FOCUS STUDY

outsourcing

electronic
commerce

total cost

ethics

supply chain
management

strategic alliance

global sourcing

purchasing
consortiums

operational
resource management

minority enterprises

Purchasing Education and Training II

by

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Professor
Florida State University

and

Robert B. Handfield, Ph.D.
Bank of America University Distinguished Professor
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CAPS Research

2004

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Acknowledgments

Many managers we have spoken with recently have decided that one of the most important drivers for success in deploying supply chain initiatives is people. The comment that we often hear is, "I need to understand what the key skills are for people we recruit, for training our existing people, and for developing career path requirements for the future." This effort is a follow-on to two past research projects that were funded by CAPS Research. First was the *Purchasing Education and Training* (PET) study completed in 1993 that looked at that this same issue — purchasing and education training requirements for supply management. The second study, entitled *A Skills-Based Analysis of the World Class Purchaser,* was completed in 1999 and looked at various skills and knowledge required of supply professionals. One outcome from each of these studies was the identification of a defined skill set for supply management professionals that was deemed critical. Phil Carter, Executive Director of CAPS Research, approached us about completing an update on this study to identify some of the following questions:

❑ Have the major trends, skills, and knowledge required of the function changed?
❑ What is the impact of newer phenomena such as the Internet and business-to-business commerce solutions?
❑ How have purchasers adapted to the general economic downturn and will they be ready when business conditions improve?
❑ Have advances in technology and supply base management techniques changed the required skills for supply managers?
❑ What changes, if any, are needed in purchasing education and training to support these new skill requirements?
❑ What are the key course requirements for training and education, both for your current workforce as well as for people you are recruiting at universities and elsewhere for building that same sense of skills and concepts?
❑ What are the sources delivering this training?

In effect, there was a need to understand the major changes and trends that are occurring in industry today, forecast what is required in the future, and define what the key issues are that are shaping the nature of the supply chain environment. A decade ago, supply chain management (SCM) was one of the newer concepts, similar to the Internet and e-purchasing of today. Supply chain management was in its infancy and no one was really managing it that well. Today we're looking at a much more integrated perspective, linking customers and suppliers, in some cases multiple tiers of customers and suppliers, in an integrated, holistic fashion. Managers are also interested in understanding, as a result of these trends, what the natural impact will be on the required knowledge and skill sets of the managers today, as well as in the future.

While defining the ideal "Supply Manager of the Future" is a difficult task, it is necessary if firms want to remain vibrant and competitive in their acquisition practices. Through the course of our interviews, we talked with many different people and asked them to think of the people they have recruited or trained that have been outstanding performers in terms of what they're able to do. Conversely, we also asked them to think of the people they have today and define what they would like those people to be capable of in the future. Through this process, we were able to get a good idea and begin to answer some of these questions.

We hope that the study is helpful to the supporters of CAPS Research, as well as to the managers who helped us produce it.

Executive Summary

Purchasing/supply management education and training are vital to the success of the organization and to the survival and growth of the profession. In the last decade, there have been dramatic impacts upon and changes within the field of purchasing and supply management, all of which have ultimately influenced education and training trends.

Some examples of the major changes that have shaped the supply management landscape since 1993 (the year of the first *Purchasing Education and Training* CAPS Research study) include:

- A change to more strategic supplier relationships and alliances, as firms look to optimize expertise and resources through the chain
- The growth and expanded use of the Internet to facilitate e-sourcing, e-procurement, and other business activities
- Reductions in purchasing staffs
- A focus on strategic goals related to cost and value
- The evolution of supply chain management as an integrated competitive business strategy, and the increased contribution of purchasing to this strategy
- A shift from basic, tactical purchasing to more strategic supply management

There is also increasing anecdotal evidence that many of this decade's Chief Purchasing Officers (CPOs) are being assigned from outside the purchasing and supply field. These appointments bring with them two strong implications: 1) senior management desires different objectives and outcomes from the purchasing/supply management groups than they perceive would be obtained by promoting from within, and 2) these new CPOs appear to be appointed with short-term employment contracts/agreements and have defined missions for change that must be accomplished in a defined period.

All these conditions combine to create the dynamic environment in which purchasing and supply professionals are operating today. In order to meet the challenges and expectations dictated by this environment, it is appropriate to revisit the realm of purchasing education and training in the new millennium and discover relevant trends. By doing so, professionals can then create or influence action plans to achieve education and training goals that will foster success.

Research Objectives

The objective of this study was to ascertain the state of purchasing/supply education and training as it currently exists and forecast what changes are coming by the year 2010. This includes: 1) the perceived needs for training; 2) the types of training being pursued by purchasing/supply management personnel; and 3) the contexts within which training is planned and delivered. The research was intended to update the first PET study and be supplemented by the World-Class Skills study. The design of the study involved four phases: 1) a review of literature; 2) conducting focus groups with key purchasing executives of major companies in Boston, Kansas City, Raleigh, and Phoenix; 3) analyzing the results of an online survey; and 4) developing summary findings and conclusions.

Specific Areas of Analysis

While the major focus of this study is on the education and training requirements in the purchasing and supply management area, an analysis of the changes in the field

as well as the skill and knowledge base required is fundamental to its success. Once the required knowledge base is defined, one can analyze the training and education to support such efforts, identify the gaps or shortcomings in the training, and forecast what form that future training and education should take. To support the analysis above, specific research questions addressed some of the questions below:

❏ What are the major *trends* impacting the purchasing and supply management field, and what are the requisite *knowledge* and *skills*, both present-day and in the next five to 10 years?

❏ What specific *training and education* are organizations currently offering, and who are the *major providers* of these training efforts, currently and in the next five to 10 years?

❏ What new *training techniques,* (e.g., Internet and distance learning) are being utilized currently and in the next five to 10 years?

❏ What are the roles of *formal education* and *professional associations,* particularly universities, in relation to the purchasing and supply management function, currently and in the next five to 10 years?

Lessons Learned

Many issues about purchasing education and training were uncovered in this study. In particular, there were 10 that were consistently mentioned in the focus groups, identified by research questionnaire respondents, and uncovered when doing longitudinal analysis to the first PET study and the World-Class Skills study.

1. Training programs have made modest gains over the past decade. While the function is moving in a more strategic direction, coordination of the overall training effort through purchasing councils and other mechanisms is essentially unchanged from a decade earlier. Given the centralized and centralized/decentralized structure of most organizations today, such councils are a necessary ingredient to effective development, delivery, and evaluation of training. The need for such mechanisms is evident in that 67 percent plan to have a council in the future. This can be accomplished since the person responsible for training was usually at a high level in the organization. The economic slowdown of the past two to three years has also tested training budgets. Although, many of the respondents indicated their training budgets were held constant. Despite this, training expenditure per employee has decreased from a decade earlier yet the number of days have increased. A possible explanation

to this anomaly is that organizations are getting more efficient on training and relying more on internal groups within the organization to provide this training. Regardless of the efficiencies achieved, there needs to be a greater emphasis on structuring and delivering purchasing training in the future.

2. Career development of purchasing and supply management professionals needs more emphasis. Career development programs are characterized by a holistic approach that attempts to guide, track, and monitor the career path of purchasing and supply management employees. Career development is broader than training in that it addresses career goals and objectives for individuals in the function. Career development is critical for the function since it is viewed either as a career path unto itself or as a career and rotational type track. From a rotational standpoint, the more time future top managers spend in purchasing the more likely they will be to allocate the appropriate resources to the function when they reach executive level positions. Correspondingly, in order for more purchasing and supply management professionals to make the career moves to top management, some formal career development program needs to be applied. Currently 40 percent of the respondents indicated having formal career development programs, which is more than the 26 percent having them in 1993, but less than the forecasted goal for 2000 of 75 percent. By 2010, 89 percent of these respondents expect to have formal career development programs in place for supply professionals. This is a goal that organizations serious about the purchasing and supply management function need to hit or else the profession will continue to see top level purchasing positions filled by individuals from other functions.

3. Technology is impacting all areas of purchasing training. Many in the field are familiar with the changes the Internet is having on how more business is being conducted electronically with suppliers. This is also true for training. The Internet as a training tool is now being used by almost 70 percent of these respondents in forms such as distance learning courses and interactive Web-based training modules. Self-paced learning in other forms such as CD-ROM and DVD formats are also very popular alternatives to Web-based learning. Further, it is anticipated that the use of teleconferencing, videoconferencing, and satellite/broadcast television will grow in the future. While the traditional classroom training is still the most popular format, practicing professionals and their companies have a much wider range of training media to select from when implementing their training programs. It may also be one of the reasons that training cost per employee has dropped over the past decade.

More creative approaches to training can combine the popular "on-the-job" and "coaching" techniques with CD-ROMs or DVDs to quickly instruct the supply management professional on a knowledge area that relates to the actual job problem being faced. A good sports analogy relates to a device developed by Iris Technologies that allows coaches to categorize and play various aspects of their opponents' behaviors. One can review all third-down plays or all third downs with greater than seven yards for a first down. The coaches like the device as it enables them to understand their opponents' tendencies while watching less film and spending more time practicing. Similarly, rather than attending a two-day course on supplier relationships, an employee may be able to better understand how to deal with a problem supplier through viewing a self-paced CD-ROM on the topic while he/she is experiencing this problem.

4. After acquiring the essential knowledge base, required training knowledge will be targeted specifically to the individual's needs based on a gap analysis. All individuals will be required to master the basic functional knowledge through a combination of formal education and C.P.M. or A.P.P. certification. Once these basic knowledge areas are established, continual monitoring — comparing job performance to the required knowledge — is performed. Gap analysis is the assessment technique that compares the skill level the employee has attained on an individual skill dimension to what is required in the ideal skill level for the position. For example, if a senior supply position requires the employee to have mastered advanced negotiation techniques and the individual is judged to be at only a basic level, then a gap exists. A plan is then developed to close this gap by acquiring the needed knowledge to upgrade the current skill level.

5. There are key skills needed for success in purchasing and supply management. One of the advantages of having longitudinal data is to illustrate those skills that were highly rated at different times over the past 10 years. A comparison of three studies, and the triangulation with focus groups and the mail questionnaire responses highlight these key skills. Those skills that have stood the test of time are:

- Interpersonal communications
- Ability to make decisions
- Negotiation
- Influencing and persuasion
- Conflict resolution
- Analytical
- Problem solving
- Managing Change

- Customer focus
- Leadership

6. Ethics has become a very important issue in purchasing and supply management training and education, and this emphasis is expected to remain strong into the future. There is a great deal of concern about ethics in the minds of today's purchasing and supply management executives. The entire business world has been shocked by events at Enron, World Com, Adelphia Communications, and other corporations. Accountability to key stakeholders is an important issue facing executives today. This concern appears to have been passed down to purchasing and supply management executives. New situations, such as closer relationships, can pose ethical issues that may affect the profitability of the firm or cast it in an unfavorable light with suppliers, customers, and shareholders. Courses on ethical conduct were offered to their employees by 56 percent of the sample. MIT's Sloan School of Management recently announced it would put a renewed focus on ethics in business for its MBAs. With the increasingly complex web of supplier alliances, customer alliances, mergers, and acquisitions, as well as sensitive data being transferred, ethical behavior is important as is illustrated by its number one rating now and in the future.

7. Supplier relationship management is a critical knowledge area. As purchasing becomes more strategic, the need to manage supplier relationships becomes a critical knowledge area required of supply professionals. This was critical a decade ago and is still important. In the focus groups this was the most frequently mentioned item. When comparing the three studies, it ranked second in terms of mean importance. The other four were complimentary knowledge items that would support supplier relationship management and included: 1) analysis of suppliers; 2) total cost analysis; 3) price/cost analysis; and 4) supplier development.

8. Pressure to reduce costs is unrelenting and has escalated into a major part of the purchaser's job. Intense global and domestic competition and reduced market growth are major factors in the drive to reduce costs. "Pressure to reduce costs" was the most highly rated trend both currently and into the future. However, suppliers will not win the business on low price since they are expected to provide lowest total costs and purchasers should be able to measure to lowest total cost. If purchasing wants to gain status as a strategic player, reducing costs will be one of the key drivers. This means the firm must come up with a strategic cost management plan to satisfy management. Top management expects purchasing to contribute to

bottom-line profits through strategic cost initiatives. This does not mean lower prices but lower total cost under the framework of a supply strategy. The top ranked skill and knowledge areas tie into this goal. For example, the skills forecasted to require the largest gains in the future were strategic thinking, contract writing, managing change, managing the supply base, and managing risk. Meanwhile key knowledge areas involved included: analysis of suppliers, total cost analysis, pricing techniques, and purchasing strategies and plans.

9. Tactical buying will be automated. If purchasing is to become more strategic, its professionals will not have the luxury of spending a majority of their days placing orders and expediting. Benchmarking studies have shown that despite all the talk of a strategic posture, purchasers still spend a significant part of their days in administrative tasks. Automation of the function bodes well for e-purchasing systems, which can streamline the routine low-dollar sourcing process. Web-based buying and other "e" tools such as eRFIs and eRFQs will replace traditional paper-based methods. One of the largest jumps in the trends into the future was that e-commerce systems will replace paper-based systems, increasing from 15th currently to fourth in the future.

10. The pressure to reduce the supply base is being replaced with managing the supply base. After a decade of cutting supply bases, firms have moved to a posture of managing the supply base. There appears to be no magic number. In some areas, the supply base is increasing due to supplier diversity issues while in others it is shrinking due to leverage and consolidation. Certainly the overall trend is not to add great numbers of suppliers. Mergers, consolidations for leverage, and the desire to have one or few sources supply a firm globally are but a few of the reasons that supply bases will remain lean. It's just that the pressure for massive supply base reductions doesn't appear to be as prevalent as it was a decade earlier when firms had far too many suppliers. "Pruning" the supply base may be a better term in today's environment.

Looking in from the outside, it might be easy to say that a firm has too many suppliers, but what was found in the focus groups is that many felt determining the number of active suppliers and cleaning up databases to determine their current supply base was a first step to determining the ideal supply base. In 1993, the top-rated trend was "fewer sources of supply will be used" and it was forecasted to be the top trend in 2000. In 2003, it was rated 22nd. Further, the issue of "single sourcing will increase" dropped from fifth in 1993 to 35th in 2003. To illustrate the changing nature of the field, the top five trends of 2003 were not on the list in 1993.

Survey Results

The Sample: Fifty-five (55) high level purchasing/ supply management executives responded for a response rate of 27.5 percent. These individuals were at the level of Vice President, Director, or Manager with 83 percent having corporate-wide responsibility. As expected, individuals at these levels were highly educated, holding either a bachelor's or master's degree and having significant business experience (61 percent 20 years or more).

The sample represented 15 industry groups with the largest number coming from the pharmaceutical and biotechnology companies. These were large corporations with mean annual sales revenue of $21.7 billion and employing 48,000 individuals. The average purchasing/ supply organization consisted of 385 individuals and had 53 managers. The purchasing organizational structure was likely to be centralized or centralized/ decentralized.

Major Trends: There is a great deal of pressure to reduce costs, engage in strategic cost management, and automate the purchasing function. In this cost-conscious environment, purchasing performance will be measured and they will be expected to produce results. It is anticipated there will be no letup in the drive to reduce costs, as "pressure to reduce costs" was rated first currently and into the future. However, suppliers will not win the business on low price because they are expected to provide lowest total costs and purchasers should be able to measure to lowest total cost.

The impact of e-commerce will take hold and eliminate paper-based systems. When analyzing the trends that are expected to make the largest gains in the future, they revolve around supply chain initiatives of controlling inventories throughout the entire supply chain and sharing data to help accomplish this. E-commerce and the automation of tactical buying will become a reality. When comparing the common trends in both PET I and PET II studies, purchasers will "manage supplier relationships," "increase the amount of global sourcing," and "manage/drive shorter cycle times." These trends were highly rated a decade ago and continue to be important. "A smaller number of suppliers will be used" was the highest rated mean a decade ago but has dropped to 14th in 2003. Firms that have been reducing their supply bases for a decade are seeing less of a need for major reductions but continue to search for the ideal supply base.

Major Skills: A skill that many organizations did not emphasize in the past, *ethics*, has jumped to number one in this study. Respondents expressed their feelings

that supply professionals must act ethically in business dealings with their suppliers. Purchasers must also be communicators, negotiators, able to make decisions, and able to solve problems. In the future, leadership and working in teams become more important. When analyzing the skills that will make the largest gains we see *leadership, strategic thinking, contract writing, managing change, managing the supply base,* and *managing risk.* Common skills rated over the decade show a picture of those that supply managers feel are important regardless of the time period. Those skills that have stood the test of time are: *interpersonal communications, the ability to make decisions, negotiation, influencing and persuasion, conflict resolution, analytical, problem solving, managing change, customer focus,* and *leadership.*

Major Knowledge Areas: Top knowledge requirements tie to the trends and support the necessary skills. These include: *analysis of suppliers* ranked first, closely followed by *total cost analysis, pricing techniques,* and *purchasing strategies and plans. Supplier relationship management, commodity expertise,* and *supplier evaluation* were next. In the future *supplier relationship management* was the highest-rated knowledge requirement. This was followed by *total cost analysis, purchasing strategies, analysis of suppliers, competitive market analysis, supply chain management, supplier evaluation,* and *price/cost analysis.* When analyzing the knowledge areas that will make the largest gains in the future, we see *outsourcing, total quality management/Six Sigma, make versus buy, value chain,* and *project management.*

Those knowledge areas that have stood the test of time were: 1) analysis of suppliers; 2) supplier relationship management; 3) total cost analysis; 4) price/cost analysis; and 5) supplier development.

Conclusions about Purchasing and Supply Management Training

In terms of *structure* for conducting the training, the method of organization follows the overall purchasing organizational structure. If the firm's primary organizational structure is centralized, then the purchasing training will be centralized. Eighty percent of the firms in this study were either centralized or centralized/decentralized. The person ultimately responsible for training is at the director, vice president, or manager level. In some cases this was outside the purchasing function, in a human resources or training function.

Obtaining input from various business units to develop the specific training content and evaluate instructors

was carried out through *purchasing training councils* in 32 percent of the firms. The use of training councils was expected to increase to 67 percent in the future. The average amount spent per employee on training was $1,800, and this was expected to increase to $3,400 in the future. On average, purchasers are now given the equivalent of about nine full days of training annually. This is expected to grow nominally to a little more than 10 days in the future. Seventy-five percent of the firms had a purchasing training catalogue.

The *minimum formal education required* of purchasers is a bachelor's degree. The three most desired degrees are a bachelor's in purchasing/supply chain management, an M.B.A., or a bachelor's in a technical field coupled with an M.B.A. After formal education, attaining the designation of Certified Purchasing Manager (C.P.M.) was viewed as desirable. In line with education and certification, it was felt the purchasing organization was perceived as one having "moderate status" now and increasing to "high status" in the future. As a result, executive management puts a "moderate priority" on purchasing training now, and this is expected to increase to a higher priority in the future. Training for purchasing tends to hold constant despite decreases in profits or sales in difficult economic times.

Purchasing is viewed either as a career area or one that is *both career and rotational.* In other words, purchasing can be a stepping stone to upper management either within the function or by moving into it and out to other functions. This is supported by the organization, with 40 percent of the firms having career development programs for their purchasing personnel. In addition, 50 percent of the sample had formal purchasing training programs. Seventy percent conducted a needs assessment to determine what specific training programs the individual should attend. Most often this needs assessment was performed annually. Most firms had developed a list of required skills by position and compared this to the skills attained by the employee. Those skills thought to need an upgrade were identified and a training program established. Most purchasers received some training. On average, 67 percent of the individuals received some training annually with the expectation that this would rise to 87 percent in the future.

A variety of *methods* were used to implement training. These ranged from informal techniques of "on the job" and "coaching" to more formal techniques of formal classroom instruction. The *Internet* is now being used as a training media by more than 50 percent of the respondents, and this is expected to increase to 76 percent in the future. Formal classroom training will still be the most popular method of instruction, but

there are other technologies to support and supplement the classroom. These include self-paced CD ROMs and DVDs and the virtual classroom using video and teleconferencing.

Regardless of the delivery method, the three most popular standard courses are negotiations, ethical conduct, and legal/UCC. Total quality management/Six Sigma, and basics for purchasers followed these courses. Supply chain management and legal/UCC were expected to experience the largest increases in the future. Respondents also mentioned several other courses such as strategic cost management, supplier relationship management, and value stream/process analysis.

Forty-four percent of the respondents offered these courses to non-purchasing personnel and 26 percent extended them to suppliers. Sources of training were most likely internal (65 percent) with the remainder being delivered by sources outside the organization (35 percent). With regard to outside providers, the Institute for Supply Management™'s (ISM) standard programs and its international conference were judged to be "effective" in meeting the training needs of these respondents. Training effectiveness is most likely to be evaluated using course evaluations. Pre-and post-tests of knowledge were also used, but much less likely than course evaluations. Colleges and universities were expected to provide students an understanding of purchasing as well as to keep abreast of the changes occurring in the field through research. Seventy-two percent of these firms offered internships to students in the purchasing/supply management area.

General Conclusions

This research has extensively studied purchasing and supply management training efforts in conjunction with the major trends, skills, and knowledge required for success in the function. As a result, researchers developed these general conclusions.

The impact of the changing purchasing environment is reflected in the identification of the following trends deemed by managers to be prevalent across multiple industries:

❏ Strategic relationship management with suppliers.
❏ An increased focus on strategic cost management across the supply chain.
❏ The need for enterprises to create integrated systems and to collaborate with suppliers, internal customers, and eventually the firm's customers.
❏ A need to focus more on total cost in supplier selection.

❏ Purchasing organizations focusing more on strategic versus transactional processes with internal customers and suppliers.
❏ Increased outsourcing of services and non-traditional areas of spending.
❏ Greater use of e-procurement systems and technology tools to streamline the purchase process and reduce costs of material and services. Such systems will reduce the number of tactical buyers required in the future.
❏ Integrating internal purchasing information systems with other functional legacy systems.
❏ A greater focus on capturing purchasing performance and making a business case for investment in purchasing strategies.
❏ A need for a broader range of business skills, such as understanding markets, products, and finances in the purchasing function.
❏ A need for purchasers to adopt a supply chain-wide perspective of business processes.
❏ The need for increased relationship building with internal and final external customers.
❏ The continued increasing use of cross-functional and virtual teams for sourcing strategy.
❏ Increased use of global sourcing strategies.
❏ Increased use of alternative training methods via distance education.

In conjunction with these trends, the results of this study found that the core skills and knowledge deemed critical for purchasing associates to be able to successfully manage these environmental trends will include the following:

❏ **Team Building:** Leadership, Decision-making, Influencing, and Compromising
❏ **Strategic Planning Skills:** Project Scoping, Goal-Setting, and Execution
❏ **Interpersonal Communication Skills:** Presentation, Public Speaking, Listening, and Writing
❏ **Technical Skills:** Web-enabled Research and Sourcing Analysis
❏ **Broader Financial Skills:** Cost Accounting and Making the Business Case
❏ **Relationship Management Skills:** Ethics, Facilitation, Conflict Resolution, and Creative Problem Solving
❏ **Legal Issues, Contract Writing, and Risk Mitigation in a Global Environment**

In order to successfully create these skills, senior purchasing executives are increasingly creating purchasing training councils, composed of cross-functional executives who provide their input in describing the key skills and requirements. A six-step

process for establishing the requirements for training, and deploying the training program, is as follows:

- ❏ Assess environmental requirements
- ❏ Identify skills required
- ❏ Establish current skills gaps and goals
- ❏ Determine the specific knowledge areas needing improvement
- ❏ Assess training mediums and align with skills required
- ❏ Evaluate outsource providers, run pilot, and award the contract

These steps are complimented by continual monitoring, evaluation, and adjustment of goals based on performance.

In general, the need for purchasing training will continue to grow, with an increasing focus on distance-based learning. However, the need for on-going instructor-led classes will remain high, particularly in order to develop key skills valued in purchasing professionals, such as team-building, communication, strategic thinking, and relationship management. The trends identified in this study suggest that purchasing training will continue to grow as the importance of purchasing as a source of competitive business performance gains recognition by senior management.

Design of the Study

Phase 1: In-Depth Literature Search
A literature review was performed to further examine work in business research, purchasing, and training requirements for supply management. This literature review is summarized later in the report.

Phase 2: Focus Groups
The insights found in this study were taken from the participants' feedback and discussion during four regional focus groups shown in the lists below. The top executives of 41 companies within the Boston, Phoenix, Raleigh, and Kansas City metropolitan areas attended the focus groups in 2002. Each of the focus groups was facilitated by the study's authors. The intent of these focus groups was to gain information about the type of training and education requirements that are needed for supply managers of the future, based upon what the represented companies believed to be the trends of purchasing and supply management.

It is obvious that a wide range of industries were represented, including manufacturing, high-tech, pharmaceutical, aerospace, consumer products, and others.

The focus groups were recorded, with the sessions transcribed by a court reporter. Each session began by asking the participants to describe the current environment they face within supply management, to describe their current efforts in key Purchasing Education and Training (PET) areas, and to discuss what they see themselves doing in the future. In particular, the future vision required facilitation by the focus group leaders to identify requirements of the new supply chain model in terms of future PET. Each participant was allocated time to respond, with on-going dialogue permitted between other participants.

The format for the discussion adhered to the following agenda.

