2. A STRATEGIC, GOAL-ORIENTED APPROACH TO PURCHASING AND SUPPLY MANAGEMENT

Innovative Commercial Firms Are Taking A More Strategic, Goal-Oriented Approach to PSM

Motivators:
- Purchased goods, services take large share of budget
- PSM practices offer large prospective benefits
- PSM process and outcomes include and affect entire organization

Actions:
- Establish measurable, corporatewide strategic goals for PSM that are linked to high-level corporate goals
- Assign responsibility and accountability for meeting goals
- Integrate PSM into highest levels of decisionmaking

Adopting the new [PSM] model requires widespread change— in processes, the organization, and even the supporting infrastructure. First, the focus of purchasing processes must shift from transactional to strategic management.

(Laseter, 1998, pp. 19-20)

When firms recognize the significant portion of their budget affected by purchasing outcomes (as much as 50 to 80 percent), the large potential

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1David Nelson, vice president of worldwide supply management for Deere & Co. (now vice president for global purchasing, Delphi Automotive Systems), notes that 20 years ago, 70 percent of a typical manufacturing company’s spend was for direct labor and other in-house costs and 30 percent was for purchased goods and services. In the past decade or two, this ratio has reversed for many firms as they focus more on where they can add the most value and outsource tasks that are not part of their core competencies.
benefits from implementing PSM, and the fact that PSM processes and outcomes draw on and affect the entire firm, they often begin to shift their view of the purchasing function from that of a tactical support organization to a strategic capability. For example, Motorola's Space and Systems Technology Group recently identified supply management as a core operating process (Ostroff, 1999). Similarly, Larry Bossidy, former Chief Executive Officer (CEO) of AlliedSignal, believed that for AlliedSignal to accomplish its goals, it needed the most talented materials management group in the industry (Minahan, 1997).

The first step firms often take toward a more strategic approach to PSM activities is to establish measurable, corporate-wide PSM goals that map directly to high-level corporate goals. These goals may arise from benchmarking exercises, internal analyses, or analyses performed by an

(Atkinson, 2000, p. 51). For example, Pratt & Whitney used to do everything involved with the design and production of its jet engines; now two-thirds of the engine is purchased (Fitzgerald, 1999a, p. 51).

The PSM process involves developing a business plan/strategy, defining requirements, performing market research, deciding how to bundle requirements, soliciting offers, selecting sources, integrating sources into operations, measuring and managing performance, and working with suppliers to continually reduce costs and improve performance throughout the value chain. Thus, PSM stakeholders are all those who are affected by the PSM outcomes or who participate in the process including internal customers (e.g., business units), technical functions (e.g., manufacturing, logistics, engineering), and supporting functions (e.g., purchasing, legal, human resources, finance quality). Such a broad range of skills and personnel requires broad, organization-wide coordination and cooperation for successful PSM outcomes.

For a systematic, 30-year review of the purchasing strategy literature, see Ellram and Carr (1994). See also Ciancarelli (1999) and Laseter (1998).

Typical goals include ongoing cost-reduction targets (e.g., $200M/year, 6 percent/year); quality-improvement targets (e.g., 50 percent reduction in ppm defects/year); design-cycle-time targets (e.g., 50-75 percent reduction); increased operating flexibility, which in some firms has yielded an economic lot size of one—the ultimate in flexible manufacturing; more value for the customer's customers (e.g., 10 percent increase in customer satisfaction); enhanced leverage with technology, including earlier access to new concepts and more control over technological change; and more powerful competitive strategies, gained when a customer adds its supplier's expertise to its own (Lewis, 1995, pp. 3-4).

Because firms' strategic goals vary (see Porter, 1996, for an excellent discussion of different strategies), their PSM goals will also vary (e.g., cost reduction, quality improvement, improved responsiveness) and hence the PSM practices used will also vary in their mix and intensity. For example, in the late 1980s Intel's highest priority for its suppliers was quality (Morgan, 1990). In the mid 1990s Sun sought responsiveness from its suppliers (Carbone, 1996).
outside consultant. For example, one firm we interviewed used a consultant to identify the level of savings that might be achieved through the shift to new PSM practices.\textsuperscript{6}

The metrics used to track progress toward meeting these PSM goals are outcome-based, such as total cost reduction, supplier quality improvements, or number of preferred suppliers rather than function-, process-, or tool-based metrics that are purely internal to the purchasing function, such as the number of contracts and/or purchase orders processed per year or number of electronic orders.\textsuperscript{7} However, merely establishing goals and identifying corresponding metrics alone is not sufficient to make the transition to a strategic approach to PSM.

