppliers, and (2) frequent sharing of information (refer to Table 1, X4 and X3 respectively). The buyer may collect information about a potential supplier's product quality, pricing, delivery performance, financial stability, willingness to cooperate, location, and engineering capability. Based on that information, the buyer decides whether to use that supplier. After supplier selection, the buyer begins a regime involving sharing information with the supplier on a regular and frequent basis.

When uncertainty about suppliers' abilities to deliver quality products on-time pervades the sourcing decision, the information strategy is most likely to be used. If a company were

purchasing high frequency ultrasonic transducers for flaw detection, then the information strategy would be appropriate. These products are not particularly complex, but they are typically assembled to order because of slightly different specifications in orders. The quality of these components can vary significantly from one company to the next, and due to technical reasons, firms require different quality standards. Consequently, it pays for companies to be highly selective in choosing suppliers of these components. After that, the components often require on-going adjustments to properly meet the demands of the buyer. This requires continual and frequent sharing of information.

Manufacturers of products highly sensitive to quality specifications must be particularly critical in supplier selection. Suppliers must have proven demonstration of adherence to all performance criteria prior to the business exchange. Procurement managers must develop acceptable criteria ratings and ensure that the information technology is in place to effectively disseminate quality specification updates.

Interaction Strategy

The interaction strategy entails frequent deliveries of the critical components and high selectivity in choosing suppliers, both of which require a great deal of interaction between the buyer and supplier (refer to Table 1, X5 and X4 respectively). The strategy yields a highly coupled buyer-supplier dyad where the feedback loop is minimal and where there is an appropriate congruency of the buyer's needs and the supplier's capabilities.

Congruency between the buyer's needs and the supplier's capabilities is achieved by the buyer analyzing numerous performance measures in the supplier selection process. Once the supplier is selected, the company using this strategy maintains a high level of interaction by taking frequent deliveries of components. The interaction resulting from the frequent

deliveries is likely to be successful with this strategy since the congruency of the two companies is assured by the up-front investment of time in the detailed analysis of the supplier.

Procurement officers are encouraged to identify their strategy with respect to managing inventory. Firms requiring minimal inventory levels will look for suppliers who can accommodate frequent deliveries. Due to holding low levels of inventory, selection of suppliers must be critical and only those able to perform this level of delivery service need be considered.

Efficiency Strategy

The efficiency strategy contains two facets—use of fewer suppliers and less frequent deliveries (refer to Table 1, X1 and X5 respectively). The two facets together lead to various cost efficiencies in purchasing, although typically not viewed together in a single strategy. These two variables together as part of a pure JITP strategy would entail the use of fewer suppliers with **more** deliveries. However, there is a logical and cost efficient reason why companies would employ an efficiency strategy.

The use of fewer suppliers can reduce both administrative costs and component costs. Administrative costs can be reduced since there are fewer suppliers to manage and coordinate. Additionally, by reducing the number of suppliers and increasing the volume purchased from these suppliers, the component costs can be reduced by leveraging purchase volumes. Using fewer suppliers makes it easier for the buyer to take advantage of quantity discounts, and less frequent deliveries allow the buyer to gain transportation efficiencies, thus reducing total delivered cost of the components.

Consequently, manufacturers purchasing components with low inventory holding costs or those most conducive to transportation

efficiencies are encouraged to employ efficiency strategies. It is also recommended for those organizations where the purchasing department procedures are complex, slow, unstandardized, and bureaucratic, which greatly increases ordering and administrative costs. Therefore, purchasing managers must identify suppliers associated with volume discounts and strive to achieve relationships with select vendors in an effort to ensure large volume availability and improve future per unit cost savings. Ideally, the efficiency strategy should not be used to cope with such an inefficient purchasing department; instead, the company should eventually reengineer the purchasing process.

In summary, the ways in which the five strategic purchasing decision variables are used are manifestations of the purchasing strategies themselves. These purchasing variables can be used in many ways but they are most often discussed under the rubric of the JITP strategy, contrasted to the TP strategy. However, these variables can, and are, used in other combinations. While there are many benefits associated with JITP, it does not make sense to purchase all components using that strategy. The HP Greeley Division uses JITP to purchase only about 1 percent of their parts (Ansari and Modarress 1988).

This research identified four purchasing strategies that do not clearly fit into any previous category such as TP or JITP. Firms are likely to implement one of these four strategies while moving from a traditional purchasing strategy into long-term strategic supplier partnerships and JITP.

LIMITATIONS AND FUTURE RESEARCH

More empirical research in this area is needed to facilitate a better understanding of these strategies and their effect on overall firm performance. Such research should focus on various components, using a typology of the components (e.g., critical versus not critical, cost, quality). While the firms in this study represented various process technologies, due to the scope of the sample the results may only be applicable to the fabricated metal products industry. Future research should look at how different categories of purchases should be managed and investigate cross-industry and industry-specific patterns of behavior among firms. Lastly, the effect of buyer supply chain positioning (channel position) should be assessed to reveal evidence, if any, that buyers with greater channel power (i.e., in the extreme, monopolistic) have a greater propensity to pursue traditional purchasing strategies or perhaps natural market forces lead firms to greater levels of cooperation.

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