Raleigh
- ABB
- American Airlines
- APICS
- Bayer
- Caterpillar
- Duke Energy
- GlaxoSmithKline
- John Deere
- Lucent
- Society for Mfg. Engineers
- Sonoco

Phoenix
- Dial
- Phelps Dodge
- Fluor
- US Space Alliance
- Motorola
- Texas Instruments
- Intel

Boston
- Genzyme
- Compaq
- Raytheon
- EMC, Inc.
- Parexel Intl.
- Innovation International
- PMAB

Kansas City
- H&R Block
- AT&T
- Sprint
- Honeywell
- MAC Equipment
- BHA Group
- CAP Gemini Ernst & Young
- Utilicorp United
- Harla Corporation
- KC Regional Council for Higher Learning
- American Century Investments
- UMB Bank

Current Trends
- Primary challenges facing your organizations
- Trends that are changing the profession

Skills and Knowledge Required
- Skills and knowledge required of supply managers now and in the future
- Do current training approaches meet these needs?
- Subject areas that need to be covered now and in the future

Future Requirements
- What will be the job requirements for the SCM professional of the future?
- Skills and knowledge required of supply chain managers 10 years into the future

A transcript was made of all comments, using a court reporter. These transcripts were then reviewed and coded by multiple individuals into "clusters" using a spreadsheet. Clusters were identified using the guidelines cited in *Qualitative Data Analysis: An Expanded Sourcebook* by Miles and Huberman (1994). Each cluster represented a similar grouping of the most common ideas and concepts that were gleaned from all of the respondents across all of the focus groups, resulting in a spreadsheet of the most common. These clusters were then reviewed, with important comments brought forward into the discussion. This represented a list of the key variables that executives felt were critical in terms of trends and required skills. These comments were then used to create a survey in order to validate whether these variables also rose to the top when tested with a broader sample.

Phase 3: Online Survey
From the results gathered in the focus groups, and by looking at the two previous CAPS Research studies, researchers developed a questionnaire. The questionnaire was pilot tested with two supply management executives who had major responsibility for training within their organizations. One of the executives was in the food industry and the second in the transportation industry. The final questionnaire was addressed to the top purchasing officer of major firms. The research sample was selected from the Institute for Supply Management™ (ISM) mailing list and CAPS Research Roundtable members. The survey was administered via an online instrument. Participants were contacted by e-mail and asked to respond to the site, with follow-up conducted by a graduate student. These responses were analyzed and summarized. This approach approximates the process detailed by Dillman in his *Mail and Telephone Survey: The Total Design Method* (Dillman, 1978).

Phase 4: Report Findings
After thorough analysis, researchers developed summary findings and created a best-practices model for training and development of purchasing associates. The set of results from the roundtables and the survey were presented to executives in five different venues: 1) purchasing executives at a major oil company; 2) a roundtable forum with an airline; 3) a global Webcast with a pharmaceutical company; 4) a Webcast with a large software company; and 5) a group of executives attending the Supply Chain Resource Consortium on December 5, 2003. The results were presented, and executive feedback regarding the results were recorded. These results provided additional validation of the results, and executives generally agreed that they were in alignment with their thoughts and initiatives in the area of purchasing education and training.

Phase 1: Results of Literature Review

Introduction

The business strategy literature is replete with evidence that indicates that the functions of a firm have an impact on achieving a firm's goals. The purchasing function can have an impact on the firm's ability to achieve its chosen strategies because organizational buying is one of the forces that impact competition (Carr et al. 2000; Landeros and Monczka 1989). As U.S. firms strive to achieve global competitiveness, effective purchasing has assumed great importance. Historical events, such as the 1970s Arab-oil embargo in the United States, caused firms to recognize a purchasing's strategic role (Carter and Narasimhan 1996). The relevance of effectively managing the material resources of an organization to its competitive success has been observed by both practitioners and researchers in purchasing and supply management (Carter and Narasimhan 1996). As a result, purchasing evolved in many firms from a low-skill, clerical function to a highly skilled, strategic function involved in strategic planning and managing the firm's sourcing decisions.

Recognition of purchasing's strategic role occurred in leading firms, where cost control and supply management has become increasingly important in the ability of firms to remain competitive, raising concerns about developing and maintaining a world-class staff of purchasers. The *world-class purchaser* is an individual who visualizes and approaches his/her job from a strategic perspective in dealing with the supplier firm-purchaser firm-customer linkage. This individual continually embraces and leverages his or her skills and knowledge of critical supply chain activities to provide value in meeting organizational and customer objectives (Giunipero 1999). World-class purchasing greatly contributes to increases in profitable sales by enhancing the quality of the firm's products, ensuring on-time performance, reducing time to market, enabling the

inflow of technologies that are the basis of success of new products, and providing sales and marketing the freedom to maximize the firm's net revenue through the application of price elasticity (Burt et al. 2003).

The following discussion addresses the relevant changes in the purchasing function that were shaped by the changes in the business environments, such as the computer revolution, electronic commerce, increased international competition, new management practices, and strategic cost management. As illustrated in Figure 1, these environmental trends increase the complexity of the purchasing function, are expected to shape the typical firm's purchasing function, and are expected to impact the knowledge/skill set required of the purchasing/supply management professional. World-class purchasers need continuous learning/training to keep their purchasing knowledge and skill sets up-to-date and, in turn, be able to strategically contribute to the competitiveness of the firm. Purchasing training, which has become an academic field of considerable interest and relevance, is an essential requirement in today's competitive organizations.

Overview of Existing Body of Knowledge of the Purchasing Function Development

A summary table of the studies that addressed purchasing skills is shown in Table 1. Table 1 also provides a summary of the skills that were considered essential to the purchasing professionals in each of these studies. Below is a summary of the literature review as it relates to:

- Purchasing function trends
- Purchasing skills
- Common body of purchasing knowledge
- Training

Figure 1
Purchasing Function Role in Supply Chain Competitiveness

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                    ┌──────────────────────────────────┐
                    │   Environmental Forces           │
                    │   -Technology                    │
                    │   -Global competition            │
                    │   -Government policies           │
                    │   -Changing customer preferences │
                    └──────────────────────────────────┘
                                   │
                                   ▼
                    ┌──────────────────────────────────┐
                    │   Purchasing Forces              │
                    │   -Fewer sources of supply       │
                    │   -Concern with customer satisfaction │
                    │   -Supply chain management       │
                    │   -Shorter cycle times           │
                    └──────────────────────────────────┘
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                                   ▼
                          ┌──────────────────┐
                          │ Purchasing Training │
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   ┌───────────────────────┐              ┌───────────────────┐
   │ Common Body of        │────────────▶ │ Purchasing Skills │
   │ Purchasing Knowledge  │              └───────────────────┘
   └───────────────────────┘

              ┌───────────────────────────────────────┐
              │   Supply Chain Competitiveness        │
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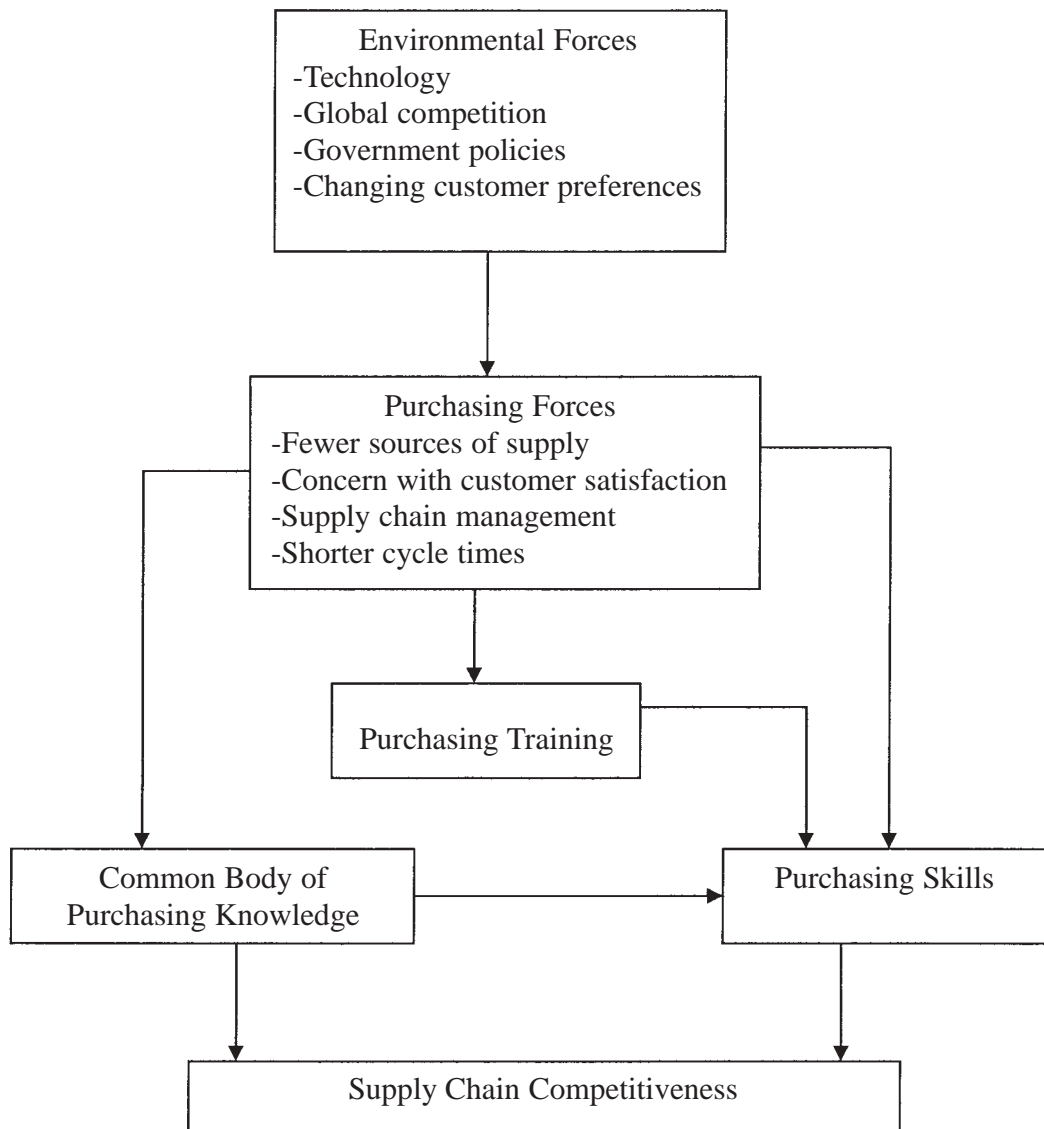
Purchasing Function Trends. During the last three decades, businesses have undergone unprecedented changes, such as the computer revolution, electronic commerce, increased international competition, new management practices, and strategic cost management. These trends shaped the typical firm's purchasing function and impacted the skill set required from the purchasing/supply management professional. Most of these changes have increased the complexity of the external business environment (Pooley and Dunn 1994). Businesses cope with environmental complexity by expanding the responsibility of buffering areas, such as the purchasing function.

As the role of purchasing, as emphasized in the purchasing literature, evolves to a strategic level to support the firm's competitive position, its role expands to include: supplier coordination, supplier development, supplier market research, cost analysis, sourcing strategy formulation, benchmarking, make-or-buy decisions, and supplier capability analysis (Carr et al. 2000). This evolution implies an elevation in the status of the purchasing function, which is expected to assist in defining the firm's competitive strategy. Purchasing can contribute to the company's strategic planning effort by monitoring supply market trends, interpreting the meaning of these trends, identifying the materials and services required, and developing supply options.

Table 1
Literature and Key Skills

Article	Analytical/Problem Solving	Change Management	Communication	Creative Thinking	Computers	Conflict Management	Customer Focus	Decision-Making	Entrepreneurship	International Buying	Interpersonal	Knowledge/Purchasing Items	Leadership	Knowledge and Environment	Materials Management/Inventory/JIT	Negotiation	Organization	Production Systems	Professional Presence/Bus. Perspective	Project Management	Quality	Research	Risk Management	Sales Interface	Self-Motivation	Strategic Supplier Selection	Strategic Thinking	Supplier Evaluation	Supplier Relations	Supply Chain Management	Team Building Facilitation	Technical	Total Cost Analysis
(Cavinato 1987)	X				X							X			X			X			X											X	X
(Kolchin and Giunipero 1993)	X	X	X	X	X	X	X	X		X			X			X											X		X	X		X	
(Down and Liedtka 1994)			X		X						X								X							X							
(Pooley and Dunn 1994)			X		X					X	X				X	X											X					X	
(Murphy 1995)														X	X			X		X		X				X		X					
(Carter and Narasimhan 1996)	X	X	X		X	X	X	X		X	X	X			X																X		
(Laseter 1997)						X	X	X			X		X								X						X		X	X			
(Giunipero 1999)	X	X	X	X	X	X	X	X		X	X				X	X	X	X	X				X	X		X	X	X	X	X	X	X	
(Carr and Smeltzer 2000)	X	X	X	X	X	X	X	X			X		X			X											X			X	X	X	X
(Carr et al. 2000)												X		X			X	X	X	X	X		X				X	X	X	X	X	X	
(Giunipero and Pearcy 2000)	X	X													X	X		X				X	X	X			X	X	X	X	X		
(Giunipero and Flint 2001)			X		X																X					X			X	X			X
(Burt et al. 2003)	X				X																					X	X			X	X		
(Muller 2001)			X																								X	X	X	X	X	X	

Carter and Narasimhan (1996) pointed out that the increased strategic importance placed on purchasing decisions is expected to be the most influential trend in shaping the function in future. Purchasing literature documented this evolution and its implications on the purchasing practices (Carter and Narasimhan 1996; Ellram and Carr 1994; Giunipero and Pearcy 2000; Johnson et al. 1998). The increased reliance on supply chain management as a source of competitive advantage necessitates the active involvement of the purchasing function in major supply chain decisions. Also, it confirms the crucial role of the purchasing function in overseeing and developing a loop that extends throughout the series of organizations — all the way to the ultimate customer — and feeds back to the firm information about the effectiveness of supply chain decisions and customer responsiveness. The trend toward adopting strategic alliances and strategic sourcing translates to the elevation of the purchasing function's status to be more involved in open relationships with suppliers, wherein the needs of both parties are satisfied. This evolution impacts the ideal skill set required for excellence in the purchasing profession, the nature of the purchasing job, skills requirements, training courses offered, and performance measurement metrics.

Furthermore, there are trends in the purchasing function's environment that act as facilitators in transforming purchasing into a more strategic function. In order to assist the purchasing function's move from its earlier clerical-task orientation to a more planning, analytical, and strategic orientation, there is a greater reliance on information and on information technology, such as EDI, to support purchasing and supply management decision-making. Purchasing professionals are no longer responsible for non-value-adding activities and paperwork processing (Burt et al. 2003). The internal end user of an item or service is now empowered to place orders directly to suppliers through the use of the Internet. The release of this tactical responsibility allows supply professionals to focus on value-adding activities, including early involvement in the development of requirements and strategic sourcing or supply base management (Burt et al. 2003).

The new capabilities require the purchasing professionals to focus on enhancing strategic skills, such as the ability to develop what is called "scope boundaries" (Laseter 1997). Laseter defined "scope" as the breadth of material content and associated responsibilities assigned to a supplier. In the traditional arm's length transactional relationship, when purchasing used to be more clerical in nature, the supplier had a very narrow, well-defined scope. However, with the increased strategic importance of the purchasing function, long-

term and loose-scope-boundary supplier relationships provide opportunities for value creation through the integration with suppliers, such as in cases of JIT and integrated quality assurance arrangements. In order to attain increased supply chain value from these processes, the purchasing function needs to use technology that will closely align the firm's operations with those of its suppliers.

The structure of the purchasing organization is expected to change in order to adapt to the new environmental changes. Carter and Narasimhan (1996) predicts that the absolute number of jobs within purchasing will decrease because the purchasing organizations will adopt flatter forms, with less emphasis on hierarchy and less distinction between positions. Teamwork will be critical to organizational success. Avery (1999) posits that 87 percent of corporate buyers in her study reported that their companies used cross-functional teams to purchase equipment and software. These teams are made up mostly of representatives of purchasing, IT, end users, top management, and finance. The lines separating the classical functions of marketing, manufacturing, engineering, purchasing, finance, and personnel will be less important in defining work. Fundamental restructuring and reengineering will become a way of life at most companies. Customers will be the primary focal points in creating value in supply chains. This, in turn, will require increased flexibility and the deployment of information technology. Work will become integrated and competitive advantage will be attained through connections across organizational and company boundaries. New measurements that focus on strategic directions and cost of quality will be required.

Interestingly, the emphasis on total quality management (TQM) and quality-related issues is expected to decline in the future (Carter and Narasimhan 1996; Kolchin and Giunipero 1993). There are two explanations for this phenomenon. First, this might simply mean that the manifestation of quality management has changed. Purchasing professionals equate quality more directly with flexibility, mass customization, cycle-time reduction, and related issues (Carter and Narasimhan 1996). Another explanation could be that purchasing professionals perceive quality as a "prerequisite" for survival in today's competitive environment. In other words, quality is perceived as an order-qualifier rather than an order-getter; quality is an important but not sufficient condition for creating supply chain value. Order-getters and competitive firms can no longer solely depend on the delivery of high quality to differentiate their product/service offerings.

Kolchin and Giunipero (1993) used personal interviews with purchasing executives followed by a questionnaire to identify a list of 29 purchasing trends thought to be significant for the purchasing profession. The top 10 trends reported were:

1. Fewer sources of supply will be used.
2. Purchasers will be more concerned with final customer satisfaction.
3. Purchasers will manage supplier relations.
4. Purchasers will drive shorter cycle times.
5. Supply chain management will receive greater emphasis.
6. Design engineers and buyers will be part of sourcing teams.
7. Global sourcing will increase.
8. Order releasing will be relegated to users.
9. Teams will make sourcing decisions.
10. Single sourcing will increase.

These results are very similar to the most important trends identified by respondents from Saudi Arabia-based organizations interviewed by Giunipero and Flint (2001), who reported that the top 10 trends predicted for the next century were:

1. Design engineers and buyers will be part of sourcing teams.
2. Purchasing managers will be more concerned with final customer satisfaction.
3. Purchasing managers will manage/drive shorter cycle times.
4. Purchasing managers will manage supplier relations.
5. An advanced certification designation will be needed.
6. There will be greater emphasis on supply chain management.
7. The order release function will be relegated to users.
8. Managers will focus on the purchasing process versus outcomes.
9. Teams will make sourcing decisions.
10. Two levels of purchasing personnel will evolve — professional and transactional.

The authors compared this sample of Saudi managers to the U.S.-based study conducted by Giunipero (1999). Seven of the top 10 trends are similar. They include:

- sourcing teams
- an increase in the purchasing function's concern for final customer satisfaction
- supply chain management
- relegating order release to users
- driving shorter cycle times

- managing supplier relations
- having both design engineers and buyers as part of the sourcing team

However, the major differences were that the U.S.-based study found a greater emphasis on strategic sourcing and performance measurement.

One area of strategic sourcing, the trend toward increased outsourcing, will only escalate this process. As shown in Figure 2, outsourcing systems and services is very different from traditional procurement roles associated with component outsourcing. The integrative nature of this new set of processes will require a different set of abilities, which are often acquired at a high per-employee salary, but which may also require reduced headcount of traditional buyers. As such, a new breed of purchasing manager will be required.

Purchasing Skills. A "skill" is the ability gained by practice or knowledge (Carr and Smeltzer 2000; Kolchin and Giunipero 1993). The impact of employees' skills over organizations' performance has been the focus of numerous research studies and writings (Borman 1991). Specifically, purchasing skills were evidenced to influence the effectiveness of supply chain decisions and, in turn, a firm's performance (Carter and Narasimhan 1996; Landeros and Monczka 1989). The resource-based theory posits that a firm that has key resources (i.e., people, location, technology) that its competition does not have will have a competitive advantage. Thus, purchasing skills can be a source of a firm's competitiveness. A number of studies have used the resource-based theory to explore the conditions under which a business's competitive advantage is sustainable (Barney 1991). Barney lists four essential requirements for a resource/skill to be a source of sustainable competitive advantage (SCA):

1. It must be valuable.
2. It must be rare among a firm's current and potential competitors.
3. It must be imperfectly imitable.
4. There must not be any strategically equivalent substitutes for this resource/skill.

In light of the resource-based theory, employees' purchasing skills represent a valuable resource that contributes to the competitive advantage of the firm as well (Giunipero and Pearcy 2000). Purchasing resources fit the above-mentioned requirements for a resource/skill to be a source of SCA and, hence, are considered valuable, as they aid a firm in formulating and implementing strategies that improve its efficiency and/or effectiveness. Purchasing skills represent employees' mastery over "tacit" purchasing knowledge

Figure 2
Purchasing's Changing Role

Purchasing's Changing Role

Higher-level outsourcing will begin to shift how procurement and supply organizes its activities and responsibilities

Component Oursourcing	Outsourcing	System Outsourcing
❏ Manage thousands of component part numbers ❏ Manage thousands of component suppliers ❏ Manage hundreds of basic contracts ❏ Employ many buyers ❏ Pursue traditional relationships with most suppliers	**Procurement and Supply's Role**	❏ Manage 100 or fewer critical suppliers ❏ Manage strategic relationships ❏ Develop alliances and partnerships ❏ Pursue cross-organizational integration ❏ Pursue value-creating strategic sourcing activities

Source: Monczka, Trent, Handfield, 2004.

that is greatly intangible, based on employees' own learning experiences, and cannot be easily put into words or communicated (Giunipero, Dawley, and Anthony 1999). Thus, purchasing skills are valuable and rare because firms that do not possess these purchasing skills cannot obtain them (as a direct consequence of a capability gap) (Barney 1991; Coyne 1985). Purchasing skills are non-substitutable. A competitor cannot duplicate a firm's purchasing skills exactly and cannot substitute similar resources that enable it to formulate and implement identical strategies.

The increased recognition of the relevance of purchasing to firms' competitiveness has been accompanied by an evolution in the job duties and skills of purchasing professionals. Pooley and Dunn (1994) tracked the evolution of professional purchasing positions, using an archival content analysis of job advertisements and skill attributes, and found statistically significant changes across decades. All of the changes in the job duties and skill attributes point to more professionalism and broader business skills for purchasing agents.

In the same study, Pooley and Dunn (1994) reported that computer, international, negotiation, strategy, and communication skills had a statistically significant increase over the last three decades as a result of the

increased proliferation of computers and purchasing software, global competition, emphasis on more than just price as a source of competitive advantage, and effective communication in the supply chain. Technical skills, on the other hand, experienced a drop in importance. One explanation is that purchasing is developing into a highly specialized occupational area with its own special skills. As the purchasing field develops its own professional identity, firms have responded by separating purchasing and technical areas. Additionally, this supports the idea that technical skills are not as useful at resolving the strategic issues that are the main focus of the purchasing function.

However, human resources remained constant. The authors explained this finding by the shift in the mix of clerical and professional purchasing employees. Clerical employees tend to require a higher level of supervision than professional employees. Growth in computer technology over the last three decades has eliminated some clerical functions and may have led to fewer clerical employees. If there has been a reduction in purchasing clerical positions over the last three decades, then most of the growth in purchasing staffs must be professional employees. Because professional employees tend to be self-motivated, firms may have responded by not changing the emphasis placed on human resource skills and duties.

In an attempt to conduct a comprehensive job analysis of the purchasing and supply management function, Muller (2001) used a sample of 2,416 purchasing managers and employees to obtain up-to-date information about the present state and future direction of the purchasing/supply function in a variety of industries and organization sizes and types. The author reported that:

1. Tasks of a strictly procurement nature — identifying requests, preparing solicitations, supplier analyses, negotiations, and contract execution/implementation/administration — are still a component of the work of most purchasing/supply managers and buyers.
2. Tasks dealing with maintaining positive relations with entities (internal and external to the organization) were also relevant to the work of purchasers in a majority of sectors.
3. A majority of the sectors (at both management and employee levels) said none of the material flow or transportation/logistics tasks were applicable.
4. In terms of resource planning, only the task pertaining to the coordination of new products and services was found to be applicable across the majority of sectors at the purchasing/supply manager level.
5. Tasks pertaining to standardization and process improvement were applicable to a majority of sectors at the managerial level, while the cost-reduction task was applicable to a majority of sectors at both management and employee levels.

These findings support the premise that the skill set that is more valued now in the purchasing function is one of a strategic nature and that the purchasing function is moving from a tactical orientation to a strategic one that is of a more elevated status.

Kolchin and Giunipero (1993) reported that their respondents expected the following 10 skills to be the most critical for purchasing professionals in the next decade:

1. Interpersonal communication
2. Customer focus
3. Ability to make decisions
4. Negotiation
5. Analytical
6. Managing change
7. Conflict resolution
8. Problem solving
9. Influencing and persuasion
10. Computer literacy

These skills overlap with the top skills that were reported by Pooley and Dunn (1994). In both studies, computer, negotiation, and communication skills were important over the last three decades and will continue to be important in the future. These three skills span both dimensions of the purchasing job: strategic as well as the tactical. Therefore, they represent the essential core of the purchasing function that is expected to withstand environmental changes and be a source of sustained competitive advantage over time. According to the resource-based theory, there are two broad sources of competitive advantage-unique resources: assets (such as state-of-the-art technology) and distinctive skills (capabilities such as negotiation and communication skills) (Porter 1985). These two broad sets of sources enable the purchasing function to perform the various primary and secondary value activities either at a lower cost or in a way that leads to differentiation.

Kolchin and Giunipero (1993) used a sample of 131 purchasing executives from large U.S. organizations to identify the skills that are essential for purchasing professionals. They identified 18 skills: interpersonal communication, customer focus, ability to make decisions, negotiation, analytical, managing change, conflict resolution, problem solving, influence and persuasion, computer literacy, leadership, understanding general business, tactfulness in dealing with others, creativity, planning, managing internal relations, organizational skills/time management, and investigative nature. They divided their list into four categories of skills: technical, management, interpersonal/group, and individual. Additionally, they examined the skills required by purchasers to perform effectively in the 21st century. The skills required by purchasers in the next decade can be categorized into three areas: (1) enterprise (having a good understanding of the overall business), (2) interpersonal, and (3) technical.