The firms that have been most successful in implementing best PSM practices also assign responsibility and accountability for meeting the PSM goals, beginning with high-level PSM stakeholders (e.g., savings performance goals for the head of the PSM organization, business unit heads). One firm that we interviewed gave PSM savings goals to the head of the PSM organization and then provided mirror-image goals to the heads of the business units, whose cooperation was crucial to meeting the goals.\textsuperscript{8} Further, responsibility and accountability for meeting the goals is parsed and flows down to all key participants within the stakeholder organizations, including senior, middle, lower, and line management.\textsuperscript{9} For example, MKS Instruments currently measures individual buyer-planners on purchase price variation and informally measures them on inventory turns, supplier kanban\textsuperscript{10} implementation rates, supplier quality,

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\textsuperscript{6}Laseter (1998) suggests that these goals should be aggressive enough to lead to the necessary PSM changes and should represent both short- and long-term PSM objectives.

\textsuperscript{7}Local purchasing process- and tool-based metrics are not eliminated. They can be valuable for identifying root causes of poor performance and improving the internal functioning of the process. However, care must be taken to ensure that they are aligned with overall PSM goals. See Morgan (2000b) for the results of a recent survey and interviews with purchasing executives indicating how traditional PSM metrics are changing.

\textsuperscript{8}This firm has a culture of strong, autonomous business units that might not have cooperated with the new PSM practices otherwise.

\textsuperscript{9}The results of a recent Purchasing magazine salary survey indicate that 83 percent of purchasing vice presidents receive a bonus, which averages about 25 percent of their base salary whereas only 34 percent of buyers receive a bonus, which averages almost 7 percent of their base salary (Purchasing, 2000c, p. 56). See also Easton et al. (1998).

\textsuperscript{10}Kanban is an automatic system for pulling materials from suppliers direct to the factory floor.
and on-time performance (Porter, 1999a). Not surprisingly, once many firms link PSM organizational and personal accountability and responsibility to attaining specific performance goals (e.g., savings, quality, or responsiveness), purchasing organizations quickly develop systems to accurately measure and track their performance over time.

As a final step toward adopting a more strategic approach to PSM, firms are integrating the PSM organization and considerations into the highest levels of internal decisionmaking. For example, top management at Intel now recognizes purchasing as strategically co-equal with design and manufacturing (Morgan, 1995a). From 1990 to 1996, supply management (which included purchasing) at Sun evolved, and its status was elevated because of its supplier strategies and the resulting contribution to Sun’s.11 In fact, there are more supply management personnel in Sun’s director positions than probably any other function within operations (Carbone, 1996).

11Because spending represents between 70 percent and 80 percent of the standard cost of Sun’s products, purchasing represents the area with the most potential to create improved performance and profitability. As a result, the contribution of supply management at Sun is valued and recognized as a core competency (Carbone, 1996).
As discussed above, a key step toward moving from a tactical approach to a strategic approach to PSM is to integrate PSM into the highest levels of decision making within the firm. Many firms accomplish this by creating a chief purchasing officer (CPO) position that elevates the head of PSM activities to the executive level (generally, the corporate vice president level) (Atkinson, 2000).\textsuperscript{12,13} For example, in 1991 Lawrence Bossidy, then CEO of AlliedSignal, consolidated procurement into a single materials

\textsuperscript{12}The exact title varies from vice president to senior vice president and from purchasing, to materials, supply, or supply chain management.

\textsuperscript{13}In their 1988 and 1995 surveys of U.S. and Canadian firms (not necessarily selected for their best PSM practices), Fearon and Leenders (1995) found that 66 percent of the 118 U.S. firms participating in both surveys had changed the reporting line for the head of purchasing between 1995 and 1998 and 59 percent of these firms had changed the title of the head of purchasing. In their 1995 survey, the authors found that the purchasing function reports directly to the president in 16 percent of the firms, to the executive vice president in 15 percent, and to the senior/group vice president in 19 percent. In 1995, 37 percent of the firms’ CPOs had the title of vice president. See also Smeltzer (1998).
management organization and elevated the function to executive status.\textsuperscript{14} In 1995, Harley Davidson hired a new director for its purchasing organization and in 1997 promoted that director to vice president (see Davidson, 1997). AMR hired a new vice president of purchasing and elevated the position to only one level removed from the chairman of the company (Avery, 1998). In 1998, to resolve problems in purchasing Boeing Commercial Airplane Group brought in a new vice president and general manager of what is now its supply Management and Procurement Division (Stundza, 2000b). One firm we interviewed assigned the leadership of global strategic sourcing to its former chief financial officer (CFO), who had previously been in operations at one of the firm’s business units. The CPO is given goals for savings and performance improvements that are tied to corporate strategic goals and also the resources to meet those goals.

Establishment of a CPO accomplishes three objectives. First, it signals that PSM is viewed as a strategic activity within the firm (see Laseter, 1998). The major financial commitment that comes with establishment of such a position\textsuperscript{15} indicates that PSM has the support of the highest levels of leadership within the firm\textsuperscript{16} and emphasizes that new expectations have been established.\textsuperscript{17} For example, the goals given to the CPO reflect the benefits that corporate leadership expects to receive from implementation of the new PSM practices. The actions also indicate that PSM input is important for many future strategic corporate decisions. At AMR, the CPO attends executive planning meetings for the corporation and participates in discussions of issues that go beyond the scope of PSM.