Carr and Smeltzer (2000) reported a list of 35 purchasing skills. These skills were subsequently divided into three categories: (1) technical, (2) behavior, and (3) skill techniques. The skills noted as being important with respect to strategic purchasing included the ability to monitor and interpret supplier market trends, use of general management skills such as decisiveness and interpersonal skills, and use of technical skills to help suppliers improve their processes and products. The authors posited that skill techniques were positively related to strategic purchasing, technical skills were positively related to the financial performance of the firm, and behavioral techniques were positively related to supplier responsiveness. The results suggest that firms can enhance their competitive position by ensuring that purchasing professionals acquire and cultivate the requisite technical skills and skill techniques.

Pooley and Dunn (1994) listed the main qualifications that companies look for in the purchasing professionals that they hire. These qualifications represent the skills that these companies consider to be essential for the purchasing function. The following is a list of the 10 most important requirements:

1. College degree
2. Materials management (MRP, inventory management, scheduling)
3. Computer
4. Technical skills (scientific and engineering)
5. International
6. Negotiation
7. Strategy
8. Communication (oral and written)
9. Human resource
10. Industry experience

Murphy (1995) illustrated the continuing search for the "ideal" skill set that purchasing professionals should possess. The author listed four general skills that were identified in a poll of purchasers as important to their job function. The skills identified were: (1) negotiation, (2) management, (3) computer literacy, and (4) mathematics. The author did not associate these skills with any particular job within the purchasing field.

A survey of corporate recruiters, conducted by Down and Liedtka (1994), revealed the seven most critical skills that recruiters looked for in purchasing professionals. These skills were identified as: (1) communication skills, (2) interpersonal skills, (3) self-motivation and initiative, (4) professional presence, (5) leadership (potential or actual), (6) analytical/problem-solving skills, and (7) academic achievement.

The results of the factor analysis by Giunipero and Pearcy (2000) suggested seven broad categories of skills. The skill set is as follows:

1. Strategic skills. These include the skill set required for the world-class purchaser such as: (1) strategic thinking, (2) supply base research, (3) structuring supplier relationships, (4) technology planning, and (5) supplier cost targeting.
2. Process management skills. These entail the effective accomplishment of: (1) organization/time management, (2) tactfulness, (3) written communications, (4) problem solving, and (5) conflict resolution.
3. Team skills. This dimension consists of teamwork, leadership, managing change, managing internal customers, and salesmanship.

4. Decision-making skills. This dimension consists of only two skills — ability to make decisions and computer literacy.
5. Behavioral skills. Behavioral skills describe the conduct of the purchasing manager in the course of his or her duties. This dimension is composed of interpersonal communication, risk-taking/entrepreneurial, creativity, and inquisitiveness.
6. Negotiation skills. The negotiation factor consists of four key skills: (1) negotiation, (2) customer focus, (3) influencing and persuasion, and (4) understanding business conditions. Negotiation skills are necessary for purchasers in dealing with multiple constituencies.
7. Quantitative skills. The quantitative dimension is composed of four skills: (1) computational, (2) technical, (3) blueprint reading, and (4) specification development. Given the move toward more service-related environments and the access to technical help, these dimensions represent three of the four lowest-rated skill items.

In the same study, the sampled purchasing and supply management professionals rated the five most important skills as: (1) interpersonal communications, (2) ability to make decisions, (3) ability to work in teams, (4) negotiations, and (5) customer focus. These skills are reflective of the dynamic, interactive nature of the purchasing function and its role as a boundary spanner. Contemporary purchasing organizations require supply chain interfaces both externally, with suppliers and customers, and internally with others in the organization (Giunipero and Pearcy 2000).

Given the escalation of purchasing performance as a key priority for organizational competitiveness, it will be imperative for senior management to identify the current gap between current and future requirements, as well as the need for specific types of roles. The design and structure of the new sourcing organization will alter substantially, in the following ways (Monczka, Trent, and Handfield, 2002):

- Smaller professional staff
- Minimal involvement with day-to-day operations or transactions
- Act as an internal consultant and problem solver
- Responsible for managing alliances and other critical relationships
- Greater responsibility for non-traditional purchasing
- Involvement with cross-enterprise negotiations
- Manage integrative activities with suppliers and the rest of the organization
- Become process managers who oversee strategic and tactical responsibilities

Figure 3
New Forms of Purchasing Skills

New Forms of Purchasing Skills

A separation of purchasing activities will occur as organizations structure themselves to pursue strategic sourcing

Strategic Sourcing Activities…	❑ Manage strategic relationships
	❑ Develop company-wide electronic systems
	❑ Develop and manage alliances and partnerships
	❑ Develop company-wide contracts
	❑ Manage critical commodities

Transactional Activities…	❑ Execute transactions with strategic suppliers
	❑ Use e-systems to obtain standard or indirect items through catalogues
	❑ Source items that are unique to the operating unit
	❑ Generate and forward material releases
	❑ Manage accounts payable and material control

Source: Monczka, Trent, and Handfield, *Purchasing and Supply Chain Management,* Southwestern College Publishing, 2002.

• Segment sourcing strategies to match requirements with an appropriate strategy

Common Body of Purchasing Knowledge. The changing nature of the purchasing function requires a different skill set from purchasing professionals. During the last three decades, businesses have undergone unprecedented changes that are likely to shape the skill set required of the purchasing/supply management professional. Most of these changes have increased the complexity of the external business environment. Businesses cope with environmental complexity by expanding the purchasing body of knowledge upon which these skills are developed. Purchasing knowledge was found to have a positive impact on strategic purchasing in the firm (Carr et al. 2000). This finding implies that continuously upgrading the purchasing function body of knowledge can contribute to the competitiveness of the firm. Utilizing the resource-based theory, purchasing knowledge can be viewed as a source of competitive advantage in three ways.

First, companies must upgrade the purchasing knowledge level of its professionals before it can have a strategic orientation (Pearson and Gritzmacher 1990). As companies attempt to shift the direction of their purchasing functions from a clerical to a more strategic organization, they must recognize the importance of updating the body of purchasing knowledge. Purchasing professionals require knowledge in the areas of general management skills and technical skills (Stuart 1993). A high degree of purchasing knowledge is critical to gaining acceptance into the firm's strategic planning process. When the purchasing function is part of the firm's strategic planning, it becomes interested in accomplishing both current and future goals, partnering with suppliers, and creating relationships that are not easily imitated, and thus, it enables its firm to obtain competitive advantage.

Second, having the appropriate purchasing knowledge allows the purchasing function to develop the skills that could be used as a valuable inimitable input to the firm's planning process and, hence, be a source of competitive advantage. Continuously upgrading the purchasing knowledge is a prerequisite for purchasing professionals to develop the skills to interpret changes in the supplier market, offer technical assistance, and assist in developing suppliers, which will produce valuable supplier relationships that cannot be imitated by competition (Lester 1999; Pearson and Gritzmacher 1990).

Third, the literature provides evidence that purchasing risk-taking has a positive correlation with and a positive impact on purchasing knowledge and skills (Carr et al. 2000). Since purchasing is the function that interacts with the firm's suppliers, it is appropriate that purchasing knowledge involve supplier-related activities. This means developing purchasing knowledge of supplier market activities and working with current suppliers to ensure that the purchasing staff can make the appropriate supplier-related decisions that support future requirements of the firm. Purchasing risk-taking activities may occur more often as purchasing increases its knowledge base and develops its skill level. Companies that possess the required purchasing knowledge are more willing to incur the risk of developing the close inter-firm involvement that is essential in strategic partnering, which can contribute to the competitiveness of the supply chain relationship.

Burt, Dobler, and Starling (2003) emphasized that the current purchasing body of knowledge should enable the world-class purchasing professional to conduct key 10 strategic activities, which are:

1. Monitoring the firm's supply environment.
2. Developing and managing the firm's supply strategy as an integrated whole.
3. Developing and managing sound commodity supply strategies.
4. Collaborating with the firm's IT function to develop a data management system, which facilitates strategic supply planning.
5. Joining marketing and operations as the key players develop the corporation's strategic plan.
6. Designing and managing the firm's supply base in line with its strategic objectives.
7. Identifying the advantages of specific potential supply alliances and then developing and managing them.
8. Developing and managing the firm's supply chains or supply networks.
9. Developing and implementing programs that protect the environment; facilitate the inclusion of diversity, women-owned, and small businesses in the economy; and promote values in the workplace.
10. Studying and understanding the industries that provide key materials, equipment, and services, including their cost structures, technologies, competitive natures, and cultures.

Killen and Kamauff (1995) described the necessary characteristics of a good buyer and purchasing manager. The authors grouped the characteristics of a good buyer into four general areas: (1) product knowledge, (2) principles of purchasing and management,

(3) personal attributes, and (4) interpersonal skills. They felt that these characteristics applied to all non-managerial buying positions. The authors also identified key characteristics required for a purchasing manager. These included: (1) technical knowledge, (2) analytical ability, (3) interpersonal skills, and (4) managerial skills. The authors asserted that the purchasing manager must possess all the qualities of a good buyer plus those of a good business manager.

Cavinato's (1987) research revealed the seven technical skills top managers wanted to see improved in their organizations' purchasing departments. The skills were: (1) knowledge of materials; (2) production systems and technologies; (3) materials management, inventory systems, and JIT; (4) quality systems and options; (5) contract manufacturing relationships; (6) computers, MIS, and automated purchasing systems; and (7) costing. Top managers also expressed the need for purchasing professionals to possess strong communication skills.

In their study, Kolchin and Giunipero (1993) reported that the top 10 rated knowledge areas by their respondents were:

1. Total quality management
2. Cost of poor quality
3. Supplier relations
4. Analysis of suppliers
5. Lowest total cost
6. Price/cost analysis
7. Source development
8. Quality assurance
9. Supply chain management
10. Competitive market analysis

Pooley and Dunn (1994) pointed out that material management knowledge was ranked high in importance and there was a growing importance of material management skills in the last two decades amongst purchasing practitioners. Application of MRP systems, innovative production systems like Just-In-Time, integrated supply chain management, and other management techniques probably propelled the growth of the material management attribute. Each of these management techniques requires some level of coordination between purchasing and materials management. On the other hand, the importance of industry experience as a source of purchasing knowledge declined in importance over the last decade. One possible explanation for the drop in the specific-industry-experience qualification is that a standardization of professionalism in the field may make purchasing skills more portable across industries. If purchasing managers understand a common body of

purchasing theory and associated professional activities, they should be able to apply these skills across industries. Prior to adopting these professional skills, it appears that purchasing knowledge was more domain- (or industry-) specific.

Giunipero and Flint (2001) asked their respondents to indicate which knowledge areas should be required of purchasing managers. The top 17 areas identified as most important were:

1. Quality assurance
2. Total quality management
3. Material requirements planning
4. Awareness of new products
5. Price-cost analysis
6. Supplier relations
7. Information systems
8. Production planning
9. Operations
10. Just-In-Time
11. Managing inventories
12. Government regulations
13. Materials management
14. Analysis of suppliers
15. Information technology
16. Order releasing
17. Safety issues
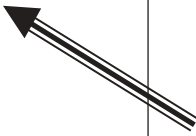
When the authors compared the knowledge required of their sample with the responses of the purchasing managers and executives used in the 1999 Giunipero study, they found an overlap in the following five categories:

1. Supplier development/relationships
2. Price/cost analyses
3. Supplier analysis
4. Total quality analysis
5. Inventory management

Table 2 illustrates a contrast between the top 10 knowledge areas that were reported in the two studies: Giunipero (1999) and Kolchin and Giunipero

Table 2
Quadrant of Current and Future Purchasing Knowledge Requirements: A Contrast Between the 1993 and the 1999 CAPS Research Studies

Year 1999	Knowledge Requirements Unique to 1999 Market Analysis Personal Computer Skills Understanding Markets and Industries Electronic Commerce Systems Human Behavior	Knowledge Requirements in Common between 1993 and 1999 Supplier Development Supply Chain Management Lowest Total Cost Price/Cost Analysis Supplier Analysis
Year 1993		Knowledge Requirements Unique to 1993 Total Quality Management Quality Assurance Commodity Expertise Procurement Process Cost of Poor Quality
	Year 1999	Year 1993

(1993). There are some knowledge areas that remained a top priority in the purchasing function, such as supply chain management, supplier relationship issues like supplier development and supplier analysis, and the value added by the purchasing function in terms of cost reductions. This further supports the strategic emphasis on the purchasing function's decision and on the efficiency of its processes. Interestingly, the emphasis shifted from some knowledge areas, such as quality-related issues and technical areas like commodity expertise, to broader knowledge of the environment, technology, and interpersonal skills. This shift supports the research contention above that there is a trend toward the standardization of professionalism in the field and the redefinition of what "quality" means. This shift is expected to change the training requirements of the purchasing professionals. Training courses are expected to mirror a corresponding shift.

Training.

"It's not a matter of policy or procedure, it's a matter of investing in the future: to be well equipped, and achieve world-class status, both organizations and individuals are taking an aggressive role in training and building skill sets. If you're not making improvements, you're falling behind. You have to keep up with the changing times" (Duffy 2000).

The importance of employee training for effective and efficient purchasing practice is well documented (Carter et al. 2000). The argument has been made persuasively that training for purchasing employees is what leads to world-class purchasing practices. The key to successful purchasing learning organizations, those that possess superior advantages over competition, seems to be a well trained purchasing professional. Some academics, executive coaches, and human resources professionals argue that companies that provide education and training for their employees are almost always more profitable than those that don't (Taylor 2002).

To achieve the required level of competency in world-class purchasing, individuals and organizations are searching for various methods of training and learning activities. Designing and implementing training programs is not as simple as setting some training objectives, coordinating some programs, and participating in those programs. Both the individual and the organization must properly assess the desired skills, optimize the learning process by using the appropriate training methods, and stay continually motivated to participate and receive benefit (Duffy 2000). Designing on-going training programs and continual learning is not limited to attaining a specific "skill." Continual learning is an essential source of competitive advantage

that is required for world-class status.

An important challenge to designing effective training programs is the need to tailor the training programs to the skills needs of each group of purchasing professionals. As mentioned above, skill-set requirements will vary based on the needs of a particular organization, the individual, and his or her experience. Each organization has purchasing and supply management employees of varying experiences and backgrounds — experienced professionals, employees with previous tactical experience looking to gain more strategic skills, and new recruits with heavy academic experience. The beginning purchaser or new hire, generally, needs basic skills and exposure to those more experienced. The traditional purchasing and supply management professional, a seasoned employee who is very experienced and educated, who is constantly adjusting to a changing workplace, needs change management skills, process improvement skills, and interpersonal skills. Meanwhile, all purchasers looking at future growth in the 21st century need advanced skill levels to meet the needs of changing environments.

Young, Cavinato, and Tucker (1996) portrayed in their study a spectrum of training and development in executive education that reflects the manner in which training programs have evolved in the last three decades, corresponding with the changing environment and purchasing trends as discussed above.

Their model suggests a migration from the tactical to the strategic training and development needs of the purchasing profession. The purchasing training and development taxonomy addresses the shift in the types of training and development undertaken by purchasing professionals. Young et al. (1996) posited that purchasing training is moving away from the question of "what is" toward those which address the question of "what will be." Young et al. (1996) categorize the types of training and development into the following seven principal groups. The first five address the "what is" question; the remaining three, "what will be."

1. Operational Competencies. These include supplier selection and evaluation, make-or-buy analysis, value analysis and value engineering, elements of cost and price analysis, negotiation techniques, and computer applications in purchasing.
2. Client-Oriented Expertise. These include the courses that provide purchasers with an understanding of the activities of the internal users and the requisitioners, such as courses in manufacturing practices, MRP II, and Just-In-Time.

Table 3
Spectrum of Training and Development in Executive Education

Type	Objective	Content	Era
Training	Transfer of detailed skills	What is	Up to 1979
Workshop	Fill in details of what they already know in part	Cause & effect relationships	1980-1984
Seminar	Understand the world. Crystal ball to help them look forward	What could, will, or might be	1985-1989
Development	Help them change their thought processes for personal and professional growth	How to handle the 1989-1992 world	1989-1992
Action Learning	Tao-like approach. Help prepare them through growth experiences for need or the journey they face.	Insights into other 1992+ tools and views (often outside their knowledge sphere)	1992+

Source: Young, Cavinato, and Tucker (1996)

3. Management Skills. These include courses in human resource issues such as hiring and firing, employee appraisal, objectives writing and measuring, effective communication, and equal employment opportunity compliance.
4. Parallel Function Knowledge. These include budgeting, managerial accounting, and quality control methods courses.
5. Benchmarking and Environmental Scanning. These include the courses that provide purchasing professionals with the ability to interpret the direction of supply markets by reading current events data.
6. Purchasing Awareness. These include courses in environmental scanning and in interpreting the implications of the trends in the environment in terms of the strategies and objectives of the purchaser's own firm.
7. Catalytic Processes. These courses address the issues of senior purchasers effectively bringing about change in the purchasing function and across corporate boundaries in order to optimize supplier and customer relationships across the entire supply chain.

As discussed above, the changes in the purchasing function and the environment in which it operates significantly affect the ideal skill set required for a world-class purchasing professional. As a result, many firms have established internal training programs for employees in purchasing and supply management positions that can enable them to acquire the skills needed to adapt to these new demands. Typical courses include cost analysis, blueprint reading, root/cause analysis, and supplier quality (Carr and Smeltzer 2000).

Kolchin and Giunipero (1993) identified the most popular course offerings by firms in their sample to be: (1) negotiations/ethics; (2) basics for purchasers; and (3) total quality management (TQM). The sampled purchasing executives thought that TQM would become even more critical in 2000 and was rated second behind negotiation/ethics. The most popular sequence of courses for new buyers was: (1) basics for purchasers; (2) negotiation; (3) TQM; and (4) legal issues.

In the same study, respondents were also asked to rate the most important subjects that should be provided to

purchasing professionals in the year 2000. Respondents rated the following 10 subjects as most important:

1. Total cost analysis
2. Negotiation strategies and techniques
3. Supplier/partnership management
4. Ethical conduct
5. Supplier evaluation
6. Quality techniques
7. Purchasing strategy and planning
8. Price/cost analysis
9. Electronic data interchange (EDI)
10. Interpersonal communication

Furthermore, there is a growing demand for a college degree, which signals increasing recognition of purchasing as a professional management function (Pooley and Dunn 1994). Business organizations typically require professional managers to possess college degrees. Another factor behind the increasing percentage of positions requiring college degrees could be to facilitate working relationships between other functional managers. Possessing a college degree puts a purchasing manager on an equal educational status with professional managers in other areas. Conceptually, equal status should lead to better communication and working relationships with other managers (Pooley and Dunn 1994).

Giunipero and Flint (2001) assessed the importance of training by asking their respondents whether it is viewed as an "investment" or an "expense." Those firms that view training as an investment are less likely to cut it at the first sign of a business slowdown and more likely to remain committed to training as a way to increase their competitiveness. Training budgets were closely tied to business activity in these firms. In addition to formal degree status, they reported that attaining a Certified Purchasing Manager (C.P.M.) designation was very desirable for a candidate. One of the goals of a certification program is to increase the professionalism of the purchasing field. Perception of status did not greatly affect annual purchasing turnover.

Phase 2: Results of Focus Groups

Overview

From the focus groups, a number of different trends came out during discussions. The findings included, but were not limited to: 1) the evolving character of strategic supplier relationship management; 2) the growth of the Internet to facilitate e-procurement; 3) the implementation of strategies to further reduce cost and gain value; 4) greater integration of procurement strategies with the competitive business strategy of the company; and 5) a transition from tactical purchasing to more strategic supply management.

The research questions that were posed to focus group participants were:

- What are the major *trends* impacting the purchasing and supply chain management field and what changes will occur in the next five to 10 years?
- What *skills* should purchasing and supply management professionals possess today and in five to 10 years?
- What *knowledge* base should purchasing and supply management professionals have today and in five to 10 years?
- Are current training approaches fulfilling these needs?

A transcript was taken of all comments made, using a court reporter. These transcripts were then reviewed and coded by multiple individuals into "clusters" using a spreadsheet and following Huberman's (2000) techniques for evaluating qualitative research. Each cluster represented a similar grouping of the most common ideas and concepts that were made across all of the respondents, across all of the focus groups, resulting in a spreadsheet of the most common. These clusters were then reviewed, with important comments

brought forward into the discussion. This represents a list of the key variables that executives emphasized as important and felt were critical in terms of trends and required skills.

The responses of the executives were combined into two major categories:

- Problems, trends, and challenges
- Key skills and knowledge requirements

Each category resulted in a number of notable areas. These areas were tabulated across all four focus groups to determine the major future trends in purchasing and supply chain management, as well as the skills/knowledge requirements of purchasing and supply executives.

Future Trends

Table 4 shows the top responses for **future trends.**

In the next section, each of the top trends shown in Table 4 is discussed.

Strategic Relationship Management with Suppliers
Supply management organizations are being challenged to build superior supply chains to increase competitive advantage. As supply chain management has matured and as customers require greater "customization" of product and service offerings, building the ability to customize will be a key element in the value proposition offered by the procurement function in building a stronger supply chain. How will supply management add to this competency?

In the future, there will be a greater need for integrating data systems, standardizing parts, and creating joint

Table 4
Top Future Trends — Focus Group

Top Problems, Trends, Challenges	Total References	Sub samples	KC	BOS	PHX	RDU
Strategic Relationship Management with Suppliers	85					
Supplier Relationship Management (SRM)		53	6	15	10	22
Resource Sharing and Joint Innovation Management		18	0	2	5	11
Supplier Development		14	0	6	5	3
Strategic Cost Reduction	63					
Leveraging and Worldwide Pricing through Standardization		49	17	11	6	15
VMI/Inventory/Consignment/Cycle Time Reduction		4	0	0	2	2
Innovation in Logistics, Materials Management, and Packaging		3	0	0	3	0
Productivity Improvements and Labor Cost Reductions		1	1	0	0	0
Warranty Provisions and Maintenance		6	0	2	2	2
Integrated Systems and Collaboration	50					
Coopetition* — Buying Consortiums and Horizontal Inventory Consolidation		12	4	5	0	3
Forecasting and Information Visibility		10	0	0	0	10
Outsourcing or Operations through Joint Ventures and Alliances		5	0	2	1	2
Multi-Tier Supplier Chain Collaboration on Forecasting and Information Sharing		5	0	0	5	5
Systems Integration with Suppliers and Electronic Funds Transfer		19	1	3	6	9
Aligning Cultures, Systems, Policies, and Procedures with Suppliers		7	0	3	1	3
Coping with Mergers and Resulting Supply Base Consolidation		2	0	0	0	2
Greater Focus on Total Cost in Supplier Selection	46					
Improved Supplier Selection with Consideration of Total Cost of Quality, Cycle Time Reduction, and Value-Added Services		27	9	2	9	7
Focus in Inventory Holding Costs and "Best-Value Purchasing"		19	5	1	8	5
Strategic versus Tactical Purchasing Orientation	40					
Moving away from the "Daily Grind" toward Strategic Thinking		14	2	6	4	2
Focusing on the "Big Picture" rather than Tactical Buying		27	10	5	5	7
Improving Recruiting Talent by Positioning Purchasing as a Strategic Function		1	0	0	1	0
Outsourcing Services						
Focus on Services Outsourcing		10	1	6	0	3
Infrastructure Outsourcing — Non-Core and Shared Services		11	6	3	1	1
Internal SLAs and Deliverables for Internal Customers		8	0	7	0	1
Outsourcing of Purchasing		6	0	5	0	1
Increased Focus on Software Contracts, Consulting, Site Licenses, and Maintenance		5	5	0	0	0

Category / Item					
E-Procurement / Reverse Auction — 39					
E-Procurement Driven by IT Function	23	7	7	3	6
Reverse Auctioning	11	2	0	5	4
Improving the Bidding/Sourcing Process through Web	2	0	0	1	1
Linking Customers and Suppliers Electronically	1	0	0	0	1
E-sourcing applications — RFPs, Bidding, etc.	2	0	0	1	1
Internal Systems Integration — 36					
ERP Systems and Lack of IS Support	17	5	4	3	5
ERP Systems Reduce Morale and Difficulty of Showing Benefits	10	1	6	2	1
Challenges of Coding Assets/Expenses in Data Warehouses	7	4	0	2	1
Running Legacy and ERP systems	2	1	1	0	0
Capture Purchasing Performance Performance — 36					
Need Better Supplier Incentives/Controls (Balanced Scorecard/Stretch Goals)	15	6	6	0	3
Audits of Purchasing to Ensure Realized Savings and Cascading into Budgets	12	0	4	1	7
Purchasing as Profit Center	9	0	4	0	5
Need for Broader General Business Skills — 35					
Business Person/Expert/Entrepreneur Needed	31	17	5	3	6
Critical Business Skills are Most Lacking	4	0	1	1	2
Supply Chain Business Process Focus — 34					
Increasing Process Focus as Key Cost Drivers	34	14	5	7	8
Customer Relationships Building Internal/External — 33					
Interacting Differently with Internal and External Customers	28	5	8	7	8
Moving toward Customer Management, not just Purchasing	3	1	2	0	0
Have Customer Meet with Supplier to Better Define Needs/Dependence	2	0	0	0	2
Cross-functional/Virtual Teams — 31					
Integrate Functions (Cross-Functional Buying Teams)	21	8	6	4	3
Virtual Teams with Supply Chain Focus	10	0	7	1	2
Global Sourcing Strategies — 23					
Global Sourcing — International Law, Taxes, Logistics, Duties, Political Risks, Translators, Time Change	25	8	2	5	10
Integrating Currency issues in Negotiation	1	0	0	0	1
Translation Software for Currency and Language	2	0	0	0	2
Increase in Alternative Training Methods — 21					
Customized and Distance-Based Training Approaches for Global Environment	21	0	8	2	11

* **Coopetition** is a concept that emphasizes simultaneously cooperative and competitive behavior among organizational units (Tsai, 2002).

ventures in the procurement area. Strategic relationships will be essential in achieving these goals. Developing long-term partnerships with suppliers and maintaining those relationships will be a key value-add as teaming between buyers and suppliers will provide the opportunity to reap the fruits of a larger pie.

Developing and managing relationships is not second nature to all people. In fact, schools such as North Carolina State University have begun offering a new MBA-level class called "Relationship Management," in which students go through a simulation requiring them to assess potential suppliers or customers (made up of other students), select a partner, negotiate an agreement, and write a contract. Then, the relationship is "tested" through a one-year simulated supply and demand scenario, where different events cause supply chain disruptions. Students must then find creative ways of managing the tension of the relationship, and thus deal with the potential conflicts that inevitably arise.

Supply managers will be asked to think outside the box and seek out new technologies and new suppliers more often while continuing to ensure quality products and services and reliable delivery schedule performance. Supply managers will be required to think more strategically when evaluating suppliers and making the selection decision, concentrating more on suppliers' strengths and capabilities and long-term quality output versus pure yield results for upcoming quarters.

Establishing solid, productive working relationships, both with the extended business units within a corporation and suppliers, will be the driving force for accomplishing all strategic relationship goals. There will be a greater focus on suppliers' strengths, capabilities, and willingness to allocate resources to further relationship goals.

The following representative comments demonstrate that supply managers feel that a better understanding of the key strengths that suppliers offer and bring to the table is instrumental and is a key trend that should be monitored and managed.

> "One of the differentiating factors for us, and a key to our future success, is the way that we are working with those suppliers that we consider to be key suppliers — to bring them closer into the overall operation of the company, bring them much closer into the design process — to leverage their resources for our design and execution of our solutions. Everyone understands what's been done to get to that target cost. If it comes down to beating up the suppliers — but still working with them to reduce cost so that we can hit target cost

— they are much more amenable, because it's not just coming at them with the idea that 'you need to reduce costs because we need to have it lower.' They understand that we have done everything that we can and they need to look, ideally, within their supply chain. It's not a matter of taking costs out of them, but really helping them to reduce our costs so that it is a win-win for both."

"We have to learn how to manage risk — and the only way to do that is by learning to write better contracts. We have contracts out there that are putting our organization in a very difficult situation in terms of risk — we need to think strategically and manage that risk by writing better contracts."

Strategic Cost Reduction

Corporations will continue to view cost reduction as a means to maintain the bottom line and reach ever-changing company goals. Finding ways, both in the domestic and international arena, to secure key materials at a cost that provides the company advantages in pricing, time, and delivery will become the standard by which purchasing officers will operate.

In today's economy, the driving force behind global competition can be summarized in a single equation:

Value = (Quality + Technology + Service + Cycle Time) / Price

Although purchasing has a major impact on all of the variables in the numerator in this equation, many supply management executives are focused on the denominator: price, and its primary driver, cost. A major responsibility of purchasing is to ensure that the price paid for an item is fair and reasonable. The price paid for purchased products and services will have a direct impact on the end customer's perception of value provided by the organization, thereby leading to a competitive advantage in the marketplace. By delivering value through continued progress in reducing costs, and thereby improving profit margins and return on assets for enterprises, purchasing is truly becoming a force of its own within the executive boardroom.

Evaluation of a supplier's actual cost to provide the product or service, versus the actual purchase price paid, is an ongoing challenge within all industries. In many situations, the need to control costs requires a focus on the costs associated with producing an item or service, versus simply analyzing final price. In these cases, innovative pricing approaches involve cost identification as a process leading to agreement on a final price. In other cases, however, purchasing may not

need to spend much effort understanding costs and will focus instead on whether the price is fair given competitive market conditions.

Another area of cost reduction is through outsourcing manufacturing and services. One of the respondent firms recently outsourced its entire audit group. Outsourcing permits an organization to focus more resources on core areas.

To achieve the level of cost reductions required to maintain a competitive position will require more cooperation between firms to establish joint cost-reduction strategies. These process improvements can include productivity improvements and labor cost reductions. Another way to reduce costs is through productivity enhancements; respondents cited several of these coming from logistics innovations, better management of key materials, and more efficient packaging techniques.

Strategic cost management approaches will vary according to the stage of the product life cycle. Various approaches are appropriate at different product life cycle stages. In the initial concept and development stage, purchasing will often act proactively to establish cost targets. Target costing/target pricing is a technique developed originally in Japanese organizations in the 1980s to combat the inflation of the yen against other currencies. Target pricing, quality function deployment, and technology sharing are all effective approaches for cost reduction used at this stage.

As a product or service enters the design and launch stages, supplier integration, standardization, value engineering, and designing for manufacturing can improve the opportunity to use standard parts and techniques, leverage volumes, and create opportunities for cost savings. During the product or service launch, purchasing will adopt more traditional cost-reduction approaches, including competitive bidding, negotiation, value analysis, volume leveraging, service contracts focusing on savings, and linking longer-term pricing to extended contracts. As a product reaches its end of life, purchasing cannot ignore the potential value of environmental initiatives to remanufacture, recycle, or refurbish products that are becoming obsolete. As an example of this, print cartridge manufacturers such as Xerox and Hewlett-Packard have developed innovative technologies that allow customers to recycle laser toner cartridges, which are subsequently refurbished and used again, eliminating landfill costs.

Involving Suppliers in New Product Development
The major benefits from cost-reduction efforts occur when purchasing is involved early in the new product/service development cycle. When sourcing decisions are made early in the product life cycle, the full effects of a sourcing decision over the product's life can be considered. When purchasing is involved later in the product development cycle, efforts to reduce costs have a minimal impact because the major decisions regarding types of materials, labor rates, and choice of suppliers have already been made.

Comments from the focus groups with regard to this topic included:

"In the past, we allowed engineering to determine the specifications, the materials, and the supplier. In fact, the supplier already produced the first prototype! That's when they decided to call in purchasing to develop the contract. How much leverage do you have in convincing the supplier to reduce costs when the supplier already knows they are guaranteed the business, and they have already sunk money into a fixed design and tooling for the product?"

"We can no longer support all the resources necessary to design and implement solutions, and so we need the expertise of this key group of suppliers. Bringing them into the design process early enough so they can see the parameters of a particular piece of equipment, understand what the cost issues are, understand what our target pricing is, and what we have to do to get to that target cost can free up a great deal of creative energy from the suppliers in terms of contributing to solutions that can reduce costs."

Standardization of Part Numbers and Processes
Depending on where the product is with respect to its position in the portfolio matrix, a strategic focus in terms of price versus cost may be required. In general, low-value generics, in which a competitive market with many potential suppliers exists, should emphasize total delivered price. There is no need to spend time conducting a detailed cost analysis for low-value items that do not produce significant returns. Greater returns can be obtained by having users order these products or services directly through supplier catalogs, procurement cards, or other e-procurement technologies. Commodities are high-value products or services that also have a competitive market situation — for example, computers and technology are certainly in this category. These types of products and services can be sourced through traditional bidding approaches that require price analysis using market forces to "do the work" and identify a competitive price. With greater standardization being introduced in many industries, products once considered as "critical" are being moved into the

"commodities" quadrant — allowing further leveraging opportunities to accrue.

Comments from the focus groups with regard to this topic included:

"There's going to be even more consortiums put together with different organizations to determine what their needs are at specific plants, for widgets or digits in an effort to get the suppliers to bid on that particular product for all of them. Even as an internal situation, we've got so many different business processes and process flow maps built for material delivery — same material, different site, different process."

"A 'product simplification task force' pushes divisions to use standardized parts, even if that means a redesign. For example, a new low-end server was redesigned to accommodate the rear panel where cords connect, used in PCs, instead of the specialized part used in its predecessor. Eliminating the customized part saves $50 per unit on these servers — and we sell 22,500 of these machines in a year. We made a hundred such moves across the company. In the process we have reduced inventories by a third, slashed suppliers by half, and pinched pennies at every turn. The big prize now — and the really hard work — comes from transforming the entire end-to-end operation. You cannot hope to thrive in the IT industry if you are a high-cost, slow-moving company. Supply chain is one of the new competitive battlegrounds. We are committed to being the most efficient and productive player in our industry."

Integrated Systems and Collaboration

Increasingly, companies are looking to purchasing to establish greater integration with suppliers, both through systems integration, as well as through greater integration in on-going programs, such as new product development, co-location, and vendor-managed inventory systems. Integration can be defined as: "The process of incorporating or bringing together different groups, functions, or organizations, either formally or informally, physically or by information technology, to work jointly and often concurrently on a common business-related assignment or purpose" (Monczka et al. 2004). Although this is a very broad definition, it implies certain elements. First, that people are coming together to work together on a problem. It is no surprise that "two heads are better than one" when it comes time to solve problems, but the idea of bringing people together *with a different point of view* to solve a common problem is not always commonly applied in

many enterprises. This is especially true in a global environment, with team members located all over the world. Thus, another caveat to this definition involves doing so either informally, physically, or by information technology. Finally, integration requires that people create a common understanding of the end goal or purpose; this is an important aspect to the success of integration strategies.

Integration can occur in many forms. It can occur through functions, such as in sourcing or new product development teams. It can also occur through cross-location teams, where people from different business units are brought together. Finally, the most difficult and challenging sort is cross-organizational teams, which involves working with suppliers, customers, or even both concurrently. Bringing different people to the table to work on a problem can provide significant benefits. People will generally provide input in the form of:

- Information
  - About their markets
  - About their own plans/requirements
- Knowledge/Expertise
  - Product/service knowledge and technology
  - Process knowledge and understanding of how to "make it work"
- Business Advantages
  - Favorable cost structures that can benefit customers
  - Economies of scale, which can also help reduce costs
- Different perspective on an issue, which may drive a team to look at the problem from a new perspective that they hadn't thought of before

Some of the different methods that purchasing will apply to achieve integration include:

- Cross-functional or cross-organizational committees/teams
- Information systems such as videoconferencing and Web mail
- Integrated performance objectives and measures that drive a common goal
- Process-focused organizations that are dedicated to continual process improvement
- Co-location of suppliers and customers in the same location
- Buyer/supplier councils that provide input and guidance to a steering committee

Comments from the focus groups with regard to this topic included:

"[Supply management] has to be able to present what our value is to our companies or we will be outsourced and we'll be out working for someone else to provide that service. That is exactly what we do for the small colleges — as a purchasing consortium we bring together their MRO stores and collectively bring together the purchasing power that will enable them to achieve lower costs."

"I hear companies — some of the biggest companies in the world, around this table — and they're talking about their problems with inventory management. And yet at the same time, we're implementing these huge systems where we need more training than ever, and we're expecting people now to do more with less."

"We've got to not shy away from good materials management. Probably an older terminology, but it is tremendously important in the supply chain. And by that I mean thinking about the whole life cycle of designing for manufacturability, new product introduction, looking at the life cycle, looking at the obsolescence risk and implications, whether to deploy inventory, how to position inventory, how to use logistics to a good advantage."

"Something we've done similarly is instituted a bi-weekly teleconference for the entire product planning, engineering, and supplier management group organization, which is not all supply chain, but it's about 1,300 people, and we have a teleconference on Mondays and Thursdays. The Monday one is more general to the entire organization. The Thursday one tends to be more specific to supplier management. You can only do so much in a teleconference or in 45 minutes, but at least it raises awareness and most importantly, brings people together who might not be aware of what's going on in other parts of the organization that relates to what they're doing. We also use these opportunities to go over scorecards and quarterly survey results."

Cross-Organizational Integration
The following comments suggest that supply management is still largely viewed as a silo in many organizations. Supply managers must be able to communicate and sell the benefits of procurement to people outside of their function to be effective.

Comments from the focus groups with regard to this topic included:

"Right now supply management is just a purchasing function. There is a separate organization for logistics and a separate organization for planning. So we're not really linked together. That's another issue that prevents us from getting our product to market quickly. We're trying to get more finance people into our organization. Currently we do not have expertise to do accurate cost modeling, so we're guesstimating costs without a true understanding of the repercussions."

"We've gone through an enormous centralization within supply chain, into one central supply chain organization, bringing together resources that were separate within engineering and perhaps even more significantly, all the manufacturing resources within the company."

Greater Focus on Total Cost in Supplier Selection
In today's ever-changing market where the competitive edge can be won or lost based on the cost and time delivery of a major shipment, supply managers must continue to evaluate, not only the supplier, but also quality in relationship to price.

Any effort to redesign the supply chain requires a fundamental shift in thinking by both managers and employees, and it may take years to fully mitigate the "price-based" thinking that is ingrained in traditional supply management culture. Many of the "low-hanging fruit" require less effort, and coordination and can be implemented simply by focusing on internal cost-reduction efforts that span one or two functional groups. These include leveraging purchasing volume with suppliers, supplier consortia, design for manufacturability, value engineering, and standardization.

Continual Improvement Beats Getting the Lower Prices
An important step on the evolutionary ladder is a new generation of cost management initiatives in which three or more supply chain functions or partners work together in an open dialogue to identify cost reduction process improvements. Examples include global supplier development, customer-relationship management, target pricing, sharing of cost savings and technology roadmaps, and engineering change controls.

Interest in such initiatives is strong. At a mining company, executives realize that the opportunities for cost savings lie not only in reducing prices paid for supplied goods and services, but also in the way that operations specifies maintenance, equipment, and operating specifications for these goods and services. And when an automotive executive first suggested to

suppliers that he was open to sharing cost savings ideas with them, he was inundated with cost savings ideas.

Supplier Selection and Evaluation Scorecards
Experts agree that no one best way exists to evaluate and select suppliers, and organizations use a variety of different approaches. The overall objective of the supplier evaluation process is to reduce purchase risk and maximize overall value to the purchaser. An organization must select suppliers it can do business with over an extended period of time. The degree of effort associated with the selection is related to the importance of the commodity as reflected in the commodity portfolio matrix. Depending on the supplier evaluation approach used, the process can be an intensive effort requiring a major commitment of resources (such as time and travel budget). Formal supplier evaluation can involve a team of experts from purchasing spending several days at a supplier's workplace. Scorecards have also been shown to be a major predictor of success in integration of suppliers in new product development efforts. In such efforts, qualitative information related to technology roadmaps and engineering capabilities will weigh heavily in the mix of parameters evaluated (Handfield et al. 2003).

Comments from focus group participants with regard to this topic include:

"Our scorecard is shared with the suppliers. The suppliers are aware of what we're measuring. So when we share that information, we tell them what we're going to keep score on. We share the information at quarterly meetings. We bring all the suppliers in, sit them down, blind the names and say, 'Here's what everybody's doing.' And you as a supplier — you were Supplier A or B or C — you could see where you fit amongst the suppliers."

"The purchasing profession must be able to show return on investment by not going to the cheapest price. There are other drivers, cost of quality, and other elements that demonstrate that the lowest price is not always the cheapest. Purchasing has to look at the total cost of ownership, not just initial price. That's where we need a percent cost reduction. Is it going to cost more to maintain the supplier/process over the life of the product?"

"We did a lot of scorecarding to evaluate tangible cost factors and to find what value was being added by supply managers and the supply management group to the supply chain. The most important measure was cost savings. We took a look at things like PMI programs, how many PMI

contracts did we put in place? What percentage of dollars were we spending on what contracts? We also tracked internal measures. What are the cost savings per person and that kind of value from a COI, ROI, and COA perspective?"

"The complexity of the cost-benefit analysis that we are called on to lead and to evaluate is much more difficult than ever before."

Optimization of the Supply Base
Along with supplier selection, companies are also being asked to lead supply base optimization efforts, focused on reducing the size of the supply base, and in some cases, delegating responsibility of smaller first-tier suppliers to large first-tier suppliers (thereby decreasing the number of first-tier suppliers, but increasing the number of second-tier suppliers).

Comments from focus group participants include:

"The analysis of potential suppliers' circumstances is also kind of a new area for us and some cases we struggle with — particularly as we get involved with more new companies in the larger arena."

"We've been focusing on reducing the number of suppliers we manage directly to a small group of key suppliers, those that we consider to be strategic and allowing the other suppliers to be managed by our contract manufacturers."

Strategic Versus Tactical Purchasing Orientation
The traditional role of the buyer who fills out purchase orders, sends out RFQs, and processes paperwork is rapidly disappearing. Increasingly, supply management professionals are being called on to interact with management on their teams about the company and industry future; acquiring the best products and services; analyzing the total cost, value, and risks; and improve contracts to drive down costs and improve value. The question of "How do we manage within these more sophisticated approaches?" arises. Certainly this question will need to be asked more often during strategic planning sessions.

Nurturing the creativity of suppliers in coming up with a new solution, their willingness to invest resources to further company objectives, as well as the overall capability of the supplier to reduce costs, are only a few of the determining factors for supplier selection in the future. Supply management will not be just about bringing parts in anymore. It will be about codevelopment with suppliers and sharing resources to reduce costs end to end. Essentially, suppliers will have to assess current capabilities and be more of team

players in cost assessment. Purchasers will automate the transactional part of their jobs, which frees up more time for strategic issues.

These strategies are more likely to be developed in purchasing teams that will leverage internal functions *more* and manage external relationships *better* to create the most competitive supply chain strategy for the company, and ideally within the entire industry. Leveraging internal functions will require a greater integration of sales and marketing, and greater cross-functional and upper management communication in order to make business decisions that align with the corporate strategy.

The two primary factors that will continue to drive the purchasing arm of companies are cycle time reduction and cost over time — which includes cost of poor quality. At the end of the day, both are needed to get the products to market quicker.

Focus group comments included:

> "Instead of silo buying, where I buy this and you buy this, we're doing more cross-functional buying where people who are specialized in different commodities will come together with business partners on teams to make a large buying decision."

> "In the Tom Cruise film, 'Minority Report,' the Department of Crime Prevention collected data in various fashions about crimes and murders that were going to happen. They pieced this together and then sent a special squad of experts to capture the villain before the crime had been committed. I think demand chain management is going to be a bit like that. We'll put together pieces of the jigsaw puzzle to determine what sort of special squad — suppliers, vendors — you need in order to plan a solution before it happens or as it actually happens."

Outsourcing Services: A Non-Traditional Purchasing Area

As more services are outsourced, purchasers will become more involved in non-traditional purchasing areas. These non-traditional areas include software contracts, consulting agreements, site licenses, maintenance agreements, etc. These outsourcing agreements will require new contracting skills different from those used to acquire materials. Finally, these outsourcers need to be monitored, and many contracts will include service level agreements (SLAs) that specify the required service levels.

With this trend to outsourcing, supply managers are evolving from materials and logistics managers to being more effective demand (response) managers. This means getting away from materials requirement planning (MRP) and incremental purchasing with constant analysis of the differences between negotiated buys and actual buys, and moving toward demand-driven fulfillment. In order for procurement to win against the increasing challenges of cost management, buyers and suppliers will have to be able to determine customer demand in such a way that leads toward absolving obligations to commit to purchases beforehand.

Fulfilling orders and meeting timelines are driven by cost. Therefore company profits must be a part of supply management's goal orientation. As the cost of doing business continues to rise, suppliers that provide more flexible services-based delivery in place of the rigid process with no scheduling changes will win contracts. More companies are emphasizing supply management's involvement in the so-called "non-traditional" areas of spending. However, the fact that non-traditional purchasing spans areas that have been considered the domain of other functions for many years means that the process must be modified to include the input of these stakeholders, so that ownership of the outsourcing process can be established across groups. This is a key requirement for successful deployment of any successful outsourcing strategy in supply management.

Successful outsourcing requires that an internal client department, such as finance or information systems, initiate the involvement of purchasing in non-traditional spending decisions. Organizations may also initiate purchasing involvement via some form of control system. For instance, an internal audit of payments and matching purchasing orders may reveal a significant amount of "backdoor buying" occurring, which bypasses the formal purchasing process. Furthermore, in many outsource decisions purchasing is an afterthought.

Before any type of purchasing involvement can occur in the non-traditional spend area, purchasing must carry out a comprehensive spend analysis across all strategic business units and functions, including all forms of spending across the cost-of-goods sold ledgers. While most organizations have a good handle on their major commodity spends, capturing non-traditional purchase volumes may be difficult. Some organizations in the process of implementing enterprise resource planning systems (such as SAP, Oracle, and PeopleSoft) are being forced to identify these levels of spending. These systems will aid in standardizing databases and help automate the process of analyzing all purchasing data.

However, before these systems can be used, a consistent understanding across all of an organization's operating units is required to introduce value-added purchasing in non-traditional areas. A key activity at this stage should be to look for commonalities of activities and materials among sites or business subunits to identify opportunities for leveraging. This may require a commodity classification coding scheme and an internal organization coding scheme to aggregate this information.

Once the data on total spend is aggregated, a team assembled from the relevant divisions perform a strategic analysis of spend patterns in non-traditional areas. The team includes key stakeholders from the different groups, who can help in identifying major areas of non-traditional spending that have potential for savings through purchasing involvement. It is important to note that this stage of the process involves considerable research on the part of purchasing and other functions, to identify these areas. Commodity/ services groups should be "Paretoed" according to two major categories: (1) volume/potential return and (2) ease of attaining cost reductions/objectives. The deliverable at this stage is a portfolio of non-traditional purchases, with the objective of targeting those purchases that have a high potential for immediate savings (in the form of leveraging, headcount reduction, simplification, etc.) and that also have a high probability of success.

It is important to note that in assessing the different types of services and non-traditional purchases made by the organization, not all forms will be classified as "strategic." Moreover, there may exist certain types of purchases that are best made by internal clients, as they are relatively standard, and the client is utilizing sound purchasing practices in awarding the business. In deciding which types of commodity/service groups to address, purchasing should target those purchases that exceed an agreed-upon baseline level, and which offer potential elimination of non-value-added provisions that have the potential for significant cost savings and/or competitive advantage.

Focus group comments include:

"You've got a supplier that is supplying that same part number to five facilities in a different manner: different container sizes, different delivery methods. I think we're going to see that standardized, that as a buying business we will put our bid out there and show qualified suppliers what we need. It could evolve into suppliers bidding to deliver for tomorrow and other suppliers for delivery the next day."

"With cost as a key component, finding new ways to better process and deliver orders becomes part of the standard operating procedures. With all things considered, outsourcing or using third-party operations must be considered."

E-Procurement Systems

E-procurement systems provide purchasers with ways to reduce transaction costs, automate the purchase process, and reduce the total costs of acquiring materials and services (Antonette et al. 2003). Most companies spend too much time and too many resources managing the ordering of goods and services, particularly lower-value items. Some purchasing departments spend 80 percent of their time managing 20 percent of their total purchase dollars. A. D. Little, for example, reported in a study of maintenance, repair, and operating (MRO) purchases, that while the average MRO invoice was $50, the total cost of processing an MRO transaction was $150. In another example, a U.S. government agency reported that in a single year it processed 1.1 million transactions at an estimated cost of $300 per transaction! How can organizations create value through their purchasing process when they spend more time and money processing orders than what the values of the orders are worth?

A CAPS Research study by Trent and Kolchin addressed how organizations are improving the purchasing process by reducing the time and effort associated with obtaining lower-value goods and services. The study involved 169 randomly selected organizations, of which 77 were industrial companies and 92 were non-industrial companies or organizations. Some of the key enabled processes improved through e-procurement included the following:

- ❑ Online requisitioning systems from users to purchasing
- ❑ Procurement cards issued to users
- ❑ Electronic purchasing through the Internet
- ❑ Longer-term purchase agreements
- ❑ Online ordering systems to suppliers
- ❑ Purchasing process redesign
- ❑ Electronic data interchange
- ❑ Online ordering through electronic catalogs
- ❑ Electronic collaboration with suppliers

Five years ago, purchasers believed that many of their business transactions would occur on the Web through online markets and exchanges, eliminating the need for face-to-face contact. Many of these business models did not live up to their initial promises. So many of these dot-coms, which were the darlings of Wall Street during the late 1990s, became the so-called "dot-bombs" of 2000 and 2001. Despite these initial failures, the

movement of business-to-business (B2B) commerce will continue to move to Web-based solutions. Recent research by Forrester Research, Inc. (2003) indicates the survivors are gaining strength and making more realistic assessments of their capabilities.

Presented with a deluge of information on dot-coms, servers, B2B requirements, and online customer and supplier linkages, buying organizations are much more cautious and critical when evaluating these new solutions. Today, organizations are focused on understanding and pilot testing a host of new purchasing technologies. Many purchasers will at some point become involved in the development of different types of purchasing information systems, and knowledge of information systems applications is necessary in order for future managers to realize purchasing performance objectives.

Related focus group comments include:

> "Technology is changing very quickly. And there's a real need to integrate our systems with our suppliers' systems in everything from water replacement, water entry, and transit receipt to payment. And even if we didn't necessarily want to move that fast, we really have to respond to what's going on with our suppliers."

> "Today it's like white space. Figure out what your ERP does not do and supplement it. It just becomes the way you do business. You know if it doesn't make sense to code pens in your ERP catalog, just put it in an e-catalog."