\textsuperscript{14}Bossidy also promoted some key materials management players to the front office (Minahan, 1997).

\textsuperscript{15}Salaries for the most talented PSM executives are climbing and are currently in the neighborhood of $200,000 per year with 20 to 40 percent of their compensation linked to performance much like a general manager running a business. See Chapman et al. (1998).

\textsuperscript{16}Chapman et al. (1998, p. 71) note that “[t]he challenge of executing a multi-year program cannot be underestimated; those few companies that have successfully transformed their PSM capabilities all had commitments from their senior managers.” Smeltzer (1998) finds that firms with greater executive leadership support for new PSM practices experience greater and more successful PSM change.

\textsuperscript{17}AlliedSignal’s elevation of procurement to executive status was meant to send a clear message to suppliers and AlliedSignal personnel that from then on, AlliedSignal was going to take materials management very seriously (Minahan, 1997). See also Smeltzer (1998).
Through these discussions, the CPO gains a better understanding of the broader corporate concerns, increasing opportunities for PSM to add value.18

Second, establishment of a CPO enables the changes that are necessary to implement best PSM practices. The CPO becomes the champion for implementation of the new practices throughout the firm with the responsibility and resources to create and communicate broadly throughout the firm a new, holistic vision for PSM that is aligned with the corporate strategic goals, to develop a plan for making the new vision a reality, and to implement the necessary changes. A senior PSM executive we interviewed said, “Most of my job is selling the change.”

Third, the CPO title helps with supplier negotiations and communications by providing clear leadership and coordination of all purchasing activities and, when necessary, one voice and one point of contact. It is especially helpful when putting together strategic alliances because it gives suppliers the assurance that they are dealing with a person with decisionmaking authority (Atkinson, 2000).19

Placing the CPO on the same level with the leadership of the other key stakeholder divisions and functions, such as the business units and technical experts, promotes visibility of PSM considerations in decision making, enables the CPO to effectively sell the value of purchasing across the organization, and provides opportunities for the CPO to obtain the cooperation necessary to meet PSM goals.20 One firm that we interviewed

18AMR’s chairman, president, and chief executive officer, Donald J. Carey, noted that for the first time in his history with the company, user departments clearly see purchasing as value added (Avery, 1998).

19This may be particularly important for the DoD as it moves toward more strategic partnerships with leading commercial firms. For example, many Air Force and DoD suppliers have multiple sole source contracts (Honeywell had 154 sole-source “contracts” with the Air Force; 29 were purchase orders and 396 sole-source “contracts” with the DoD in Fiscal Year 2000, according to the DoD-wide DD350 contract database). Resistance by some of these suppliers to consolidating their sole-source contracts into fewer corporate contracts may suggest the need for high-level involvement. An anecdotal example is DoD contracting personnel in one organization negotiating an innovative major contract using standard commercial pricing clauses only to have contract management personnel in another organization balk at enforcement of the new terms and conditions. This suggests the need for a single high-level voice when dealing with suppliers.

20Wincel (1998) notes that because purchasing goals of controlling total costs and making the supply chain operate more efficiently cut across the entire firm, turf battles between
took this a step further and elevated the CPO from a management level equal to the heads of the business units (production plants) to one level above them to promote coordination across the business units. This change was necessary because of the strong organizational culture of powerful, independent business units. In fact, the president of this firm offered his direct assistance to help overcome stakeholder resistance to working toward the new PSM goals.

In many cases, when the CPO position is created, a new person is brought into the organization to manage the shift to strategic PSM activities. Often this person has an MBA or other master’s-level degree. However, many new CPOs have little career experience in the purchasing field. Instead, CPOs often are hired for their management expertise, including their experience in successfully implementing major organizational change.

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21 AMR hired Navistar International’s head of purchasing to be its new VP of purchasing (Avery, 1998). John Deere hired the head of purchasing from Honda of America to lead its new PSM activities (Nelson, 1998). IBM’s CEO, Louis Gerstner, Jr., realized in the early 1990s that to revamp IBM’s Global Procurement operations he had to find the very best purchasing executive. He hired a new vice president and chief purchasing officer, Gene Richter, who twice (when he headed purchasing at Hewlett-Packard and also Black and Decker) won Purchasing magazine’s Medal of Professional Excellence (Fitzgerald, 2000a).

22 In its 1995 survey, CAPS (1996) found that 39 percent of the respondent firms’ CPOs had advanced degrees. Of these 70 percent had MBAs, 12 percent had masters in management degrees, and 6 percent had Ph.D.s.

23 Some firms, such as Chrysler and Delta Airlines, are strategically moving functional heads within the company to enhance their executive teams (Ciancarelli, 1999). None of the CPOs interviewed by Smeltzer (1998) had received formal purchasing training.