Internal Systems Integration and ERP

As supply chain members increasingly work together, integration must occur between different functions that are internal to the organization (purchasing, engineering, manufacturing, marketing, logistics, accounting, etc.), as well as between parties that are external to the organization (end customers, third-party logistics, retailers, distributors, warehouses, transportation providers, suppliers, agents, financial institutions, etc.). Both types of integration present their own set of challenges. Internal strategic integration requires that all members within a company use the same information system that spans across business sites and functions. This is most often accomplished through a companywide ERP system that links these internal groups together via a single integrated set of master records. External integration refers to the systems that link external suppliers and distributors to the focal company. This is needed to forecast demand and balance the levels of supply and demand at different points in the supply chain.

Focus group comments related to this topic include:

> "To think that a purchasing professional goes out to form an ERP user's community is beyond the scope of what anybody would ever think of as a traditional purchasing function. So with that being said, within my own organization, finance and accounting determined four years ago that we would use System A, and six months after I was hired, we decided to use a different one (System B). We had to do that because we run distribution centers for our products. At time, we didn't have any sort of infrastructure for warehousing or pick list management. We did not have enough organizational support to make the System B implementation successful, and all of a sudden, we were also the repository of all this financial information that needed to be dumped correctly into the financial statements, and we had no accounting support because we were in the midst of their System A implementation. The implementation was such a mess that I would never want to go through that again in my life. Once the ERP people sell you the software, they're done unless you want more licenses. And that's what they come back to you for is more licenses."

> "I did one ERP implementation, but you have to understand your business, and everybody that we had on our team understood their area so well that when we went live, we really went live. But I will also say that once you go live, the downside is there's no real book to say, you can also do this and this. You've got to really get in there and do a lot on your own to find out other functionalities that are in there, but if you go with the logic that 'it should be able to do this,' then you'll find it."

Capturing Purchasing Performance

Many managers interviewed often complained about the problems associated with convincing CFOs of the importance of supply chain management initiatives. Recent research, however, suggests that this is about to change. A recent study conducted by Accenture, Stanford, and INSEAD (2003) and documented in a white paper found that 89 percent of senior executives at leading companies view supply chains as critical or very important to their company and industry, and 89 percent also agreed investments in supply chain capabilities have increased in the last three years. Further, the 9 percent of companies identified as leaders in supply chain management were found to demonstrate significantly higher financial performance than the random probability of 4 percent. Some of the most important financial metrics impacted included cost reductions, enhancing revenue, and reducing working capital.

Instead of beginning with a menu of strategies that can be pursued in the supply chain, and picking off the ones that are the quickest and easiest to implement, the challenge is rather to begin with the variables that mean most to financial managers — those that comprise the fundamental equation of economic value add (EVA). EVA is a driver for stock price, which in the end is what determines whether CEOs succeed or fail. Once managers understand the net impact of different "levers" of purchasing performance on the critical elements of revenue, cost of goods sold, working capital, and assets, they can begin to map a strategic approach for pursuing different strategies, both in the short term as well as in the long term.

Focus group comments include:

"One trend I'm seeing is making cost savings impact with profit and loss. This whole cost savings must be believable to our internal customers. And that goes to this approach to where it was decentralized, there was a lot more control on it. They could see and control all those things. And now that it's more centralized, we have to ask the question: 'Where are those cost savings going and how does that impact my P&L?' If we cut percent costs out of what we spend in our travel with our airlines, then their budgets don't change and so they don't see the cost savings impact unless we cut those budgets by that percentage."

"We tried to demonstrate where procurement will bring value. To bring value, you have to bring visibility. People talk about cost savings. We built a database out there for people to look at and broke it up into four categories: cost savings, cost avoidance, recurring savings, and capital savings. And by doing that, everyone is allowed to challenge those savings. We also have a set of auditors internally and externally that audit my reported savings to the business. My books are open for anyone and everyone to look at. This brings credibility to the process. By doing that, we were able to take those savings and those avoidances — and we are very careful when we separate these differences, using a set of guidelines — and allow people to show financially how their various cost centers, projects, etc. are running."

Need for General Business Skills
Supply managers must be in tune with what is happening, not only in their business but in the entire marketplace that surrounds their business, from both a supplier and final customer perspective. These broad-based business skills required of purchasers will require

them to act and think more like entrepreneurs. Entrepreneurs constantly monitor their markets looking for new opportunities. Effective supply professionals must begin to act the same way and analyze risks and opportunities.

For the supply professional, these opportunities often involve understanding the needs of the customer and matching this with supplier capabilities. For example, long-term product demand forecasts must be aligned with logistics forecasts, supply network forecasts, and global and regional facility planning reports, as well as capabilities. When a full picture of these three structural elements are combined, an annual sales and operations plan is generated that includes critical assumptions based on these long-term forecasts. In turn, a pro forma operating plan is generated, with multiple parties in the supply chain assessing its impact from a market, supply chain, and financial perspective. Each element should have an equal say in assessing its impact on key elements of technology, supply and logistics strategy, and financial metrics, bearing in mind the total impact on the customer. In this manner, in an iterative fashion, an executable sales and operations plan begins to emerge.

Once the plan is established, a set of impact statements should be forthcoming, which communicates in clear and certain language the effect of this plan in terms of demand forecasts, capacity, transportation requirements, supply market requirements, and customer priorities. These impact statements should be shared with critical internal functions (sales and distribution), but also with critical suppliers and logistics channel partners. As the year progresses, on a quarterly basis, critical customer metrics, supplier scorecard metrics, and sales/customer satisfaction metrics should be tracked and reviewed in a "balanced scorecard" dashboard. This ensures that performance in all areas is not suffering due to an inappropriate strategy occurring at the expense of one or more other elements in the integrated strategy.

By effectively linking these three elements of demand and supply planning, organizations will be better prepared to deal with the uncertainties of a difficult market climate.

Focus group comments include:

"Individuals need to know where the organization, the products, and the suppliers fit within the business system that they're in. They should also have a true understanding of who the end customer is through closer relationships with customers to understand their needs."

"Today, there is confusion in the purchasing profession coming from a couple of perspectives. In the supply chain area, purchasing is recognized as an integral part within the organization. There is an expectation at the top that the current organization can grasp all of what we do."

Supply Chain Business Process Focus

One of the fundamental elements lacking in today's supply management function is a problem with execution of strategies. Implementing strategies means putting a process in place to ensure execution — handing it off to "get it done" doesn't work. Business process must be aligned with high-level strategic goals through direct, tangible performance metrics that track results. Focus group participants noted that once a process is established, appropriate resources must be put in place to educate everyone on how the process works. In researchers' discussions with executives, many noted that supply management strategic initiatives are often undertaken by enterprises that have failed to consider the impact on their employees, not to mention their customers and suppliers. Deploying an e-procurement or supply base rationalization effort without adequately considering the underlying business process that is required can result in devastating effects. Every strategic initiative must be deployed using a well-thought-out business process. Thus, as companies prepare for the integrated supply era, how can supply management executives lay the groundwork today that will make their organizations accept new ways of doing business?

Well-defined business processes are:

- designed (or re-designed) by cross-functional stakeholders
- linked to business and functional strategies
- supported with adequate resources
- deployed through effective training
- linked to employee performance assessment

Some of the common barriers to effective implementation include:

- Crossing functional boundaries results in lack of ownership.
- Processes may be well documented at the corporate level, but poorly understood across divisions and geographies.
- Information systems may be at odds with new business processes.
- Full-time versus part-time team assignment results in degrading performance.
- Information overload prevents focus.
- Lack of senior executive support hinders implementation.

Focus group comments include:

"In our business we've got people who really understand what I'll call the APICS side of it — the systems, the 'how process works' piece of it. And then you've got another school of people who really understand the manufacturing elements of it —- the physical 'how do you do it' processes. The blend of those two skills to me is invaluable, and it's few and far between that we really develop those two skills together, that blend of 'I understand conceptually how the business is supposed to run; physically I understand the packaging logistics, the trafficking, what it takes to actually make those things work,' and somehow to build a program that allows us to, not only conceptually but experientially build those things. And so that covers that element. And then the leadership piece, I think, is far and away probably the area, we as an overall business environment, lack — understanding what leadership is about, building leaders from within, their skill sets, and what individuals want to contribute to the organization."

"The other attribute is having some knowledge and skills in project management, because in our technically oriented business, there are probably more project teams than there are hours in the day. Every — every buyer and planner is involved in just about every project in the facility, whether it's a capital project or some kind of technical project or a new product's introduction. So knowing how to participate in a project (and management in a project team environment, knowing how to be a leader or a facilitator in those environments) is critical to the success of supply chain and planning and purchasing people."

Building Internal/External Customer Relationships

Purchasing groups will have more of an expansive role inside the corporation, not only in acquisition but also in the contracting role. Customer management, in addition to supplier management, will also be important because of the role played with sales teams. Supply managers are assisting bids with sales teams, winning bids with sales teams, and co-writing sales agreements.

Results from the Delphi groups in this study suggest that many supply chain problems have their root cause in a lack of communication between the four critical functional areas of marketing, logistics, operations, and supply management. In order to ensure well informed decisions are made regarding customer requirements,

demand forecasts, new product introduction, regional market conditions, and global logistics needs, organizations need to develop an infrastructure to collect, disseminate, and consolidate market and supply information. This is not a random process, but in fact requires that executives *dedicate the resources* to ensure that the process is carried out on a regular basis.

Key elements of this process involve developing both qualitative and quantitative elements of market intelligence. Formal demand planning methods such as forecasts and market analysis must be validated and indeed corrected based on competitive market intelligence, collected through direct feedback from sales representatives, product development planners, and logistics specialists. All pictures of the future market requirements, including customer order winners and qualifiers, regional demand forecasts and market conditions, product development performance specifications, and global logistics requirements must be established.

In supply management, formal commodity research using secondary data, assessing supply market conditions through supplier interactions, and tracking pricing data, etc. can help establish potential market/supply trends. However, such analysis must again be validated through direct engagement with key experts who reside in the supply base. As one manager noted, "I spend a lot of time hanging around plants, taking the engineers out to lunch, so that I can pick their brains on what is happening in the industry!" This type of informal dialogue is key to establishing an effective technology roadmap, as well as understanding supplier capability and capacity to fulfill requirements. Understanding the supply market is especially critical in periods of mergers and consolidation. The risks associated with not obtaining an early understanding of the changes in the supply base pose a great threat to the organization.

As this information is collected, it becomes the basis for a) long-term product lifecycle planning, b) sales and operations planning, and c) quarterly goals and objectives reviews. Each of these is a different planning and feedback process unto itself.

Focus group comments include:

> "I think our buyers and our procurement managers and material managers need to understand the whole of the operation, strategically looking at a project and planning it, understanding how business strives on a project, because each client has a different business driver. We have a client who wants to get to the market real quick. They

want to get to market three months ahead of the competitor; so where's the driver? It's schedule. We did a project for another company where eventually we all realized that their driver was cost. It didn't matter if they finished four months later than schedule. What's the optimum cost for the project? And, one, you have to understand your client's drivers and the buyers need to understand them, not the project manager — you do need a project manager as well — and gain a working knowledge of what they're buying. They don't have to be engineers."

> "Some of the trends that I see: My buyers need to be thinking more like business people; you know, increase customer support skills, improve communication skills, teamwork skills. When you go in and have to implement some of these accession processes, the buyer has got to have teamwork and accession skills, not just a 'three bids and a cloud of dust' mindset."

Cross-Functional/Virtual Teams

The pressure to improve, already intense, is expected to increase even more in the years ahead. Many firms are responding to this pressure by creating organizational structures that promote cross-functional and cross-organizational communication, coordination, and collaboration. In support of this effort, cross-functional sourcing teams have become increasingly important as firms pursue leading-edge purchasing strategies and practices.

Cross-functional sourcing teams consist of personnel from different functions (and increasingly suppliers) brought together to achieve purchasing- or supply chain-related tasks. This includes specific tasks such as product design or supplier selection, or broader tasks such as responsibility for reducing purchased item cost or improving quality.

Virtual teams are teams that join together to solve a problem then disband once the problem is solved. Participants from these teams can be located anywhere in the world and are asked to join because of their expertise in the problem requiring solution. In one of the focus groups, a senior supply manager indicated that his firm kept a worldwide list containing individuals' competencies and their participation on virtual teams. When a problem occurred a virtual team was put together. This team communicated via e-mail and if necessary, teleconferencing. When it solved the problem it disbanded.

When executed properly, the cross-functional sourcing team approach can bring together the knowledge and

resources required for responding to new sourcing demands, something that rigid organizational structures are often incapable of doing. However, in a classic work of 40 years ago, a researcher noted that groups and teams can accomplish much that is good, or they can do great harm. There is nothing implicitly good or bad, weak or strong, about teams, regardless of where an organization uses them.

Focus group comments include:

"Bringing other people in is tremendous. When we get into production engineering, we bring the suppliers in earlier, get to know how their production functions, and understand when they can give us data that we use to develop our engineering downstream. If we can't get that data in time, production engineering halts and the big, big sufferer is our construction. We need to give construction as much float in the schedule as we can."

"We have gone to purchase product teams and product realization teams. Both of them bring things to the table that are very beneficial. But you have to bring that team together. And it starts out as a core team, and then you have other resources that you call upon as you go through the process to bring in and ask the question: 'What do I have to do to provide the best contract, the best benefit to the end user? What knowledge do I need?' And then you draw upon those resources to maximize your understanding of the situation and to maximize the type of contract that you write to — to procure the product for service."

Global Sourcing Strategies

The greatest inroads into cost management will involve multiple parties across the globe — including customers, suppliers, and multiple internal business functions — to collaborate on improving the total cost of ownership; global information visibility and global material positioning; lifecycle costing; and collaborative forecasting. To be successful in today's competitive environment, global sourcing strategies are fundamental to success. Companies must be willing to buy where they sell and sell where they buy. Successful global strategies are only beginning to evolve, as they are often complex and difficult to implement, particularly given the new challenges posed by working in China and other developing areas of the world. To be successful, they must rely on a system of cost-driver identification, executive support, and access to reliable total cost data.

Working with global suppliers will require a greater focus on relationship management with suppliers in different parts of the world. For example, one automotive company outsources all body stampings to the subassembly level (Krause et al. 1999). A number of suppliers have co-located and constructed plants near its U.S. assembly operation, but this was done in some cases to provide access to other business with other automotive assemblers. In managing these new co-located suppliers, the company had to modify its traditional supplier development approach, which had worked well for many years in Europe. This traditional approach involved analyzing and telling suppliers what was wrong with their processes. This approach worked well in mature supplier environments, where the supplier really understood what the customer wanted. Because the customer and the supplier had worked together over a number of years, a type of "sixth sense" developed, wherein the supplier intuitively understood the customer's requirements. However, in the case of the U.S. suppliers, a very different approach was required. In Europe, the plants are established, and they have a group of suppliers who have a given level of understanding with respect to what the plant wants. In the United States, however, communication with domestic suppliers requires sharing and a "hands-on" support attitude — the company had to spend time asking them: "What is your corrective action plan? We will check on you from time to time. We need to suggest possible ways to put solutions in place. Which actions are more beneficial in a startup phase?"

Competing in the world market also requires a greater understanding of international laws and the political climate within various countries. Understanding and respecting customers can make or break a deal in many cases. A company must do its homework and develop well trained teams to deal with a new set of international issues that they are unfamiliar with. The recruiting of local talent to ease this transition will be critical. In addition, U.S. transplants will need to be trained on how to work with people, cultural issues, and other matters that can provide the needed edge to secure the deal.

Focus group comments include:

"We buy our things that are manufactured in Mexico or in China or wherever, and you don't see the industrial complexes that we've had in the past. So many people haven't quite made the switch. In some cases, we're still using the purchasing practices that go with manufacturing, and we need to move the purchasing practices that go with services."

Many buying organizations appear to be operating under the belief that by merely expanding the scope of their current practices, processes, and associated information systems to the far corners of the globe they will be able to establish and manage a productive global supply base. Some of these organizations are attempting to accomplish this task with limited face-to-face contact with their suppliers. These organizations must recognize that practices and processes that work in the United States may not be at all appropriate in other parts of the world. They should also recognize that while information systems are truly a key enabling factor that allow supply chains to be managed, they are not sufficient in themselves to guarantee a capable global supply base. And despite the impressions that some information systems suppliers attempt to convey, an organization's global supply base cannot be managed by "automatic pilot" regardless of the technology that is applied. As organizations seek to improve global supply base performance, the issue of supplier relationship management and supply market intelligence needs to be an important part of this discussion.

> "Supply chain people need to have the ability to find new technology and new suppliers that can drive the cost down with our commodity team. We've gotten to the point where we cannot reduce cost much more because it's driving our suppliers out of business."

> "Supply managers will need to look into low-cost countries and Eastern Europe and Asia to find other suppliers out there."

Increase in Alternative Training Methods

Corporations that encourage diverse training not only gain well trained employees, but find it also aids in retention, which contributes to cost savings. Training must be an on-going part of a company's mandate if it wishes to be a major player on the global market, and it must be geared to the industry in which the company operates. Where having general knowledge of many functions and procedures can afford some advantage, today's varying climate also demands expert training to deliver the greatest amount of service and goods on a consistent basis.

Delivery of this training can be developed at one location and spread throughout other locations by distance learning technologies. With the margin for profit loss being so narrow, a company cannot rely on the generalist as in the past. Special-trained personnel, with degrees to support the knowledge, have become the standard. Most of all, training defines the company's commitment to its employees.

Focus group comments include:

> "You've got to have a training and development program. What we've done now with our company is take a look at what ISM can do to help us develop a training program specific to our industry. Each company has had its own training program of some sort. We now have a subcommittee within our specific ISM industry forum that is looking at training and working with ISM to develop something specific in the industry for our specific needs. You get through the prerequisite training of how to be a buyer, how to be a tactical buyer, how to be a strategic buyer, how to do contracts, and all that is fine and dandy. Now, how specifically do you apply it to the industry?"

> "The customers with whom we interact on a daily basis have become very sophisticated and require greater details in all areas of service delivery."

Skills and Knowledge Requirements for the Purchasing/Supply Manager of the Future

Based on the focus groups, a number of different training requirements came out during discussions. Some of the findings included, but were not limited to: 1) more exposure to risk mitigation and legal issues within domestic and global environments; 2) better presentation and overall communication skills across employee levels; 3) an understanding of the concerns with using ERP systems; 4) new uses for e-procurement, such as reverse auctions; and 5) business strategy skills.

Table 5 shows the top focus group participants' responses *for requirements for supply management skills and knowledge.*

In the next section, each of the top skills and knowledge elements from the roundtables are discussed in detail.

Team Building: Leadership, Decision-Making, Influencing, and Compromising

Based on the focus groups and this research, it's evident that the supply management professional needs to make decisions. Being at the center of internal customers, suppliers, and management requires today's supply manager to be decisive. There is always the uncertainty associated with making any decision and it involves balancing the needs of several stakeholders. This means that supply managers must take a leadership role on teams and individually within the department in

Table 5
Top Training Requirements Referenced by Focus Group Participants

Top Training Requirements	Total References	KC	BOS	PHX	RDU
Team Building: Leadership, Decision-making, Influencing, and Compromising	66	6	25	13	22
Strategic Planning Skills: Project Scoping, Goal Setting, and Execution	58	7	21	9	21
Communication Skills: Presentation, Public Speaking, Listening, and Writing	48	6	3	6	33
Technical Skills: Web-Enabled Research and Sourcing Analysis	42	13	7	6	16
Broader Financial Skills: Cost Accounting and Making the Business Case	40	6	9	9	16
Relationship Management Skills: Ethics, Facilitation, Conflict Resolution, and Creative Problem Solving	37	13	1	5	14
Legal Issues, Contract Writing, and Risk Mitigation in a Global Environment	36	7	6	6	17

making these tough decisions. Furthermore, purchasers are expected to take the initiative in recognizing problems and opportunities and taking action to solve them.

This environment is very different from tactical and routine work, which will no longer be a specific function within the purchasing organization. With the growing emphasis on outsourcing, purchasing will now be leading teams represented by internal customers, suppliers, and external customers, to bring to bear their skills and knowledge to add value. The traditional focus on price-based negotiation is disappearing; people that will remain in purchasing functions will have to be business-oriented individuals who are willing and able to understand the entire supply chain, internal requirements, and external requirements; effectively manage merger activities that require supply base integration; and exploit supplier technologies and capabilities to add value. The role of the supply manager is changing to focus on improving integration across internal functions, through to the customer, and deeper penetration across multiple tiers of the supply base. As such, supply managers will need to have a broader range of knowledge spanning the end-to-end supply chain, including changes in market and business conditions, supply market trends, and customer requirements. Financial acumen, negotiation skills, supplier evaluation skills, Internet literacy, and strategic thinking are all important skills for supply chain managers today and in the future.

As e-procurement technologies are implemented, the need for transaction-focused planners and buyers will dwindle. Instead, supply managers will be asked to lead category management teams, which are responsible for conducting supply market research, project management, goal setting, and execution of a category (commodity) strategy. An increasing number of category teams are focused on non-traditional and services categories, including information technology, professional services, travel, document management, facilities management, payroll, human resources, accounts payable, and multiple other areas that are candidates for outsourcing. A category team is often composed of personnel from manufacturing, product design, process engineering, marketing, finance, and purchasing. The personnel involved should be familiar with the commodity being evaluated. For instance, if the team is tasked with purchasing computers, then users from information systems should be included. If the team purchases vehicles and vehicle parts, then it would be a good idea to include maintenance managers who are familiar with the characteristics of these commodities. In general, the more important the commodity, the more likely that cross-functional members and user groups will be involved. Together, the commodity team will develop a commodity strategy that provides the specific details and outlines the actions to follow in managing the commodity. Strong skills in team building, leadership, decision-making, influencing internal users and suppliers, and compromising in reaching a team consensus are therefore critical skills found in individuals who will succeed in these roles.

"The role of the purchasing function is becoming more strategic. An MBA candidate, with a technical degree in the industry we're in, accompanied by a focus in business or supply chain, will be extremely valuable. I think having more financial acumen is important in this role —

you don't have to be an accountant, but you should have some knowledge of balance sheets and P&Ls and know the meaning of cash flow as well as understand the impact your function makes on the business. The ability to do project management, research, and troubleshoot problems is a very critical skill. It's important to what's going on in the world; to have some sense of the different cultures can be helpful. Most businesses are global, and at some point you're asked to deal with either suppliers or your own business globally. We're looking for people that are promotable, so it's not just a skill set of the moment, but rather people that can grow in your organization and be leaders and managers and do more."

"The global procurement organization will need a much higher level of expertise and understanding of purchasing goals and the ability to operate at a strategic level."

"Leadership is a bigger picture. It requires someone that has a vision and can see the whole picture. I think about it as a boat. You can either be looking at where you've been on the back end of the boat to see what you've done or you can be looking forward and saying, 'Yes, we haven't done it before, but what's possible? What could we do?'"

"People operate from a standpoint of courage to live and are willing to take a little bit of risk, and I think with those basic attributes, you can go out and learn."

Strategic Planning Skills: Project Scoping, Goal-Setting, and Execution

Part of the first phase of the strategic sourcing process is to identify the people who should be involved. It is also important to publish a project charter, define the scope of the project, and develop a work plan and communication plan. These steps help to define the purpose, boundaries, and goals of the process; identify the tasks involved; and provide a plan for communicating the results to the primary stakeholders.

Purchasing derives its strategic direction from corporate objectives and the business unit strategy development process. The business unit functional strategy acts as the driver for the cross-organizational purchasing strategies that emerge for the major products and services purchased by the business unit. These in turn translate into purchasing goals. However, purchasing must spend a good amount of time ensuring that it understands the user requirements and translates them into supply market requirements. The process of purchasing

strategy deployment effectively begins at the commodity/product family level. This begins with developing a strong market research plan, which includes defining user requirements, and then performing market analysis. Purchasers must therefore possess strong skills in teaming and plan development, establishing goals for determining user requirements, and introducing the steps in developing a market research plan.

Once the purchase requirements relative to the business unit objectives are established, purchasing must evaluate supply alternatives and execute the agreement. Planning for these purchases requires officers to establish the objectives to be achieved from the purchase, establish the status of the supply market relevant to the area of purchase, and determine the likely impact the purchase will have on the market.

Strategic purchasing groups will need to evaluate potential buying strategies. Supplier evaluation, selection, and development, including cross-functional and cross-enterprise teams will be key actions. An understanding of "real purchasing" techniques will become essential. "Real purchasing" goes beyond calling in an order and negotiating on price. Improving leverage in the supply market through procurement marketing and developing new supplier capabilities through reverse marketing are strategic skills that supply managers will have to possess. Strong skills in planning, project management, and execution are therefore critical skills found in individuals who will succeed in these roles.

Project teams and project environments are being used more frequently for sourcing and quality issues. Hence, the ability to manage projects remains a key skill for candidates. Project management is a valuable skill for supply chain managers to have, because more and more work is being structured as projects. Projects have certain characteristics that make them unique compared with other forms of work. A project is a series of tasks that require the completion of specific objectives within a certain time frame; has defined start and stop dates; consumes resources, particularly time, personnel, and budget; and operates with limited resources. Examples of projects involving purchasing and supply chain personnel include developing new products, developing new management information systems, implementing value analysis recommendations, developing sourcing strategy, and initiating performance improvement plans at a supplier. Project management can be crucial in applications that span several organizations — from implementing enterprise resource planning systems and construction projects to developing a marketing plan and creating a Web site.

"We had a very serious quality issue on one of our main ingredients that could have potentially shut down production. The project team came together with the scientists and basically worked simultaneously with purchasing to lead efforts with the supplier — bringing in the supplier, coordinating all the meetings, facilitating the meetings, creating the action list, and making sure the follow through occurred."