24 Ciancarelli (1999) notes that the ideal candidate for a purchasing executive job has management experience in nonpurchasing areas, experience with global operations (or at least a global perspective), computer and Internet skills related to supply management, and the ability to change and to manage people who are experiencing change.
The shift toward more strategic PSM requires that purchasing be expanded beyond the traditional transactional approach to include more sophisticated and more strategic purchasing activities. An initial step in this direction is to move from processing purchase orders and recompeting existing contracts “as is” to the development and negotiation of more flexible, higher-dollar contracts that encompass larger groups of goods and services. Bethlehem Steel found that over 80 percent of its professional purchasing staff time was consumed by tactical activities with less than 20 percent of their time focused on strategic activities (Rudzki, 2001). A second step is to incorporate market research into the purchasing function to learn which goods and services best meet internal customer needs, the innovative providers of those products and services,

25Many firms have computerized (Giunipero and Pearcy, 2000) and are now shifting to the Internet most of the traditional, clerical purchasing activities. Indeed, “[as] companies accelerate implementation of e-procurement programs, lower-level purchasing jobs are being removed through attrition and replaced with higher-level professionals who develop long-term strategic relationships with a reduced number of key suppliers” (Purchasing, 2000c, p. 50).
the best way to purchase them, suppliers' major cost drivers, supply market conditions, effective ways to measure performance and provide incentives, what new technologies are expected in the near future, and so forth.26

The more-sophisticated PSM groups strive to better manage and integrate the corporate supply base and supply chain. They analyze corporate spending patterns and study the relative importance of purchased goods and services to the firm's core processes to determine the optimal acquisition strategy.27 As one senior PSM leader we interviewed said, "Data is key to our management process. Once you have the data, you have the ability to cut better deals." They expanded their PSM activities to include supplier management, i.e., managing performance of suppliers and tailoring supplier relationships to the types of goods and services procured. These sophisticated PSM groups also invest in strategic partnerships and intensive supplier development activities (e.g., training in quality management and process control techniques) for a small number of their key suppliers critical to operations or competitive positioning (for example, see Nelson, 1998).28

As firms begin to implement these new, sophisticated PSM practices, they are discovering that the depth and breadth of the expertise of their existing purchasing personnel is often inadequate. One firm that we interviewed likened the change in demands on PSM staff to moving from an amateur sports league to a professional one.

Whereas many traditional purchasing organizations consist primarily of clerical staff trained to process simple transactions,29 execution of new

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26Laseter (1998) notes that the market research questions should be tailored to each industry (e.g., based on its degree of globalization, vertical integration, and other relevant measures).

27Appendix A illustrates how John Deere manages this more sophisticated approach to supply management.

28A recent Purchasing magazine (2000a) reader survey found that 53 percent of responding companies pursue supplier development activities, 20 percent say that they sometimes provide financial support for suppliers' plants, equipment, and other operations; 14 percent place their own employees on-site at suppliers' facilities for some length of time; 11 percent give suppliers opportunities to learn and improve by becoming residents at customer facilities; and 1 percent have formal policies and procedures for supplier development.

29Koumantzelis (1997) argues that as purchasing evolves from a tactical transaction-based process into a strategic focus on supply-chain management, the traditional entry-
PSM practices requires interdisciplinary organizations and teams consisting of professionals with advanced interpersonal, analytic, and computer skills. For example, PSM professionals are expected to be able to communicate, build consensus, work well in a team environment, and negotiate.\textsuperscript{30} Smeltzer (1998) adds that the ability to learn, adapt, and change are also critical to the success of new PSM professionals. When conducting market research and intelligence, PSM staff members determine supplier cost structures, estimate supply market conditions, and analyze financial statements. In addition, internal spend analyses require that PSM professionals estimate the total ownership costs associated with purchasing goods and services and the cost of poor quality. As an example, AMR’s new CPO has hired commodity managers, supplier quality specialists, cost analysts, financial analysts, and systems analysts (see Avery, 1998). Most innovative purchasing organizations include supplier development activities, which require expertise in process reengineering, lean production techniques, the theory of constraints, and statistical process control.\textsuperscript{31} Perhaps the greatest new challenges for PSM professionals are associated with the very recent and rapid implementation of e-commerce on the Internet.\textsuperscript{32}

As a result of these new skill requirements, many firms are seeking staff with bachelor’s and master’s degrees from schools that have purchasing and supply-chain management programs.\textsuperscript{33} One firm we spoke with uses level buyer position is becoming obsolete. Purchasing professionals now need a broad skill base and an in-depth knowledge of the supply chain, how it works, and how its value can be maximized.

\textsuperscript{30}One firm that we interviewed said that performance of some of their purchasing teams had been adversely affected by strong-willed, uncompromising team members who communicate poorly. These people were eventually removed from the teams.

\textsuperscript{31}Appendix B offers more detail on the key PSM skills identified by Harley Davidson, Bristol-Myers Squibb, and Bethlehem Steel, three firms known for their best PSM programs.

\textsuperscript{32}Belyea (2000) suggests that skills and traits of new purchasing professionals include the ability to grasp the total value of the supply chain and the roles of its various links, technical know-how (especially in manufacturing industries), analytical abilities, ability to work with new information technology (especially the Internet), a global perspective, and interpersonal skills.