"Every buyer and planner is involved in just about every project in the facility, whether it's a capital project, some kind of technical project, or the introduction of a new product. So knowing how to participate in a project and manage project teams is critical to the success of supply chain and purchasing people."

"Ideally we would like people to have expertise in the commodity areas they're in. We see more and more — that when the salesman walks in the door, he's typically got a chemistry degree or engineering degree, which is key. If you're not able to talk on the same terms and same level in which they're talking, you're at a disadvantage."

"One aspect for skills that is interesting is that many people are hired to be a buyer. And a buyer, be it in pharmaceuticals or packaging or electronics, is going to come in and be faced with suppliers to deal with, current contracts, and internal customers. And yet it seems like a lot of kids are coming out of school and not really understanding that job. And so having them come with some expertise or strategic process in that area is valuable. 'So how do you look at a supply base?' 'How do you develop relationships?' 'How do you organize contracts?' 'What should the content be?' These are some almost basic tools with which it would be nice to have people arrive and drop into a job and be able to do more of. Most people have a smattering of things — but the strategic tool kit isn't quite there yet."

Communication Skills: Presentation, Public Speaking, Listening, and Writing

One executive at the roundtables noted that: "More people have problems succeeding due to lacking social competence than technical competence." Purchasing managers will be challenged to convey new strategies, not only with suppliers, but also with internal organizations. The art of communication, the ability to be persuasive, and proficiency in presenting ideas effectively will be vital qualifications for supply managers of the future. Purchasing managers will have to be more efficient in communicating, planning,

forecasting, and realizing the strategic plans of the organization while addressing the normal concerns of other business units with respect to product availability and quality within a shorter timeframe.

Presentation, written, and verbal communication skills are critical as supply management works with internal customers to identify their needs and communicate these back to the supply base. In addition, the ability to present a business case and effectively present facts, data, or convince an audience of the need for change is a valued ability in a supply manager. Individuals need to know what things should be emphasized in a presentation for a particular audience, both to an executive audience as well as to line workers and employees. Why? Because in many cases, these professionals will be "selling" the supply management function internally, to garner support, establish a business case for investment of resources, and establish compliance and buy-in to major commodity strategies. The tactical elements of the supply manager's job is slowly beginning to be replaced by a greater need for effective communication, team-building skills, and leadership.

Competitive education programs will need to incorporate role playing and methods of analyzing individual communication styles. This will help individuals learn to deliver the same message in alternative ways, while keeping consistently organized in thought and in delivery. Determining whether a message should be delivered in a strategic fashion versus a detailed fashion is the kind of skill that companies will be looking for. The end goal is to have purchasing managers that are capable of communicating effectively — to influence, lead, and listen.

"People coming into our company say the number one skill they are missing is a kind of general business skill/communication set."

"Being able to draft a presentation, give a presentation, talk to the correct audience, have confidence in yourself, and think on your feet is key. Talking one on one to people and speaking to executive-level management or to individuals on the factory floor — we need the whole spectrum that pulls in all variations for essential communication."

"The first thing I look for is social competence. Engineers are going to come in with something completely different from somebody who's got a bachelor's degree in business or an MBA. We are looking for candidates with knowledge about purchasing, business ethics, basic analytical skills,

business economics, and accounting principles. Project management is important. Negotiation skills are very important — one-on-one communications, the e-mail, the written, and presentation skills — being able to organize facts, structure a presentation, and make a persuasive case for whatever it is that you're wanting to do, buy, or sell."

"I personally think there should be a law against sending e-mail to anybody that's within 50 feet of you. People literally 20 feet apart will send e-mails back and forth, stating that 'you did this wrong' or 'you didn't do that.' It incenses me that people cannot walk 20 feet and talk to one another. We're forgetting how to communicate. It's the human relations side and understanding how to deal with people. And organizations are not putting the needed emphasis on these soft skills. If you don't have the technical skills, they can be provided. But those soft skills are, in my opinion, much more important and difficult to achieve."

Technical Skills: Web-Enabled Research and Sourcing Analysis

Integrated enterprise solutions hold out the promise of allowing financial, accounting, operations, purchasing, and sales organizations to access the same database, with a single dataset, to enable consistent and effective decisions. This vision, albeit powerful, has yet to be effectively realized. Purchasing will be on the front lines, the proverbial "canary in the coal mine," in terms of being forced to integrate data requirements from multiple functions to enable effective decision-making.

Because systems were mentioned as an important trend, it is natural to consider that technical skills for purchasing will also be important in the future. We expect to see an increasing number of technically skilled personnel entering the supply management area, and expect that these individuals will become part of the core team for the supply management function of the future. Why? ERP systems often work independently of decisions made by managers using the Web to order materials and transmit forecasts. In the future, we will see a change and increased integration among standalone ERP systems, the systems used to make decisions on sourcing strategies, and the systems that communicate information between buyers and suppliers. We are more likely to witness a convergence of customer-focused applications that link suppliers with internal production schedules and production schedules between different plants in a single enterprise.

Not only will the requirements between plants be consolidated and communicated to suppliers via a

supply chain-planning module, but these schedules will also be linked forward to customers. Sales representatives in the field will be able to promise exact delivery dates to customers using an available-to-promise (ATP) module, a system that allows salespeople to access plant schedules and determine if enough capacity is available to produce the product for the customer by a certain date, and also whether suppliers will be able to deliver the materials in time to produce it.

In addition, we may see other modules that will facilitate transactions between buyers and suppliers. A distribution-planning module will help identify the transportation requirements and distribution center inventory levels in time to meet customers' delivery requirements. A demand-planning module will help identify whether long-term capacity requirements will be sufficient to meet the demand for new products coming on-stream. Finally, a supplier collaboration module will help ensure that future supplier capacity requirements will be in place to meet future demand requirements for new products and services. In effect, these linked systems would enable a single view of the entire supply chain. Managers could analyze the factory and the supply chain simultaneously, and synchronize demand and supply. Distribution centers would act as a shock absorber for customer demand variability and would help to facilitate stable production schedules at the plants, thereby "collapsing the cycles." These types of systems are only now beginning to emerge.

The consensus of the purchasing focus groups is that electronic commerce will continue to mature and become an intricate part of purchasing. Procurement processes will be streamlined to help cut purchasing costs for all procured goods and services. Supply managers must look for ways to realize savings by overcoming inefficiencies inherent in traditional paper, phone, and fax-based purchasing and procurement processes.

E-purchasing systems initially started with purchasing MRO supplies and office supplies. The new growth area is in the direct material realm. Suppliers now are feeling the pressure of larger companies requesting that products be purchased through electronic commerce rather than traditional purchase orders. For purchasing organizations, negotiating agreements to include suppliers putting catalog material on the Web will be a part of overall contract negotiations.

The need for speed in both decision-making and product fulfillment will require Internet-savvy individuals to use the Internet to research new supply markets. Supply managers will also be asked to create new capabilities for purchasing that can be realized by

using the Internet. Online competitive bidding environments, such as reverse auctioning, will eventually replace traditional competitive bidding.

A reverse auction is an Internet-based technology tool that streamlines the bidding process. Multiple suppliers compete for the buyer's requirements in a secure environment. The competing sellers in the bidding pool do not know the identity of the other sellers that they are competing against. Although, depending on the nature of the product or service, they may have an idea of who their competitors are. However, they still do not know the identity of the specific bidder during the reverse auction. Competition is heightened as suppliers compete in real time by bidding lower as they see other offers (Antonette et al. 2003). According to *Acquisitions and Business Management Online,* savings from purchasing have ranged from 2 to 25 percent, with a weighted average of 18 percent.

E-sourcing and supply systems are typically organized around specific "modules" that interact with different elements of the purchasing database, elements of the enterprise resource system, and integration of data obtained through external EDI or Internet-based communications with suppliers or customers. While ERP systems such as SAP, Oracle, and PeopleSoft generally manage the internal transactions that take place in processing invoices and purchase orders, e-sourcing systems are focused on decision-support around a broader group of transactions that are specific to certain business processes.

Decision-support systems (DSS) represent an extension of systems technology that moves past the basic emphasis on structured tasks and the information processing characteristic of electronic data processing and management information systems. Decision-support systems use both data and structured mathematical models to support the decision-making process. A set of e-sourcing modules act as an interactive system designed to support purchasing managers in making effective decisions about non-standard problems. Data integrity issues will also be pervasive as organizations strive to integrate their procurement systems.

The net result of these developments is that technical skills will be one of the most valued skills for supply management of the future, according to the focus group participants. People who possess an equal balance of skills and knowledge regarding both the technical requirements and business process requirements for the supply management function will be in high demand. These people will be able to operationalize the internal user requirements into technical terms that the IT programmers will be able to understand, in terms of

data architectures, graphic user interfaces, broadband requirements, programming issues, and other technical requirements required to establish a superior and efficient procurement function. In doing so, these people will enable supply management to focus more on value-added functions related to strategic sourcing and value-added supply chain management strategies, rather than devoting resources to the process of purchase orders and other non-valued added activities.

Focus group comments include:

"Dealing with inconsistencies between MRP and ERP systems — simply understanding the basics of those systems coming in will be invaluable for new supply chain managers, which goes back to manufacturing. It's about using these systems to help reduce the variability of information so that shorter lead times can be realized."

"Purchasing has to be more than computer literate. When we talk about being computer literate, we forget to add in accessing the Internet, and understanding that when you go surfing, you know how to do searches to get the best information. So while those skills may not be innate to purchasing or to be able to be taught by our group, we should be able to recommend good classes."

"I think a purchasing individual needs to understand a general schematic of how information technology works, some of the pitfalls, and the problems to avoid, as well as the opportunities it presents — because all of those are important in building a contract and in making sure that your risks are covered. This is a non-traditional area for buyers, but I think that buyers need to be hands-on to make themselves more productive. We're looking at some tools that help us in evaluating RFPs, and ways to make ourselves more productive. This includes IT processes, IT equipment, how it works together, the component pieces, and the processes. Anyone doing IT procurement needs to have the knowledge of how software contracts work and what IT hardware does."

"[We need] the commodity manager who knows chemicals and loves the chemical industry. He isn't necessarily savvy on the technical side, so he really wants either the service auction people or system people to be with them in developing more as a team. So, I think it works out actually better when there's not a whole lot of clashes in the company as a whole."

"The transparency of global information is easy. We just have to do something with it. Reverse auctions give the market transparency. So, there's a whole market for knowledge. The communication process, the credit review — there's much more emphasis for us on the legal side and the treasury side, to get more involved in those things. There's a technology focus in our group toward operational excellence and commercial excellence."

"As we move to more of an e-marketplace, it will be important for students to understand reverse auctions, forward auctions, or online RFPs, but just as importantly for them to understand when it's appropriate to use each tool."

"To know your supplier's cost structure and what they're doing will never happen. It is a team approach, where you're keeping them in business and they're making a fair amount of profit. You understand what the market price is going to be. That's what you live with. And that's what the reverse auction has done. It has shown you what the price should be in that marketplace."

"We have to be able to articulate business solutions, recognize opportunities, and become more than just contract administrators."

Broader Business Skills: Industry, Economics, Cost Accounting, and Making the Business Case

Increasingly, chief financial officers are turning to purchasing to aid them in driving internal cost-cutting measures. Internal and supply chain cost cutting requires supply managers to understand the industry in which they operate. Understanding these economies of the supply chain will provide a boost for cost cutting efforts.

Driven by cost-cutting needs and general dissatisfaction with supply chain performance, CFOs are adding supply chain management to the financial levers they already control, according to a new survey[1]. The findings are based on a mail survey of 247 senior financial executives and telephone interviews with an additional 15 executives. UPS Consulting funded the research and released the findings. The survey provides some insight into why CFOs are exerting more influence in this area and the implications for supply chain management. First, they see this activity as integral to meeting their strategic goals. Sixty-one percent of the CFOs surveyed view the supply chain as having a large or very important effect on their ability to achieve corporate objectives. Within that framework, almost all — 93 percent — rated reducing operating costs as a key goal of their supply chain, with improving customer service coming in second at 82 percent. This suggests that CFOs are not just obsessed with financial rigor but also appreciate the importance of customer relationship management to the future of their organizations. While they recognize the significance of supply chains, CFOs are less appreciative of management efficiency in this area. Thirty-six percent said that the fragmentation of supply chain processes is a problem, with 34 percent citing unclear lines of authority as a source of dissatisfaction. Moreover, only about one-third said their companies would make major supply chain changes when necessary, and nearly two-thirds said their organizations were able to make only incremental changes. Since the management of supply chains tends to be dispersed throughout organizations, across-the-board change can be a slow process — too slow for CFOs. More than half of the respondents said the time lag between the development of business strategy and operational plans is five weeks or more.

This trend sends a clear message to supply management: Individuals with a solid knowledge of financial income statements, balance sheets, and the mechanics of financial accounting will be required to establish the business case for sourcing strategies. These individuals must be able to review account ledgers, work with databases and ERP systems to summarize data, estimate the impact of supply management strategies, and summarize the business case concisely. More companies are using "corporate steering committees" to approve supply management strategies, which allows strategies to be driven from the top down into the organization. Supply managers may only have five minutes on the agenda, so the skills necessary to bring together a concise argument with believable numbers will be a valued skill set. This may require supply management to recruit people from the financial side of the organization and bring them on-board to understand supply management through focused training.

"We would come up with a cost saving in marketing, and if marketing people agree, we'd take the money out of the budget the following year. We had teams doing all of our negotiating. And the internal customer would agree that 'X' had been saved. That was the only way we could get true savings."

"Through our accounting systems we can identify, measure, and monitor large volumes of procurement spend based on the general ledger

[1]Developed jointly with Atlanta-based UPS Consulting, the survey titled "CFOs and the Supply Chain," was carried out by CFO Research Services. Reported in "Paying Attention: Chief financial officers get involved in managing more supply chains," *Traffic World,* 09-02-03.

account code, supplier, customer, and dollar volumes. We identify this spend with various representatives of each SBU and determine if purchasing can provide a value add to the current process. Additionally, this allows us to identify where the large spend is occurring and perhaps combine it with other areas within the corporation for greater discounts."

"We have a summary database that shows our expenditures by supplier, commodity, and business unit. We use that summary database to evaluate areas of spend where commercial/procurement might be able to provide improvement in total cost. We also keep abreast of changes in the business world to identify areas where recent legal or policy changes may allow us to leverage our business. Examples include deregulation of electricity, natural gas, etc."

"About 60 percent of our group is new within a year, year-and-a-half. So, it's a pretty new group and it's just because of the situation that the board is very interested in what we're doing with sourcing. So, there's a whole lot of attention given to this process all of a sudden. It's a hot place to work so people who are coming in are coming in from the finance organizations, from operations management organizations, from engineering. So, we have a really good pocket of expertise. We actually hired quite a few from dot-com companies and technology groups so we have pockets of expertise inside the group, and they are actually taking the lead in their areas of expertise. It's more than one individual as they get cross-trained. The way I see it, you might have three different areas that kind of support each other and work together rather than trying to instill the knowledge in the other person. Gradually, everybody's going to be a little more cross-trained, but they're still going to each be in the process of gaining expertise and coming together as a team to make progress that way."

"Another thing we're trying to do is get more finance people in our organizations. We don't really have the expertise to do accurate cost modeling, so right now we're just kind of guesstimating what our costs are. We don't truly understand them. Economic literacy and industry knowledge is really important. You need to know what's going on in the world so you can relate it back to your purchases and buying things. As far as training goes, we have a rotation plan when we hire new hires. We send them to boot camp for about a month, and they get all kinds of training,

and they rotate through four different areas within supply chain management. We have two rotations in purchasing and one in planning and one in logistics — kind of gives somebody the opportunity to see all aspects of the supply chain."

Relationship Management Skills: Ethics, Facilitation, Conflict Resolution, and Creative Problem Solving

There is a requirement to merge and develop ways of exchanging ideas between virtual teams and concrete teams. Virtual teams will have to be like swat teams since they are multinational. Individuals that are able to link with their equivalent counterparts located in Asia Pacific, Europe, the Middle East, and Africa (EMEA) will become increasingly important. Understanding how to manage virtual teams and the structural aspects of work flows on a regional and corporate level will be key. An important component of managing teams of diverse individuals is the ability to manage relationships. This entails acting in an ethical manner, building trust, resolving conflicts, and managing problems in a creative manner. In a global environment, relationship management becomes even more critical. Supply managers should be fully debriefed on cultural norms in various international markets as well as the culture of organizations in other countries. As an agent for his or her enterprise, the supply manager needs to be fully aware of what's acceptable, what's not acceptable, and how to deal with different approaches to managing the relationship.

Certainly the behavior of executives in major corporations such as Enron, Tyco International, and recent others has brought a renewed focus on ethical conduct. Recently some top MBA programs, such as MIT, have started to look at integrating courses that cover ethics and proper business behavior. Conflict and ethics is a part of everyday living. Ideally, students should be taught about dealing with on-the-job conflict. When they are thrust into the environment of making it happen — without training — the challenges ahead of them relating to managing conflict and people will seem unbearable to handle along with every day job functions. Recruiters are finding that many candidates have a good education, but they cannot communicate well, which is one of the basic requirements for resolving conflict. Graduates need to be prepped on conflict resolution basics — listening, summarizing, and clarifying interests. Understanding how to come up with win-win options through cooperation and designing fair solutions will be essential in a supply management role.

Purchasing managers, more than any other group within a firm, experience enormous pressure to act in

unethical ways. This occurs for several reasons. First, purchasing has direct control over large sums of money. A buyer responsible for a multimillion dollar contract may find sellers using any means available to secure a favorable position. The very nature of purchasing means that a buyer must come in contact with outside, and occasionally unethical, sellers. Second, there can be tremendous pressure placed on many salespeople. A seller who must meet aggressive sales goals might resort to questionable sales practices.

Compromising on ethics to create shortcuts in processes or to generate less of a review during the audit process are costing companies money that could otherwise contribute to greater profits. Thus ethical behavior is a "must" in the purchasing arena. The Institute for Supply Management™ (ISM) has created a number of mediums for individuals to gain awareness of ethical issues within the purchasing profession. One of the most important for supply professionals is the *ISM Principles and Standards of Purchasing Practice.*

One area of increasing ethical concern is the e-commerce area, particularly with regard to how suppliers are treated during the frenzy that is created by reverse auctions. The textbook *e-Purchasing Plus* devotes an entire chapter to evaluating the ethics of e-commerce. Issues related to reverse auctions raise questions such as:

1) Will the reverse auction process involve additional negotiation?
2) Will the reverse auction process be utilized each time the requirement is sent out for bids?
3) Will the unsuccessful sellers be given another chance on the next bid? (Antonette et al. 2003)

As indicated above, the e-commerce era is causing a resurgence of ethical questioning and issues with regard to granting new business. Negotiating after the bids are received to determine who is awarded the contract is an important area that must involve clear communication, or suppliers might feel the buyer's actions were unethical. Fair treatment of all suppliers in either electronic or manual formats is the key to effective buying.

As the use of virtual teams evolves, candidates will have to be self-starters and capable of managing daily crises without constant supervision. Cross-geography and cross-time zone management of resources is a reality today. There will be less "on-the-job" training and more "trust" in the ethical behavior of individuals who may be left to work on their own and not under the scrutiny of their peers.

Focus group comments related to this topic include:

"We are looking for people with international experience to be change agents — those who are willing to accept changing existing paradigms or the existing way that we do business. More and more we are sourcing material internationally here in the United States, as the United States becomes a supplier of materials to our facilities over in Europe and Asia. The world is basically shrinking. As a result, we need people to change some of the technologies that are 40- and 50-year-old technologies. We need people to come in and ask, 'Why? Why do we do it that way? Why do we build the products we build that way?' and 'Is there a better mousetrap to be designed and built?'"

"The entrepreneurial spirit is a really important one for the people on whom we put the greatest emphasis in managing our suppliers, which are the global supply relationship managers. And the way we look at it is a form of reverse marketing. You need the same sort of skills that you do in marketing, but you're doing it in reverse because you're the one who is buying. There is a complete set of things you require from the supplier, and it is your job to get those, price being one of them. I would like to see a reward structure put into place, just like the sales organization has a reward structure, based upon successful sales. There should be something that rewards global supplier relationship managers for their effectiveness in negotiation and contract completion."

"The first company I worked with was Swiss. We had a global purchasing team meeting. The very first one went off great except the French were speaking French, the Germans were speaking German, the Italians were speaking Italian; I had to have interpreters. The next time around, I told their company officials, 'You've got to send somebody that speaks English because no one's doing what they committed to do.' Well, the same people came to the next meeting. They all spoke English. They just refused to speak English at the first meeting. So these cross-cultural differences, working in a multi-national arena … understanding the language problems, the gesturing problems …. There are some gestures we Americans use that are just no-no's in other cultures."

"Business ethics. It's something tough to teach, but it's absolutely necessary because society in general is getting away from the ethical side of doing business. If nothing else, you need to tell people that's important when you get into the arena, especially if you're in legal contracts. If you

mix poor ethics with legal contracts, you can bet on having a pretty healthy legal bill."

"And you also need to understand that when you start talking globalization, you're going to start dealing with unethical people because there are some countries that simply don't have the same ethics we do. One of our biggest challenges right now is trying to get our intellectual property into China because the market is so huge. But we're going so slowly because we can't guarantee protection of our own property. And that's the only thing we own as an organization, is our intellectual property."

"Conflict is part of everyday life, so we need to teach people about dealing with conflict because you're going to get it out there. You can stay in your own little environment in school and learn all the theoretical elements, and then you are thrown into the environment of making it happen and realize you suddenly have to deal with people."

"The desire to learn — I'd put my money on somebody who doesn't understand the content right now but who has the desire to go out and figure it out. I'd invite them to be on the team any day. And teaching versus creating is important. We keep talking about teaching people to do stuff. I would throw out there that we need to create an environment where people want to go out and do those things, and it's a subtle difference."

Legal Issues, Contract Writing, and Risk Mitigation in a Global Environment

A strategic area for contract writing lies within strategic cross-company global alliances, where a competitor may be a key partner for dealing with common programs and initiatives. Knowing how to negotiate on joint efforts, how to determine utilization of resources, and simply what to say and not to say during discussions are necessary skills.

Another key area for legal knowledge and contracting skills is the non-traditional services area. Most outsourcing of services requires a definitive statement of what is to be accomplished, followed by a rigorous evaluation and negotiation period. Once the supplier is selected, the contract should have an SLA section against which the supplier's performance will be measured.

People across all functions of companies are being required to understand the contracting process in order to prevent misinterpreting contracts and contract laws. Companies will look to teams of people that come from finance, engineering, and quality areas to launch corporate and regional programs in Asia Pacific and EMEA locations for procurement efforts, as contract writing has become a global delivery requirement. Understanding local regulations and dealing with world-class suppliers in international settings will become an essential skill. Graduate programs will also need to incorporate legal courses that address contract laws such as the Patent Act and more recently, the Sarbanes-Oxley Act, which holds CEOs accountable for the integrity of contracts. Courses that focus on warranty implications, remedies, and indemnifications are also fundamental to developing highly competitive graduates.

Focus group comments related to this topic include:

"Once we move past the skills that I call the givens — items such as four-year degrees, certification (C.P.M.), experience based on the position requirements, PC literacy, commodity-specific experience, strategic thinkers versus tactical doers, and negotiation skills, we come to legal training — being a decision maker in the final verbiage of contracts. Contracts are legally binding. Purchase orders are legally binding. You have an offer; you have acceptance. New hires need to know the implications of the Patent Act and the violation thereof, and obviously the reciprocity of doing business."

"There is a need for a whole series of workshops on best practices in contracting for certain categories, including areas such as software contracting, application service provider (ASP) outsourcing, and many others that are so new, that we don't know enough about them yet to know how to manage them."

The next section reviews the results of the survey and then provides a discussion of the alignment of the focus group and survey results, as well as a summary and implications of the research.

Phase 3: Survey Results

The results of the survey are reported as follows. First, the demographic data of the sample is discussed, followed by a discussion of the major purchasing trends, skills, and knowledge. Finally, results of the survey on organizing for training and career development are discussed.

Research Sample Demographic Data

The first part of this study was the four major focus groups held in four major geographic sections of the United States, which were conducted to develop a qualitative assessment of the requirements in purchasing education and training. The second part was the development and administration of a lengthy online questionnaire sent to 200 major corporations that were members of either the CAPS Research Roundtable or the Institute for Supply Management. The intent was to obtain one response per corporation from a high-ranking individual. Fifty-five respondents returned questionnaires and the response rate to the survey was 27.5 percent. Some portions of the survey were not completed by 12 of the respondents, with the distribution of incomplete surveys shown in Table 6.

Table 6
Survey Incomplete Percentage Distribution

Range	Frequency
0-10%	3
11-20%	2
20-30%	0
30-40%	2
40-50%	0
50-60%	0
60-70%	0
70-80%	3
80-90%	2
90-100%	0

All respondents held high-level positions in the organization (director level or above), were very experienced, and were well educated. Males comprised 77 percent of the sample and females 23 percent.

Major Industry Groups

Respondents were asked to indicate the industry of their companies. The industry types were categorized using *Fortune* magazine's listing of the 500 largest industrial companies. The *Fortune* listing is comparable to the Standard Industrial Classification (SIC) code for it is based on categories established by the U.S. Office of Management and Budget and is issued by the Federal Statistics Policy and Standards Office. Respondents were fairly evenly split across the 25 major industry groups. The two exceptions to this even distribution were the Pharmaceuticals and Biotechnology (20 percent) and Energy (9 percent) groups. The distribution across all industry groups is shown in Table 7.