\textsuperscript{33}Through a combination of interviews and other sources (e.g., Avery, 1998), we learned that Michigan State University, Bowling Green State University, Arizona State University, the University of Tennessee, Western Michigan University, Western Illinois University, Florida A&M University, and the University of San Diego offer undergraduate business programs with supply management specialties. Corresponding
its summer intern program to locate and secure talented people enrolled in these PSM programs at the beginning of their careers (see also Chapman et al., 1998, and Kolchin and Giunipero, 1993). Some firms stress the need for professional certification, such as Certified Purchasing Manager (CPM) status.\footnote{CPM status is achieved through a combination of the CPM exam (which consists of four modules); five years of experience (three years if the applicant has at least a four-year degree) in purchasing and materials management; academic courses in purchasing, materials management, or core business areas; seminars and continuing education; and professional contributions such as published journal articles. Recertification is required every five years (National Association of Purchasing Management (NAPM) website at http://napm.org. Note that this organization changed its name recently to Institute for Supply Management (ISM.).)} Between 1992 and 1998, AMR increased its PSM staff with college degrees from 55 percent to 90 percent, and its PSM staff with advanced degrees from 5 percent to 21 percent (see Avery, 1998). One firm we interviewed is in the process of restructuring its PSM organization.\footnote{Fifty percent of the purchasing staff employed before the shift to strategic PSM practices will become eligible for retirement within five years, creating the opportunity to shift toward a more professional organization.} At the time of our interview, 70 percent of this firm’s PSM staff had college degrees (33 percent of these are from technical or business programs). Twenty percent also had MBAs or other graduate degrees and 15 percent were CPMs. This firm was planning to hire an additional group of staff members to undertake supplier development activities. The education distribution of the new staff will be skewed toward MBAs, CPMs, accountants, and engineers. The vice president for materials and services at Intel Corp. describes the ideal purchasing candidate as having an MBA with a technical undergraduate degree. He claims that commercial skills can be taught but not technical ability (Koumantzelis, 1997). Indeed, many entering purchasing today have significant education in strategic supply management, manufacturing operations, engineering, marketing, and finance and many hold MBAs (Smock, 2000). Firms are also seeking experienced personnel from other parts of their organizations—e.g., technical experts from their business units and other internal functions—from their competitors and from firms in other industries.\footnote{A 1999 Purchasing magazine survey of readers found that “[m]ore companies are shifting people from other functions into purchasing. Nearly half of survey respondents,}
personnel in its manufacturing management program spend about six
months in purchasing (Morgan, 1995b, p. 21). AMR’s CPO recruited PSM
professionals from GE, Xerox, IBM, Motorola, AlliedSignal, and Honda
(see Avery, 1998).

To hire and retain these PSM professionals, many firms have upgraded
their purchasing salary grade levels and increased opportunities for PSM
staff to earn bonuses for meeting goals.37 One firm that we interviewed
has already raised its PSM salary grades by at least one level and plans to
upgrade them again soon.

Generally, the percentage of compensation that is tied to performance
increases with the level of responsibility. At one firm that we interviewed,
nonmanagement PSM staff are eligible for up to a 12 percent bonus that is
tied to the return on assets/investments for their factory, business unit,
and the firm. Up to 70 percent of mid-level management’s compensation
is tied to return on assets and PSM goals. Upper management personnel
have more than 70 percent of their compensation tied to PSM goals.

47%, indicate that they’re working in purchasing as a result of a company assignment,
rather than as a deliberate career choice” (Fitzgerald, 1999b, p. 74).

37 One firm we interviewed indicated that new MBAs in PSM are earning around $65,000
a year, and new college graduates are earning around $40,000 a year in PSM positions. A
Supplier Selection and Management Report survey of purchasing managers indicated that
the average salary for purchasing managers in the United States was $64,600 in 1998
(Mazel, 1998). Over half the respondents received a bonus in 1998, and the bonuses
equaled an average 11.4 percent of the managers’ base salaries. A more recent Purchasing
magazine (2000c) salary survey reports average annual salaries ranging from about
$40,000 for buyers to $128,000 for the vice presidents of purchasing, with the highest
reported salary of $510,000 for a purchasing executive. Some purchasing professionals
(about 5 percent of buyers to 33 percent of vice presidents for purchasing) also get stock
options whose average value ranges from almost $14,000 for buyers to $145,000 for vice
presidents of purchasing. Average bonuses as a percentage of base salary range from 6
to 7 percent for buyers and purchasing agents to almost 25 percent for vice presidents of
purchasing.
As noted above, many of the new best PSM practices require input from personnel with a wide variety of skills and the buy-in of diverse stakeholder groups within a firm. This is particularly true for the process of setting up strategic partnerships with providers and creating and managing complex contractual relationships with them. To facilitate these activities, many firms have placed PSM decisions in the hands of cross-functional teams.38 These teams may be permanent or temporary, depending on the nature of the task.39

For example, Steelcase used a cross-functional team to develop a new supplier performance reporting system to facilitate better performance management of its providers across the corporation (see Erba, 1998). The key stakeholders in this process were the PSM organization (supplier development), internal customer organizations, and the information

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38Stundza (2000a) reports that the Center for Advanced Purchasing Studies recently surveyed four-dozen aerospace-product manufacturing firms and found that 91 percent now use multifunctional procurement teams that include purchasing, engineering, manufacturing, quality, finance, logistics, customer support, and supplier-relations executives.

39For a nice characterization of the strengths and weaknesses of four different team structures observed in development projects, see Clark and Wheelwright (1992).
systems function. Thus, the cross-functional team included representatives or experts from each of these stakeholder groups.

In the past, AMR used a simple, transactional process to purchase the furnishings for the interiors of its aircraft. Marketing would decide which components to purchase, with input from engineering on whether the components would meet FAA requirements, and then purchasing would write the purchase order. Now, AMR uses cross-functional teams to strategically source and design the interior components of its aircraft. The core team includes representatives from engineering, marketing, purchasing, and production (see Avery, 1998). Commodity teams at AlliedSignal, which handled the sourcing decisions and managed supplier relations, included purchasing experts, financial analysts, and engineers who specialized in design, quality, and manufacturing (see Minahan, 1997).

Trent (1998) reports that executive procurement managers in attendance at the 1997 Purchasing and Supply Chain Management Executive Seminar at Michigan State University indicated that his/her firm uses cross-functional teams in some capacity to make PSM decisions. Unfortunately, every manager also expressed frustration that these teams were not as effective as they could be. Monczka and Trent (1993) and Trent (1998) recommend steps that firms can take to improve the effectiveness of their cross-functional PSM teams.

The first and perhaps most important step is to tailor the team membership to the decision at hand. Team members should embody the skills, knowledge, and abilities required to make the best PSM decision for the firm. Training should be provided when necessary skills are not readily available. For example, an automotive manufacturer that plans to outsource key components of a new engine for an existing car might put together a PSM team that consists of contract specialists, financial experts knowledgeable about the cost structure and dynamics of the key engine components' industries, technical experts who are designing the new

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40Note that the attendance of these managers at the conference means that they work in firms that place at least some importance on strategic PSM and hence probably are more likely to have teams than the average firm.
engine, technicians knowledgeable about related automotive subsystems, and representatives of the car model’s program management team.41

When facing a problem that may benefit from close interaction with existing supplier firms such as inventory reduction efforts, representatives of supplier firms should be included as formal members of the PSM teams. When they are included, PSM teams tend to operate more effectively, with greater effort put forth by the team members, higher satisfaction, and fewer coordination problems, and thus achieved greater improvements in performance (see Trent and Monczka, 1998).42

In addition to having substantive knowledge about their areas of expertise, team members should possess the strong interpersonal and team-building skills, such as group problem solving, that are necessary for close collaboration.43 This is especially important for teams that bring together personnel not acquainted with one another because they come from different parts of the firm or from different geographical locations.44 Team members should also be able to relate the task at hand to the broad interests of the firm, rather than taking a narrow, functional perspective.

The size of the team is another dimension that should be tailored to the purchasing challenge. Teams should include in their core membership only those people required to support the specific task. For example, AlliedSignal’s centralized commodity teams included a purchasing specialist, a finance analyst, and engineers from design, manufacturing, and quality focused on supplier management, benchmarking, and performance measurement. They also worked with local plant materials teams to establish long-term agreements with suppliers and to push corporate initiatives and training programs. Its plant materials teams

41Firms told the General Accounting Office (GAO) that greater breadth of knowledge on integrated product teams not only speeds the pace of development but also the amount of innovation (GAO, 2001).

42Including individuals from external organizations on PSM teams such as the firm’s major customers or suppliers can raise management challenges, such as concerns about proprietary data or intellectual property.

43Belyea (2000) argues that the broad use of cross-functional teams combined with purchasing’s elevation into strategic issues has made the ability to work with other people critical to success in supply management.

44GAO notes that collocated teams can raise issues earlier, perform tasks faster, and reach decisions quicker than when members are geographically dispersed. Collocated teams are also better able to build trust, which can improve their effectiveness (GAO, 2001).
were in charge of managing the tactical, day-to-day buying activities and included a buyer, a material analyst, and an inventory and transportation specialist (Minahan, 1997). The addition of other members decreases the ease of coordination and dilutes opportunities for individual members to make the significant contributions necessary for members to gain personal satisfaction.

Cross-functional PSM teams need explicit, outcome-oriented goals and objectives to guide their efforts and to evaluate team progress. These goals and objectives should be linked to the corporate PSM goals to maximize the effectiveness of team activities. Furthermore, member participation in the goal-setting process often leads to more-aggressive goals and higher productivity (Monczka and Trent, 1993).