Annual Sales and Purchase Expenditures

Respondents were asked to provide their approximate annual sales and purchase expenditures. With regard to sales, 51 respondents provided data. Annual sales ranged from $6 million to $276 billion with a mean of $21.7 billion. Table 8 provides a breakdown of sales by categories, reflecting that about 64 percent of the sample had sales of more than $3 billion. Overall, these firms were large organizations in the *Fortune* 1000 category.

As shown in Table 9, annual purchase expenditures ranged from $3.8 million to $13 billion of annual purchase expenditures. The mean was $6.2 billion in annual purchase expenditures. Eighty-two percent of the sample had annual purchase expenditures of more than $600 million and 33 percent had annual purchases greater than $6 billion.

Table 7
Frequency of Respondents by Primary Industry Group*

Company Type	Industry Group	Frequency	Percent
Aerospace and Defense	1	3	5.5
Automotive and Transport Equipment	2	2	3.7
Banking, Financial Services, and Insurance	3	1	1.9
Chemicals	4	1	1.9
Computer Software and Electronics	5	7	13
Consulting Services	7	1	1.9
Consumer Products Durables (i.e., Home Furnishings)	8	1	1.9
Consumer Products Non-Durables (i.e., Clothing, Footwear)	9	2	3.7
Energy	11	5	9.2
Food, Beverage, & Tobacco	12	3	5.5
Health Products and Services	14	2	3.7
Industrial Equipment	15	2	3.7
Metals and Mining	19	1	1.9
Pharmaceuticals and Biotechnology	22	11	20.3
Retail	24	2	3.7
Telecommunications	25	2	3.7
Transportation Firms	26	2	3.7
Utilities	27	2	3.7
Others	28	4	7.4
Total		**54**	**100**

*Industry Groups are based on categories established by the U.S. Office of Management and Budget, are issued by the Federal Statistical Policy and Standards Office, and are published in *Fortune* magazine's *Fortune* 500 list.

Table 8
Annual Sales by Category

Sales in Millions $	Frequency	Percent	Cumulative Percent
6 - 600	6	12	12
601 - 3,000	12	24	36
3,001 - 6,000	4	8	44
6,001 - 12,000	9	17	61
12,001 - 276,000	20	39	100
Total	**51**	**100**	
Mean = $21.7 billion			

Table 9
Annual Purchases by Category

Purchases in Millions $	Frequency	Percent	Cumulative Percent
3.8 - 600	9	18	18
601 - 3,000	19	37	55
3,001 - 6,000	6	12	67
6,001 - 12,000	9	18	85
12,001 – 13,000	8	15	100
Total	**51**	**100**	
Mean = $6.2 billion			

Total Full-Time Company Employees

Respondents were asked to report the total number of company employees. The total number of employees ranged from 125 to 426,000, as shown in Table 10. The average was about 48,000 employees. This large number further supports the contention that most of these firms are large in size. To get an idea of the employment, relative categories were established.

Total Full-Time Purchasing Employees

Firms were asked to report the total number of full-time or equivalent purchasing employees (including temporaries) at U.S. and/or North American locations. Two categories were reported: 1) purchasing/supply managers; and 2) purchasing/supply employees, professionals, support, and clerical personnel.

The total number of *purchasing/supply employees* ranged from 4 to 3,800, as shown in Table 11. The average was 385, with the distribution also shown in Table 11.

The total number of *purchasing/supply managers* ranged from 1 to 400, as shown in Table 12. The average was about 53 managers.

Respondents' Job Titles

The 54 responses to this survey were from individuals who had considerable authority in their organizations (shown in Table 13). Individuals in this survey held positions at the level of vice-president, director, or manager. These high-level executives were major players in guiding their purchasing organizations. Forty-one percent of the sample held the title of director, while another 22 percent were titled vice president, and about 27 percent were at the manager level.

Title of the Highest Purchasing Executive

A check on the respondent level was made by analyzing the title of the highest purchasing executive in the organization. Of the surveyed purchasing professionals 2 percent reported that the highest title of a purchasing executive in their firms was president, while 10 percent reported that it was the Chief Procurement Officer. As shown in Table 14, the majority of our respondents (60 percent) indicated that the highest title of the purchasing executives in their firms was vice president.

Table 10
Total Company Employees by Category

Number of Employees	Frequency	Percent	Cumulative Percent
125-1,000	4	9	9
1,001-5,000	6	11	20
5,001-10,000	6	11	31
10,001-25,000	11	21	52
25,001-40,000	6	11	63
40,0001-100,000	12	23	86
100,001-426,000	7	14	100
Total	**52**	**100**	

Table 11
Total Purchasing/Supply Employees by Category

Number of Employees	Frequency	Percent	Cumulative Percent
4-50	19	41	41
51-100	7	15	56
101-200	5	11	67
201-300	3	6	73
301-500	4	9	82
501-1,000	3	7	89
1,001-3,800	5	11	100
Total	**46**	**100**	

Table 12
Total Purchasing/Supply Managers by Category

Number of Managers	Frequency	Percent	Cumulative Percent
1-10	18	41	41
11-20	9	20	61
21-30	2	5	66
31-60	5	11	77
61-160	6	14	91
161-400	4	9	100
Total	**44**	**100**	

Table 13
Titles of Individuals Responding to Questionnaire

Title	Frequency	Percent
Chief Purchasing Officer	**1**	**1.90**
Director — example titles reported in this category:	**22**	**41.50**
Material Planning & Procurement Director		
Director, Corporate Purchasing		
Director, Strategic Sourcing		
Director, Global Strategic Procurement		
Director, Supply Chain		
Director of Purchasing and E-Procurement		
Director, Business Transformation, Global Supply Chain		
Manager — example titles reported in this category:	**9**	**16.98**
Manager, Supply Management Support Services		
Business Manager - Procurement		
Manager, Procurement Initiatives and Development		
Purchasing Manager		
Major Project Procurement Manager		
Corporate Purchasing Manger		
Vice President — example titles reported in this category:	**12**	**22.64**
VP Worldwide Procurement		
VP, Business Services		
VP Strategic Sourcing		
Vice President, Supply Management		
Vice President, Six Sigma and Operations		
V.P., Procurement and Quality Management		
Senior VP, Purchasing and Materials		
Other — example titles reported in this category:	**9**	**16.98**
Benchmarking & Process Development Analyst		
Senior Contract Manager		
Director, Strategy & Process Improvement		
Staff Development Specialist		
Quality Director		
Advisor, Strategic Sourcing		
Process Improvement Leader		
Training and Development Specialist		
Total	**53**	**100**

Table 14
Title of the Highest Purchasing Executive

Title	Frequency	Percent
President	**1**	**2**
Chief Procurement Officer/Controller	**5**	**10**
Vice President — example titles reported in this category are:	**29**	**60**
VP, Material Management		
Vice President - Commercial Division		
Vice President Global Procurement		
Vice President - Supply Chain Management		
Director — example titles reported in this category are:	**11**	**24**
Director of Procurement		
Material Planning & Procurement Director		
Director of Corporate Purchasing - North America		
Director of Supply Chain		
Procurement Manager	**2**	**4**
Total	**48**	**100**

Respondents' Responsibility

In line with the high-level status of respondents, Table 15 indicates that 83 percent (83.33) of the individuals had corporate-wide responsibility, and the remaining 17 percent (16.67) had plant, business unit, or division authority.

Table 15
Responsibility of Individuals Responding to Questionnaire

Responsibility	Frequency	Percent
Corporate-wide	40	83.33
Division/Plant	8	16.67
Total	**48**	**100**

Formal Educational Background

The educational background of the purchasing professionals was impressive, with 50 percent having graduate degrees and another 48 percent having undergraduate degrees. Table 16 indicates the high degree of formal education possessed by these respondents.

Table 16
Educational Background

Education	Frequency	Percent
Four-Year Degree	25	48
Graduate School	26	50
Other	1	2
Total	**52**	**100**

Total Business Experience

These respondents had many years of business experience. According to Table 17, about 94 percent of the respondents have more than 10 years of business experience, and 61 percent have over 20 years of experience.

Total Purchasing Experience

The respondents had considerable purchasing experience. Eighty-six percent of the respondents had more than 10 years of purchasing of experience, and 31 percent had more than 20 years experience. The most experienced respondents, those who had more than 30 years of purchasing experience, constituted 14 percent of the sample, as shown in Table 18.

Purchasing Trends

Two of the goals of the PET II study were to determine how the purchasing function has changed since the study a decade earlier and to project how it will change into the future. In order to achieve this objective, participants were given a list of 39 trends and asked to rate their agreement as to the importance of these trends, both now and in 2010. A listing of all the means for the 39 trends is shown in Table 19, ranked in descending order of importance by 2003 ratings.

Next, these trends were compared with a list provided to respondents in the PET I study in 1993. The list of trends was developed based on the results of the four focus group meetings described earlier. The top 10 trends for 2003 and those forecasted for 2010 are listed in Table 20.

Table 17
Years of Business Experience

Years of Business Experience	Frequency	Percent	Cumulative Percent
6 - 10	3	6	6
11 - 15	6	12	18
16 - 20	11	21	39
21 - 25	13	25	64
26 - 30	4	8	72
31 - 35	9	18	90
36 and more	5	10	100
Total	**51**	**100**	

Table 18
Years of Purchasing Experience

Years of Purchasing Experience	Frequency	Percent	Cumulative Percent
6 - 10	6	14	14
11 - 15	10	24	38
16 - 20	12	31	69
21 - 25	4	10	79
26 - 30	3	7	86
31 - 35	6	14	100
Total	**41**	**100**	

Currently, the pressure to reduce costs is very strong. The first three trends all involve emphasis on cost issues. These include the increased pressure to reduce costs, the need to understand total cost analysis, and strategic cost management initiatives. The next group focuses on organizing the effort to carry out supply initiatives more effectively. These involve focusing on strategic issues, monitoring purchasing performance, dividing the job into a strategic and transactional element, and the increased importance of strategic sourcing. Finally the advent of global sourcing appears to be finally catching on, with purchasers. However, global sourcing will be carried out by analyzing cycle times since the ninth rated trend involved shorter cycle times. Finally the last trend indicated that users would be placing more orders directly with suppliers.

What changes do these supply managers see for 2010? Interestingly, they don't see any change in the relentless focus on driving down cost. As shown in Table 20, the pressure to reduce costs, selecting suppliers on a total-cost basis, and using strategic cost management remained on the top future trends. Not surprisingly, they expect a big surge in electronic commerce applications to replace paper-based systems. Currently

this trend ranked 15th but moved all the way to fourth place in 2010. Global sourcing jumped from eighth to sixth and strategic sourcing (seventh) and sourcing's focus on strategic issues (fifth) remained strong in the top 10. While the trend "sourcing management" will replace "order placement," it jumped from its current 13th place to ninth in 2010. Meanwhile the monitoring of purchasing performance dropped from fifth to 10th in future rankings. Cross-functional sourcing teams moved from 11th in 2003 to eighth in 2010.

Largest Changes in Trends 2003 to 2010
After analyzing the means, a gap analysis was performed to see what changes occurred in the rankings from 2003 to 2010. The 39 trends were ranked in descending order of importance for both 2003 and 2010. Then an analysis of their movement in order of importance was analyzed to see which trends moved up the most. The *largest increases* in rank order from 2003 to 2010 are shown in the Table 21 below.

Trends with largest mean rank gains focus on managing inventories across the supply chain. This will be done using electronic commerce and the sharing of data between purchasers and suppliers. As a result,

Table 19
Mean Importance Rating of Purchasing Trends 2003 and 2010

Trends	Mean	
	Current 2003	Future 2010
Pressure to reduce costs will increase.	4.18	4.51
Supplier selection will focus on total cost analysis.	3.84	4.45
Strategic cost management will increase.	3.80	4.50
Sourcing will focus more on strategic issues.	3.80	4.36
The performance of purchasing will be more closely monitored.	3.76	4.27
Two levels of purchasing will evolve: strategic and transactional, day-to-day buying.	3.76	4.19
Strategic sourcing will increase in importance.	3.76	4.34
Global sourcing will increase.	3.75	4.34
Purchasers will manage/drive shorter cycle times.	3.74	4.08
The order-release function will be delegated to users.	3.72	3.96
Cross-functional teams will coordinate sourcing efforts.	3.72	4.31
There will be more coordinated buying across operating units.	3.68	4.27
Sourcing management will replace order placement.	3.62	4.31
Purchasers will manage supplier relationships.	3.61	4.23
Electronic commerce applications will replace paper-based systems.	3.61	4.38
Service purchases will increase as a percentage of total purchases.	3.58	3.91
Use of supplier scorecards will increase.	3.58	4.24
There will be a greater emphasis on supply chain management.	3.55	4.17
There will be global pricing arrangements.	3.53	4.21
Purchasers will be more concerned with the final customer's satisfaction.	3.51	3.98
Function will be automated.	3.51	4.26
A smaller number of suppliers will be used.	3.50	4.00
Outsourcing will increase.	3.36	3.81
Use of reverse auctions will increase.	3.35	3.72
The purchasing function will be more centralized.	3.34	3.75
Suppliers will propose more innovations.	3.33	3.94
Demand-pull systems will drive purchasing.	3.23	3.81
The authority to buy will be located at the operating unit.	3.22	3.28
Sharing of forecasting data with suppliers will increase.	3.21	4.13
There will be more reward-risk sharing arrangements with suppliers.	3.21	3.85
There will be fewer purchasing managers and more supply chain managers.	3.08	3.85
Increased emphasis will be placed on formal training versus on-the-job training.	3.06	3.61
Inventories will be managed supply chain wide.	3.06	4.00
Rotational career tracks will include time in purchasing.	3.00	3.70
Single sourcing will increase.	2.94	3.27
There will be fewer people in purchasing.	2.82	3.44
Sales, engineering, and purchasing personnel will be co-located in suppliers' and customers' facilities.	2.80	3.19
Purchasers will be more involved with potential acquisitions of suppliers.	2.58	3.26
An advanced certification designation will be needed.	2.51	3.28

Scale: 1 = strongly disagree, 5 = strongly agree

Table 20
Top 10 Purchasing Trends in 2003 and 2010

Current Trends	Mean	Future Trends	Mean
Pressure to reduce costs will increase.	4.18	Pressure to reduce costs will increase.	4.51
Supplier selection will focus on total cost analysis.	3.84	Strategic cost management will increase.	4.50
Strategic cost management will increase.	3.80	Supplier selection will focus on total cost analysis.	4.45
Sourcing will focus more on strategic issues.	3.80	Electronic commerce applications will replace paper-based systems.	4.38
The performance of purchasing will be more closely monitored.	3.76	Sourcing will focus more on strategic issues.	4.36
Two levels of purchasing will evolve: strategic sourcing and transactional-day-to-day buying.	3.76	Global sourcing will increase.	4.34
Strategic sourcing will increase in importance.	3.76	Strategic sourcing will increase in importance.	4.34
Global sourcing will increase.	3.75	Cross-functional teams will coordinate sourcing efforts.	4.31
Purchasers will manage/drive shorter cycle times.	3.74	Sourcing management will replace order placement.	4.31
The order-release function will be delegated to users.	3.72	The performance of purchasing will be more closely monitored.	4.27

Scale: 1 = strongly disagree, 5 = strongly agree

Table 21
Trends with Largest Increases in Rank*

Purchasing Trend	Rank in 2003	Rank in 2010
Inventories will be managed supply chain wide.	33	21
Electronic commerce will replace paper-based systems.	15	4
Sharing of forecasting data with suppliers will increase.	29	18
Tactical purchasing (i.e., day-to-day) will be automated.	21	12
There will be fewer purchasing managers and more supply chain managers.	31	26

* 1= Highest ranked trend

purchasing will become more supply chain management-focused. The trends that were expected to experience the largest decreases by 2010 are shown in Table 22.

While these trends experienced declines in rankings, they all increased in importance from their current ratings. It appears that these supply managers will have two levels of purchasing personnel in place: strategic and transactional. The transactional part of the purchasing job will involve placing fewer orders as order releases will be delegated to users where possible. Second, there appears to be a trend toward having the authority to buy moved to a more central location, as

Table 22
Largest Decreases in Purchasing Trends*

Purchasing Trend	Rank in 2003	Rank in 2010
The order-release function will be delegated to users.	10	23
Purchasers will manage/drive shorter cycle times.	9	19
Two levels of purchasing will evolve: strategic and transactional.	6	16
Service purchases will increase as a percentage of total purchases.	16	25
The authority to buy will be located at the operating unit.	28	36
The use of reverse auctions will increase.	24	31

* 1= Highest ranked trend

individual operating locations will have less influence over their purchases. Certainly the trend to combine spend across business units has affected the location of buying authority. Third, shorter cycle times, while important, will be expected from award-winning suppliers. Fourth, service purchases will see less of an increase as a percentage of total purchases. Finally, reverse auctions will be used, but their novelty, as a sourcing tool, will have worn off by 2010.

Comparing a Decade of Changing Trends

Trends change over time, and when looking back a decade ago the hot trends that purchasers were involved with included: 1) fewer sources of supply; 2) managing supplier relationships; 3) being more concerned with final customer satisfaction; 4) managing and driving shorter cycle times; 5) increased single sourcing; 6) supply chain management increased; 7) design engineers and buyers as part of sourcing teams; 8) increased global sourcing; 9) teams making sourcing decisions; and 10) order release delegated to users. These were the top 10 trends in 1993 out of a total of 29 trends. *The top five trends of 2003 were not on the list in 1993.* The top 10 trends as mentioned previously for the 2003 were:

1. Pressure to reduce costs will increase.
2. Supplier selection will focus on total cost analysis.
3. Strategic cost management will increase.
4. Sourcing will focus more on strategic issues.
5. The performance of purchasing will be more closely monitored.
6. Two levels of purchasing will evolve: a) strategic and b) transactional day-to-day buying.
7. Strategic sourcing will increase in importance.
8. Global sourcing will increase.
9. Purchasers will manage/drive shorter cycle times.
10. Cross-functional teams will coordinate sourcing efforts.
11. The order release function will be delegated to users.

As is shown above, the top five trends were focused on cost management and strategic issues related to sourcing.

There were two trends rated higher in 2003 than 1993. First was "There will be more coordinated buying across operating units" (increased from 23rd to 12th). Secondly, "Two levels of purchasing will evolve: a) strategic and b) transactional-day to day buying." This trend was rated 15th in 1993, and is rated sixth in 2003. Interestingly, "Global sourcing will increase" was rated eighth in both surveys and "The order-release function will be delegated to users" ranked 10th in both studies. All other trends decreased in importance a decade later, with the five **largest decreases** shown in Table 23.

The trend to lower costs and price is well documented in the 2003 trends. Purchasers feel that competition is much more intense in their markets and that they need to use it to reach their cost/price goals. It appears most feel that single sourcing will not increase and that supply bases have been pared to reasonable levels. While managing supplier relationships will continue to be important, it dropped out of the top 10. It also appears that the downsizing of the 1990s will not be as harsh to purchasing in the 21st century. "Fewer people in purchasing" was rated 36th out of 39 items in the current study, versus 12th in 1993.

Comparing a Decade of the Common Trends

Twenty-two trends were common in both PET studies. Thus to analyze the strongest trends the researchers compared the mean rankings of the two groups of respondents who rated the importance of these trends a decade apart. First, the overall mean ratings for the current trends were consistent in both groups. In the first PET study, the overall mean was 3.36 and in this study it was 3.37. Both groups rated the importance of these trends into the future and in the PET I study, the average importance was forecasted to be 3.99. In PET II it was forecasted to be 3.89. The mean ratings for the 22 items are shown in the Table 24. The table is ranked

Table 23
Decreases in Purchasing Trends over a Decade*

Purchasing Trend	Rank in 1993	Rank in 2003
Single sourcing will increase.	5	35
There will be fewer people in purchasing.	12	36
A smaller number of suppliers will be used.	1	22
Purchasers will be more concerned with final customer satisfaction.	3	20
Purchasers will manage supplier relationships.	2	14

* 1= Highest ranked trend

Table 24
Common Trends Measured in PET I and PET II*

Combined Common Trends in 1993 and 2003 Studies	Actual 1993	Forecast 2000	Current 2003	Future 2010	Overall Mean
Sourcing will focus more on strategic issues.	3.15	3.61	3.80	4.36	3.73
The performance of purchasing will be more closely monitored.	3.01	3.61	3.76	4.27	3.66
Global sourcing will increase.	3.60	4.33	3.75	4.34	4.01
Purchasers will manage/drive shorter cycle times.	3.77	4.52	3.74	4.08	4.03
The order release function will be delegated to users.	3.53	3.82	3.72	3.96	3.76
Cross-functional teams will coordinate sourcing efforts.	3.42	3.88	3.72	4.31	3.83
There will be more coordinated buying across operating units.	2.82	3.64	3.68	4.27	3.60
Purchasers will manage supplier relationships.	3.85	4.54	3.61	4.23	4.06
Service purchases will increase as a percentage of total purchases.	3.43	4.06	3.58	3.91	3.75
There will be a greater emphasis on supply chain management.	3.67	4.48	3.55	4.17	3.97
Purchasers will be more concerned with the final customer's satisfaction.	3.79	4.59	3.51	3.98	3.97
A smaller number of suppliers will be used.	3.98	4.60	3.50	4.00	4.02
Outsourcing will increase.	3.36	3.99	3.36	3.81	3.63
The purchasing function will be more centralized.	3.27	3.51	3.34	3.75	3.47
The authority to buy will be located at the operating unit.	3.19	3.47	3.22	3.28	3.29
There will be fewer purchasing managers and more supply chain managers.	3.05	3.74	3.08	3.85	3.43
Increased emphasis will be placed on formal training versus on-the-job training.	3.16	3.74	3.06	3.61	3.39
Rotational career tracks will include time in purchasing.	2.88	3.72	3.00	3.70	3.32
Single sourcing will increase.	3.75	4.29	2.94	3.27	3.56
There will be fewer people in purchasing.	3.43	4.11	2.82	3.44	3.45
Purchasers will be more involved with potential acquisitions of suppliers.	3.21	3.97	2.58	3.26	3.26
An advanced certification designation will be needed.	2.57	3.48	2.51	3.28	2.96

*Scale: 1= strongly disagree, 5 = strongly agree

by mean importance in descending order of importance based on the current 2003 rating. The table only shows those items that were common to both studies.

Comparing the overall means from the 1993 and the 2003 studies resulted in five trends having a mean of 4.0 or greater. These trends were forecasted for 2000 and 2010 and included:

1) Purchasers will manage supplier relationships;
2) Purchasers will manage/drive shorter cycle times;
3) A smaller number of suppliers will be used;
4) Global sourcing will increase; and
5) There will be a greater emphasis on supply chain management.

It is important to remember that some of these trends dropped in absolute rank in the current study, but they still are impacting the field. The other important issue is that the cost/price issues, which were so important in the current study, were not measured in the 1993 study.

Categorizing the Trends
Trends were grouped into 5 major categories:
1) Organizational (9 items); 2) Operational (8 items);
3) Professional Development (3 items); 4) Strategic
(10 items); and 5) Supply Base Management (9 items).

Regarding *organizational trends,* the highest rated were related to organizational coordination of sourcing efforts, as opposed to traditional centralized or decentralized approaches. These coordinated purchases will be handled by cross-functional teams. Within the organization, it is expected that there will be strategic and tactical purchasers.

In the *operational trends* (Table 26), it is expected that users will be more involved in releasing of their requirements to suppliers once the purchaser makes the appropriate contract arrangement. These transactions will occur in an electronic environment versus the traditional paper-based environment. Purchasers will expect suppliers to have shorter lead times.

Table 25
Organizational Trends*

Purchasing Trend	Rank in 2003	Rank in 2010
Two levels of purchasing personnel will evolve: strategic supply manager and transactional.	6	16
Cross-functional teams will coordinate sourcing efforts.	11	8
There will be more coordinated buying across operating units.	12	11
There will be greater emphasis on supply chain management.	18	17
The purchasing function will be more centralized.	25	30
The authority to buy will be located at the operating unit.	28	36
There will be fewer purchasing managers and more supply chain managers.	31	26
There will be fewer people in purchasing.	36	34
Sales, engineering, and purchasing personnel will be co-located in suppliers' and customers' facilities.	37	39

* 1= Highest ranked trend

Table 26
Operational Trends*

Purchasing Trend	Rank in 2003	Rank in 2010
Purchasers will manage/drive shorter cycle times.	9	19
The order release function will be delegated to users.	10	23
Electronic commerce will replace paper-based systems.	15	4
Tactical purchasing will be automated.	21	12
Use of reverse auctions will increase.	24	31
Demand-pull systems will drive purchasing.	27	29
Sharing of forecasting data with suppliers will increase.	29	18
Inventories will be managed supply chain wide.	33	21

* 1= Highest ranked trend

The three categories under *professional development* were not highly ranked. This included formal versus on-the-job training, rotational career tracks including a purchasing assignment, and the need for an advanced certification. All three ranked near the bottom both now and in the future (Table 27).

The *strategic area* was the highlight of the trends (Table 28). Six of the 10 trends ranked in the top 15 both now and into the future. These included the pressure to reduce costs, which was first both now and into the future. Strategic cost management is increasing in importance and is a direct tie to reducing costs. To achieve these targets, costs will fall under the umbrella of strategic sourcing. This strategic sourcing efforts will be monitored more closely because purchasing will be expected to meet its targeted objectives. While targets will be tough on costs, supplier relationships will still be important, and purchasers will be expected to manage these relationships. Thus sourcing will be expected and order placement de-emphasized.