Another step toward creating effective cross-functional teams is to provide the organizational resources necessary to help them meet their objectives. Team members should be provided adequate time to participate in team activities. The regular functional responsibilities of those members not devoting their full time to the team should be adjusted to reflect the members’ time commitments to team activities. Teams require budgetary support, especially if travel is needed, and occasionally the support of auxiliary experts not part of the core team. As we will discuss in the next section, another key resource is the commitment of high-level corporate leadership to the team-based management approach.

A team can accomplish its goals more quickly and effectively and team members are more likely to devote effort to their responsibilities if they have increased decision making authority. Executives can quickly erode team morale and effort if they dismiss, overrule, or ignore team decisions. However, because of the dangers associated with empowering a team that is not qualified to make certain decisions or to take on certain tasks, a team should be empowered gradually over time as it gains experience and demonstrates success.

The most effective and successful cross-functional teams have a strong, formal leader who is responsible for and has the time to devote to

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45Trent (1998) outlines the four dimensions of team authority: the ability to schedule meetings and activities, select a team leader and new members as needed, control internal team processes and activities, and make decisions without the approval of others outside the team.

46The practice of incremental empowerment of teams was affirmed during our interviews.
activities such as working with the members to establish team performance goals, encouraging active participation by all members, and negotiating time away from the members’ regular duties. Choosing the appropriate representative to serve as leader is critical. Firms should think carefully before choosing a PSM representative as the team leader because of the danger of sending a signal that the team’s activities are primarily purchasing activities, requiring only limited contributions from the other members.47

Finally, tying the evaluation of team members’ performance to their team activities and outcomes can dramatically increase the effectiveness of cross-functional teams.48 The most innovative firms are beginning to restructure their personnel evaluation structures and compensation systems to reflect participation on teams. Ideally, team members should be rewarded for team performance as well as for their individual contributions to the team. As an example, an early adapter of team participation in personnel evaluations asks team members to evaluate the effectiveness of the participation of each of their peers along several dimensions, including personal integrity, work ethics, ability to communicate, expertise, and leadership ability. The firm then bases 40 percent of individuals’ performance evaluations on these survey results. At Motorola, teams are evaluated on how well they use information, training, authority, and motivation to achieve objectives and continually improve their performance.49 The focus is always on enhancing personal growth and development, as well as on specific individual behaviors deemed important to the team’s high level of performance (Ostroff, 1999). The firms that do reward personnel for successful participation on teams primarily do so through four channels: (1) bonuses for meeting or

47“Perhaps the greatest challenge confronting cross-functional sourcing teams has been getting non-purchasing members and functions to support team tasks” (Trent and Monczka, 1998, p. 6).
48Monczka and Trent (1993) find that the closer the link between team members’ performance appraisals with individual contributions and team performance, the more time the members will devote to team activities and, in turn, the more successful the teams will be.
Firms told GAO that capturing an individual’s performance on a team helped create acceptance of the team approach (GAO, 2001).
49Motorola’s Space and Systems Technology Group Supply Management team performance measures include defect rates, delivery requirements (on-time delivery), cycle time, and costs. Teams are also given a roster of strategies and specific actions that need to be accomplished by predetermined completion dates (Ostroff, 1999).
exceeding team goals (e.g., tied to documented PSM savings), (2) recognition by corporate executives (e.g., plaque, write-up in company newsletter), (3) other nonmonetary awards such as company-sponsored parties or gift certificates, and (4) merit raises.\textsuperscript{50} Incorporation of team goals into the personnel performance evaluation process is one form of monitoring and feedback that can be used to promote continuous improvement of team performance.

\textsuperscript{50}AlliedSignal encouraged teams to perform well through a wide range of rewards, including a pat on the back, financial awards, and corporate stock (Minahan, 1997).
As customer firms begin to implement best PSM practices, many are discovering that their prior PSM organizational structure is no longer adequate to support the new kinds of activities and more-sophisticated personnel. For example, IBM’s new CPO took action and reshaped purchasing from a scattered collection of divisional purchasing groups into a solid centralized structure (Fitzgerald, 2000a). Boeing has recently reorganized and combined all its commercial airplane supply management and procurement into a single organization (Stundza, 2000b). In response to its new CEO’s reinvention initiative, Hewlett-Packard’s Operations Procurement created a global, web-centric culture, climate, and work-process environment to converge a previously distributed procurement function into a single global function (see Peterson, 2000). Principal Financial Group merged buying activities and created a corporate strategic sourcing organization to consolidate purchases, standardize the process across the organization, and show one face to their supplier community (Avery, 2000b).

As noted, the complexity of the most-sophisticated PSM activities is increasing, as well as the range of complexity across PSM activities. In addition, customer firms are discovering the need to provide a dynamic new career path to grow and retain their most-talented staff. To address
these new needs, many companies are turning from a predominately decentralized organizational structure for purchasing to a hybrid PSM organization with elements of both centralization and decentralization (Owens et al., 1998). For example, Pratt & Whitney reshaped purchasing into two groups: supply management, which focuses on the tactical aspects of purchasing, and commodity management, which handles strategic activities such as long-term supplier agreements and joint ventures (Fitzgerald, 1999a). Through our research and interviews, we found that although there was some variation in the detailed structure of PSM organizations across firms because of their different strategies, goals, and cultures, we discerned a trend toward tiered PSM organizations. The top tier of the PSM organization is generally a centralized group that focuses on the most-strategic PSM activities, such as linking PSM strategy, goals, objectives, and targets to their corporate counterparts; analyzing corporate spend patterns; creating strategic partnerships; and setting up complex contracts. This organization can also maintain an analytic center of excellence that conducts high-level market research, benchmarking studies, and other efforts to track the best-available strategic PSM practices. To accomplish these activities, this top tier is staffed with the most-talented personnel who have the experience and expertise needed to exercise appropriate discretion.

The centralized top-tier organization(s) may be located at corporate headquarters or in business units associated with the different commodity groups. At AMR, each part of the business has a managing director of purchasing responsible for sourcing all of the goods and services needed

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51Porter (1999b) notes that leverage of buying power is the most frequently cited benefit of greater purchasing centralization. Other perceived benefits include greater opportunity for integrated supply chain management; more rapid decision making; consistency of quality, delivery, and other supplier performance gauges; paperwork reductions; common measurement capabilities; greater opportunities for specialization among purchasing personnel; better use of purchasing talent and expertise; greater opportunity for systems integration; ease of implementing e-commerce solutions; product standardization; more influence with key suppliers (better problem solving); elimination of redundant activities; lower freight costs; and greater control. However, centralized buying can lead to a reduced ability to meet specific site service needs.

52In its 1995 survey, CAPS (1996) found that 65 percent of respondents had hybrid purchasing organizations, with purchasing split between corporate headquarters and major operating divisions or plants, 23 percent were centralized, and only 12 percent had decentralized purchasing organizations.

53Sometimes firms create several centralized PSM groups, each of which focuses on a major commodity category.
to support it. In many cases, this director is co-located physically next to
the internal customers. For example, responsibility for purchasing aircraft
maintenance parts and supplies rests with the PSM organization at the
company’s aircraft maintenance center in Tulsa, Oklahoma. The
organization responsible for purchasing PCs and desktop software is
located next to the AMR corporate headquarters in Dallas/Ft. Worth (see
Avery, 1998). At AlliedSignal, centralized commodity teams were
typically located at the business sector with the most strategic need for the
commodity.

The middle tier of the PSM organization consists of decentralized groups
associated with internal customer organizations that focus on the execution
of large complex contracts, interactions with existing strategic partners,
and creation of any complex contracts at the middle-tier level.54 An
example was AlliedSignal’s plant materials teams. Although these
activities do not require the same level of expertise as those that take place
in the top tier of the organization, firms are discovering that staff members
at the middle-tier level need to be experts in contract management. One
firm we interviewed said that when it changed the structure of its PSM
organization, it consolidated its expertise in the top-tier groups. However,
it quickly realized that knowledgeable staff members are needed in the
local organizations to manage the complex contracts that are created in the
top tier. This firm is now in the process of upgrading staff skills in its
middle-tier PSM groups. The relative sizes of the centralized top-tier and
the decentralized middle-tier groups appear to be linked to the power and
independence of the business unit leadership relative to that of the
corporate management. Strong independent business units and plants
prefer to control the more-strategic PSM activities; thus, their firms place
more of these activities in the decentralized middle-tier PSM groups. At
Motorola, the general managers of the business divisions were originally
against any centralization of purchasing. However, after a few notable
successes, the centralized purchasing organization won their support for

Finally, the lower tier of the PSM organizations consists of decentralized
groups that create and set up the simpler, local contracts and manage the

54 For firms with a centralized top-tier organization at the headquarters level, the middle-
tier organizations may reside in the business units. For firms that have centralized top-
tier commodity-based organizations within the associated business units, the middle-tier
organizations may reside at different corporate locations or plants within that unit.
transactional purchasing activities, e.g., purchase cards. These tasks can be accomplished with relatively inexperienced, less-knowledgeable staff.

Although this tiered structure for PSM organizations is still being tested in firms that are changing their PSM practices, it has the potential to provide the basis for a new, more-effective career path for the more-sophisticated PSM personnel currently being sought by these firms. Relatively inexperienced personnel, such as new college graduates from supply management programs, can begin creating and managing simpler contracts in the lower-tier organizations and learning how to work with more-complex contracts from the middle-tier personnel. Once middle-tier personnel gain experience and expertise managing complex contracts with strategic partners, they can move into the top-tier centralized organization and take on new challenges associated with creating strategic partnerships.\textsuperscript{55} Such a career path that spans from entry level to the highest corporate management levels can potentially help firms create and maintain a more stable PSM workforce.

\textsuperscript{55}As noted earlier, a number of firms rotate people in and out of their multidisciplinary purchasing organization. For example, some personnel trained in manufacturing will rotate into purchasing for several years while those trained in purchasing rotate into manufacturing to gain broader corporate perspectives. This type of career broadening approach provides a career path that zigzags laterally as well as upward as personnel gain more knowledge for more sophisticated purchases.