Table 27
Professional Development Trends*

Purchasing Trend	Rank in 2003	Rank in 2010
Increased emphasis will be placed on formal versus on-the-job training.	32	33
Rotational career tracks will include time in purchasing.	34	31
An advanced certification designation will be needed.	39	35

* 1= Highest ranked trend

Table 28
Strategic Trends*

Purchasing Trend	Rank in 2003	Rank in 2010
Pressure to reduce costs will increase.	1	1
Strategic cost management will increase.	3	2
Sourcing will focus on more strategic issues.	4	5
The performance of purchasing will be more closely monitored.	5	10
Strategic sourcing will increase in importance.	7	7
Sourcing management will replace order placement.	13	9
Purchasers will manage supplier relationships	14	14
Purchasers will be more concerned with final customer satisfaction.	20	22
Outsourcing will increase.	23	28
Purchasers will be more involved with potential acquisitions of suppliers.	38	38

* 1= Highest ranked trend

Supply base management emphasis has shifted to focusing on total cost management as opposed to a strict focus on using fewer suppliers as was the case a decade earlier (Table 29). Both single sourcing and using fewer suppliers rank much lower in importance, as trends both now and in the future. It appears the trend to cutting the supplier base has run its course. Meanwhile global sourcing will increase and help achieve lower total costs. Supplier scorecards will be used to monitor total supplier efforts. Pricing arrangements will increasingly becoming global in nature. However risk-reward sharing arrangements with suppliers appear less likely to be used.

Skills Required of Purchasers

Skills are defined by Webster as "understanding, judgment, the ability to use one's knowledge effectively, and a developed or acquired ability." Identifying the appropriate skills required to perform the purchasing function are necessary for evaluation of training and education needs. Respondents were asked to evaluate 51 skills that they required of their purchasing people on a scale of "1," not important to "5," most important. Table 30 shows rankings in both current and future periods in descending order.

Top 2003 Skill Requirements

As is evident in Table 30, there is a great deal of concern about ethics in the minds of today's purchasing and supply management executives. The entire business world has been shocked by events at Enron, World Com, Adelphia Communications, and other corporations. Accountability to key stakeholders is an important issue facing executives today. This concern appears to have been passed down to purchasing and supply management executives. New situations, such as closer relationships with suppliers can pose ethical issues that may affect the profitability of the firm or cast it in an unfavorable light with other suppliers, the organization's customers, and its shareholders. Ethics

Table 29
Supply Base Management Trends*

Purchasing Trend	Rank in 2003	Rank in 2010
Supplier selection will focus on total cost management.	2	3
Global sourcing will increase.	8	6
Service purchases will increase as a percent of total purchases.	16	25
Use of supplier scorecards will increase.	17	13
There will be more global pricing arrangements.	19	15
A smaller number of suppliers will be used.	22	20
Suppliers will propose more innovations.	26	24
There will be more reward-risk sharing arrangements with suppliers.	30	27
Single sourcing will increase.	35	37

* 1= Highest ranked trend

Table 30
Mean Rating of Top 10 Skills — Current And Future*

Skills (Current)	Mean in 2003	Skills (Future)	Mean in 2010
Ethics	4.38	Ethics	4.61
Negotiation skills	4.28	Interpersonal communication	4.54
Ability to make decisions	4.19	Negotiation skills	4.52
Interpersonal communication	4.17	Strategic thinking	4.51
Common sense	4.11	Ability to make decisions	4.49
Assessing ethical situations	4.04	Influencing and persuasion	4.47
Influencing and persuasion	4.02	Cross-functional teams	4.43
Decision making and problem solving	4.02	Decision making and problem solving	4.40
Conflict resolution	4.00	Leadership	4.38
Problem solving	3.98	Ability to work in teams	4.38

*Scale: "1" = not important, "3" = important, "5" = most important

was rated as the number one skill now and expected to be number one in 2010. Furthermore, assessing ethical situations was currently ranked fifth.

Following ethics issues are traditional purchasing and supply management skills such as negotiations, ability to make decisions, interpersonal communications, influencing and persuasion, decision making and problem solving, conflict resolution, and problems solving. It's evident that currently there is a strong emphasis on being able to act ethically, communicate well, solve problems and make decisions.

Top 2010 Forecasted Skill Requirements

Six of the top 10 skills currently perceived as important were ranked in the future top 10. The four skills dropping from the top 10 were: *common sense* that fell from fifth to 23rd, *assessing ethical situations* (sixth to 17th), *conflict resolution* (ninth to 14th) and *problem solving* (10th to 11th). All four of the skills that dropped from the top 10 increased in mean rating of importance but not enough to remain in the top 10.

Skills forecasted to move into the top 10 rankings in the future were *strategic thinking* to fourth, *cross-functional teams* to seventh, *leadership* and *ability to work in teams* to ninth and 10th respectively. In the future, a more strategic role is expected of the function, with an emphasis on working in teams to implement the necessary strategies.

All 51 skills (with their means) are listed in Table 31. One important observation about the skills is that while their position may change in the future, all the skills were thought to gain more importance. Even the lowest-rated skill, *blueprint reading,* increased its average from a 2.06 to a 2.20 in the future. In fact, the overall mean average skill rating was 3.55 now and 3.98 in the

future. While only nine skills currently had a rating of "4" or higher, 32 were rated a 4.00 or higher in the future. This would indicate these managers feel purchasers will have to be more highly trained and have mastered an increased number of skills to be effective in the future.

Greatest Changes in Skills 2003 to 2010

In order to determine which of these skills will experience the greatest change in the coming years, the researchers compared the relative rankings to assess the largest gaps, both in terms of increase in importance and those that would experience decreases in relative importance. This highlights the skills that these respondents felt would require more focus in future training programs. Again, one should remember that all the average skill ratings increased in the future, so even the skills showing the greatest decline in ranking were considered more important in the future.

Those skills experiencing the **greatest increase** in relative ranking in the future were as follows:

1) Leadership from 22nd to ninth;
2) Strategic thinking from 15th to fourth;
3) Contract writing from 45th to 33rd;
4) Managing change from 18th to 13th;
5) Managing the supply base from 23rd to 18th;
6) Managing risk from 26th to 21st; and
7) Planning from 27th to 22nd.

The last three were all tied in terms of relative increase in rankings. Certainly the two that come through the strongest are *leadership* and *strategic thinking.* This tied in with managing various aspects of the supply manager's job such as change, optimizing the supply base, and calculating the degree of risk. All these are skills related to a more strategic posture in supply management. In

Table 31
Mean Ratings of Skills 2003 and 2010*

Skills	Rank	Current 2003	Future 2010
Ethics	1	4.38	4.61
Negotiation skills	2	4.28	4.52
Ability to make decisions	3	4.19	4.49
Interpersonal communication	4	4.17	4.54
Common sense	5	4.11	4.20
Assessing ethical situations	6	4.04	4.26
Influencing and persuasion	7	4.02	4.47
Decision making and problem solving	8	4.02	4.40
Conflict resolution	9	4.00	4.32
Problem solving	10	3.98	4.37
Ability to work in teams	11	3.91	4.38
Cross-functional teams	12	3.90	4.43
Listening	13	3.88	4.21
Computer literacy in using popular application software packages	14	3.87	4.28
Strategic thinking	15	3.85	4.51
Analytical	16	3.83	4.36
Being organized/time management	17	3.77	4.13
Managing change	18	3.77	4.36
Written communication	19	3.77	4.07
Tactfulness in dealing with others	20	3.76	4.07
Managing internal customers	21	3.75	4.21
Leadership	22	3.75	4.38
Managing the supply base	23	3.75	4.26
Personal learning/self development	24	3.75	4.17
Understanding general business conditions	25	3.73	4.20
Managing risk	26	3.64	4.21
Planning	27	3.63	4.20
Using the Internet	28	3.62	4.16
Structuring supplier relationships	29	3.55	4.15
Broad-based business skills	30	3.53	3.91
Motivating others	31	3.52	3.94
Project management	32	3.51	4.15
Customer focus (on final customers)	33	3.48	4.15
Computational	34	3.44	3.70
Financial management	35	3.44	3.98
Managing others	36	3.44	3.81
Inquisitive nature	37	3.43	3.87
Contract management	38	3.43	3.96
Presentation skills	39	3.40	3.91
Process mapping	40	3.39	3.89
Creativity	41	3.38	4.04
Salesmanship	42	3.35	3.85
Motivational principles	43	3.33	3.64
Innovation management	44	3.29	3.85
Contract writing	45	3.27	3.59
Economic literacy	46	3.21	3.67
Technical	47	3.10	3.59
Entrepreneurial behavior	48	3.08	3.66
Specification development	49	2.92	3.47
Accounting skills	50	2.69	3.00
Blueprint reading	51	2.06	2.20

*Scale: "1 " = not important; "3" = important; "5" = most important

this more strategic environment purchasers must be willing to assume a leadership position.

Those skills experiencing the **greatest decrease** in relative ranking in the future were as follows:

1) Common Sense from fifth to 23rd;
2) Being organized/time management from 17th to 30th;
3) Tactfulness in dealing with others from 20th to 32nd;
4) Assessing ethical situations from sixth to 17th; and
5) Computational from 34th to 44th.

Common sense and *assessing ethical situations* were the highest ranked skills that experienced the greatest decline in the rankings. Despite the drops, their mean rating increased; *common sense* went from 4.11 to 4.20 and *assessing ethical situations* from 4.04 to 4.26. It is because they did not experience the increase that others did that they dropped in rank. The other three (*being organized, tactfulness* and *computational*) were all ranked lower to start with and their mean ratings did not increase in proportion to other skills.

Comparing a Decade of Skill Requirements

Certainly the skills required for effective purchasing and supply management have changed from a decade ago. However, is there a common core of skills that have stood the test of time and are a part of the purchaser's skill set regardless of the time period? Table 32 highlights the rankings of skills that were measured in three separate studies. The original PET study was done in 1993, the "Skills-Based Analysis of the World-Class Purchaser" was written in 1999, and the current study (PET II) in 2003. How did the skills rank across time in these three studies? Table 32 provides a picture of the relative importance of skills over time. First an analysis was performed of the overall means for the 24 common skills.

Table 32 suggests that the averages for the PET I and PET II studies are comparable. The overall mean ratings for the current time period was 3.75 for the original PET study and 3.67 in this PET II study. Forecasted mean ratings for the future were 3.98 in the first PET study and 4.11 in the second PET study. The

Table 32
Mean Ratings of Common Skills in Purchasing and Supply Management*

Skills	Actual 1993	Actual 1999	Forecast 2000	Actual 2003	Future 2010
Ability to make decisions	4.34	4.78	4.59	4.19	4.49
Interpersonal communication	4.31	4.82	4.70	4.17	4.54
Negotiation	4.30	4.59	4.43	4.28	4.52
Problem solving	4.01		4.39	3.98	4.37
Influencing and persuasion	3.98	4.50	4.38	4.02	4.47
Conflict resolution	3.94	4.50	4.40	4.00	4.32
Analytical	3.93	4.50	4.42	3.83	4.36
Customer focus	3.91	4.50	4.63	3.48	4.15
Leadership	3.85	4.33	4.30	3.75	4.38
Managing change	3.84	4.42	4.42	3.77	4.36
Tactfulness in dealing with others	3.84	4.15	4.24	3.76	4.07
Planning	3.81	3.29	4.22	3.63	4.20
Managing internal relations	3.77	4.22	4.22	3.75	4.21
Being organized/ time management	3.73	4.11	4.09	3.77	4.13
Understanding general business	3.71	4.50	4.27	3.73	4.20
Creativity	3.71	4.14	4.23	3.38	4.04
Inquisitive nature	3.63	4.01	4.02	3.43	3.87
Written communication	3.61	4.04	3.98	3.77	4.07
Computer literacy	3.49	4.29	4.37	3.87	4.28
Salesmanship	3.49	3.91	3.88	3.35	3.85
Computational	3.41	3.81	3.71	3.44	3.70
Technical	3.31	3.51	3.98	3.10	3.60
Risk taking	3.25	4.02	3.86	3.64	4.21
Blueprint reading and specification development	2.75	2.52	3.17	2.06	2.20
Overall Mean	**3.75**	**3.98**	**4.20**	**3.67**	**4.11**

*Scale: "1" = not important; "3" = important; "5" = most important

respondents in the World Class Study overall rated the skills higher in importance with an overall mean of 4.20.

What becomes clear from this analysis is that there is a set of underlying skills that make a good purchaser irrespective of the events of a particular point in time. For example, in the current study ethics was ranked as the number one skill, because at this point in time it weighs heavily on the minds of all business managers. In the first PET study and the World-Class Study, customer focus was a highly ranked skill due to the impact of total quality management (TQM) philosophy, however it did not make the top 10 in the current study. The key skills that consistently received the highest average mean ratings across all three studies (means of over 4.10) were the following:

- Interpersonal communications
- Ability to make decisions
- Negotiation
- Influencing and persuasion
- Conflict resolution
- Analytical
- Problem solving
- Managing Change
- Customer focus
- Leadership

These skills reflect the desire for a purchaser who can communicate and will make decisions. Certainly dealing with both internal and external customers requires negotiation skills. Since purchasing often must accomplish its goals with the assistance of other functions and suppliers, they must be able to influence and persuade, resolve conflicts, and solve problems. In addition to these people skills, purchasers must be able to look at the analytical side of a problem. Even though customer focus was rated lower in the current study, it was rated important for 2010 and in the previous two studies. Finally, purchasing is expected to show leadership in its actions and decisions and in getting its goals accomplished. Table 33 lists the cumulative means for the common skills across all three studies in descending order.

Table 33
Common Skill Mean Ratings in Order of Importance*

Skill	Overall Mean
Interpersonal communication	4.51
Ability to make decisions	4.48
Negotiation	4.42
Influencing and persuasion	4.27
Conflict resolution	4.23
Analytical	4.21
Problem solving	4.19
Managing change	4.16
Customer focus	4.13
Leadership	4.12
Understanding general business	4.08
Computer literacy	4.06
Managing internal relations	4.03
Tactfulness in dealing with others	4.01
Being organized/time management	3.97
Creativity	3.90
Written communication	3.89
Planning	3.83
Risk taking	3.80
Inquisitive nature	3.79
Salesmanship	3.70
Computational	3.61
Technical	3.50
Blueprint reading and specification development	2.54

*Scale: "1" = not important; "3" = important; "5" = most important

Knowledge Required of Purchasing/Supply Management Personnel

Purchasing is changing as a discipline in reaction to changes in the competitive environment. Changes such as increased competition, global economic competitors, shortened product life cycles, and e-business initiatives require purchasers to acquire new knowledge. Respondents were provided with a list of 64 areas of knowledge and asked to rate each item from "1" (not important) to "5" (important).

Thirty-six of the 64 categories were rated at least "important" ("3" or higher) in terms of current needs. In terms of future needs, 50 of the 64 categories had a mean rating of "3" or higher. The 10-highest rated mean knowledge subjects required currently and in the future as rated by respondents are shown in Table 34.

Top 2003 Knowledge Requirements

Currently eight of the top 10 knowledge areas had an average rating of greater than 3.5. The knowledge areas had a high correlation with the trends. Analysis of suppliers ranked first, closely followed by total cost analysis, pricing techniques, and purchasing strategies and plans. Supplier relationship management, commodity expertise, and supplier evaluation were next. Of the remaining three knowledge areas, supply chain management was ranked eighth and price/cost analysis and understanding markets and industries were tied for ninth.

Supply managers today want their purchasers to be able to analyze suppliers, and doing this requires knowledge of the competitive market, knowing the commodity, product, or service that they are buying. With this in place, various pricing and cost techniques can be used to achieve the lowest total cost. These buying plans need to be part of a set of purchasing strategies. Finally, suppliers can expect to be evaluated to see if they performed to expectations.

Top 2010 Forecasted Knowledge Requirements

Eight of the current knowledge areas made the future top 10. The two new additions were supplier development and business process improvement. Dropping out of the top 10 were pricing techniques (from third to tied for 11th) and commodity expertise (from fourth to tied for 11th). Supplier relationship management was the highest rated knowledge requirement. This was followed by total cost analysis, purchasing strategies, analysis of suppliers, competitive market analysis, supply chain management, supplier evaluation and price/cost analysis. The final two new additions were supplier development and business process improvement. In the future, these supply managers predicted that they will need knowledge on developing purchasing strategies and supporting supplier relationship management programs, with the focus on total cost analysis. Supply chain management will continue to receive its share of attention. Supplier analysis and competitive market analysis will be supplemented by supplier development activities and a focus on business processes. Overall, purchasers will steer their knowledge more on broader strategies — away from a price focus to a total-cost focus — and properly manage different relationships in a total cost framework. The mean rating of all knowledge areas in descending order based on the 2003 rating is shown in Table 35.

Largest Changes in Knowledge 2003 to 2010

After analyzing the top means, a gap analysis was performed to see what changes occurred in the rankings from 2003 to 2010. The 64 knowledge areas were ranked in descending order for both 2003 and 2010. Then an analysis of their movement in order of importance was analyzed. The largest increases in rank order from 2003 to 2010 were in the areas shown in Table 36.

Table 34
Top 10 Purchasing Knowledge Areas in 2003 and 2010*

Current Knowledge Areas	Mean	Future Knowledge Areas	Mean
Analysis of suppliers	3.60	Supplier relationship management	4.39
Total cost analysis	3.57	Total cost analysis	4.37
Pricing techniques (e.g., bidding)	3.55	Purchasing strategies and plans	4.37
Purchasing strategies and plans	3.55	Analysis of suppliers	4.30
Competitive market analysis	3.54	Competitive market analysis	4.22
Commodity expertise	3.53	Supply chain management	4.17
Supplier relationship management	3.53	Supplier evaluation	4.15
Supplier evaluation	3.53	Price/cost analysis	4.13
Supply chain management	3.45	Supplier development	4.13
Price/cost analysis	3.43	Business process improvement	4.09
Understanding markets and industries	3.43	Pricing techniques (e.g., bidding)	4.07

*Scale: "1" = not important, "3" = important, "5" = most important

Table 35
Mean Rating of All Knowledge Areas in Descending Order Based on 2003*

Knowledge Area	2003 Mean	2010 Mean
Analysis of suppliers	3.60	4.30
Total cost analysis	3.57	4.37
Pricing techniques (e.g., bidding)	3.55	4.07
Purchasing strategies and plans	3.55	4.37
Competitive market analysis	3.54	4.22
Commodity expertise	3.53	4.07
Supplier relationship management	3.53	4.39
Supplier evaluation	3.53	4.15
Supply chain management	3.45	4.17
Price/cost analysis	3.43	4.13
Understanding markets/industries	3.43	4.00
Cultural awareness	3.30	3.78
Legal issues	3.30	3.83
Cost of poor quality	3.28	3.84
Safety issues	3.28	3.54
Business process improvement	3.28	4.09
Quality assurance practices	3.26	3.78
E-commerce/e-purchasing systems	3.23	4.04
Supplier development	3.21	4.13
Understanding technical terms	3.19	3.54
Value analysis	3.17	3.83
Early supplier involvement	3.17	4.00
Standardization programs	3.17	3.74
Managing and analyzing inventory	3.15	3.61
Government regulations	3.13	3.41
Capital equipment purchases	3.13	3.65
Material requirements planning (MRP)	3.11	3.39
Logistics/distribution strategy	3.11	3.74
Financial and accounting basics	3.11	3.59
Project management	3.09	3.87
International sourcing	3.07	3.84
Financial evaluation of suppliers	3.06	3.76
Cycle time management	3.04	3.54
Total quality management/Six Sigma	3.04	3.87
Economic and market principles	3.04	3.70
Enterprise resource planning (ERP)	3.02	3.46
Outsourcing	2.98	3.85
Service buy analysis	2.98	3.73
Environmental regulations	2.96	3.24
Group dynamics	2.96	3.35
Operations management issues	2.94	3.24
Value chain analysis	2.94	3.76
Electronic data interchange (EDI)	2.94	3.17
Just-In-Time (JIT)	2.91	3.31
Learning curve or experience curve	2.87	3.20
Inbound transportation	2.81	3.24
Manufacturing processes	2.79	3.11
Make versus buy	2.76	3.67
Fundamental statistics	2.74	3.24
Cost accounting principles	2.73	3.23
Database management	2.72	3.11
Packaging	2.70	2.93
Lean manufacturing techniques	2.70	3.20
Warehouse management	2.67	2.91
Demand chain management	2.63	3.31
Activity-based costing	2.62	3.13
ISO 9000 - 2000 regulations	2.62	2.87
Reengineering principles	2.57	3.13
Data warehouse management	2.53	3.00
Managing currency fluctuations	2.51	3.22
Production planning	2.47	2.80
Concurrent engineering concepts	2.43	2.89
Decision support software	2.38	3.04
Simulation analysis	2.38	3.02

*Scale: "1" = not important; "3" = important; "5" = most important

Table 36
Largest Increases in Mean Rankings of Knowledge 2003 to 2010*

Table 36
Largest Increases in Mean Rankings of Knowledge 2003 to 2010*

Knowledge Area	Rank in 2003	Rank in 2010
Outsourcing	37	18
Total quality management/Six Sigma	34	17
Make versus buy	48	31
Value chain	42	26
Project management	30	16
Demand chain management	55	43
Managing currency fluctuations	60	49
Supplier development	19	9
Service buy analysis	38	29
International sourcing	31	20

*1= Highest Rank

If these respondents are right, several newer knowledge areas will be required for purchasers in the next decade. These newer areas of knowledge include: value chain analysis, demand chain management, service buy analysis, and project management. These newer knowledge areas joined some of the more traditional areas, such as: outsourcing, make versus buy, TQM/Six Sigma, supplier development, international sourcing, and managing currency fluctuations.

Several of the "hotter" topics in the literature were not highly rated by these senior supply managers. The "hot knowledge topics" that did not get high ratings are shown in Table 37.

Those areas of knowledge that were rated to experience the greatest drop in importance are listed in Table 38. Again, it is important to remember that the mean ratings all increased in the future. However, the areas in Table 38 increased less and thus, dropped in ratings.

Despite these drops in their ratings, it should be noted that the absolute value of the knowledge was forecasted to increase. It is interesting that safety issues ranked this high in the 2003 study; there is no anecdotal evidence to explain why the current ranking of 15th and the

future ranking of 35th. The ranking of 35th appears more in line with safety issues since purchasers are not directly involved with writing specifications on safety issues. Drops in MRP and EDI can be attributed to newer Internet-based technologies and ERP replacing traditional standalone MRP software. While government regulations are important and influence capital allocations and relative market freedoms, they are one knowledge area that purchasers will cover only as it affects their firm. The movement to more services and outsourcing has precluded the need to understand more about manufacturing processes.

Comparing a Decade of Knowledge Requirements
Table 39 shows the mean ratings of the 43 common knowledge requirements for both PET studies and 39 common knowledge areas for the World-Class Study. Included in the table are the 43 knowledge areas and the means for each study, as well as the overall mean for the three studies. When analyzing the overall mean ratings across the common knowledge areas, indications are that there was some variation in the ratings. They were not as consistent as the skills and trends ratings across the same groups. The original PET study averaged 3.20; the current PET study 3.05; and the World-Class Study 3.67. Future ratings were 3.78 in the

Table 37
Mean Rankings of "Hot Topic" Knowledge Areas*

Knowledge Area	Rank in 2003	Rank in 2010
Reengineering principles	58	53
ISO 9000-2000	57	63
Activity-based costing	56	53
Lean manufacturing	53	50
Concurrent engineering principles	62	62

*1= Highest Rank

Table 38
Largest Decreases in Mean Rankings of Knowledge Areas*

Knowledge Area	Rank in 2003 (Mean)	Rank in 2010 (Mean)	Change in the Mean Rankings
Safety issues	15 (3.28)**	35 (3.54)	20
Understanding technical terms	20 (3.19)	36 (3.54)	16
Government regulations	25 (3.13)	39 (3.41)	14
MRP	27 (3.11)	40 (3.49)	13
Cultural awareness	12 (3.30)	23 (3.78)	11
Managing and analyzing inventory	24 (3.15)	33 (3.61)	9
EDI	43 (2.94)	52 (3.17)	9
Pricing techniques	3 (3.55)	11 (4.07)	9
Legal issues	13 (3.30)	21 (3.83)	8
Manufacturing processes	47 (2.79)	55 (3.11)	8

*1= Highest rank; lower ranking reflected in higher numbers
**Scale: "1" = not important; "3" = important; "5" = most important

first PET study and 3.59 in the PET II study. Thus, the common knowledge areas have slipped slightly in importance as other areas such as electronic commerce and ERP have gained importance.

However, the top five overall knowledge areas across the three studies were: 1) analysis of suppliers; 2) supplier relationship management; 3) total cost analysis; 4) price/cost analysis; and 5) supplier development. These are solid knowledge areas that can form the basis for training purchasers. These top knowledge areas were followed in the mean ratings by competitive market analysis and supply chain management. Again it is worth remembering that knowledge related to Internet-based technology was not listed since it was not included in the 1993 study.

Table 39 lists all the knowledge areas that were used in the three studies and traces their changes in importance over the last decade.

Establishing the Training Environment for Purchasing and Supply Management

Training Organization and Resources
Organizational Characteristics
The organization's overall structure will have a large impact on the type and often on the quality of training conducted by the organization. First, respondents were asked to describe their primary purchasing and supply management organizational structure. Interestingly in the 1993 PET study, the participants thought their organizational structure would remain the same in 2000 as is shown by the percentage in Table 40.

However, this sample had a larger percentage of the hybrid form of organization than their counterparts did in the 1993 study (as shown in Table 40). In addition, the current sample also forecasted an increase in centralization of the purchasing and supply management function within their organizations. Centralization was forecasted to be implemented in 44 percent of the organizations by 2010.

Next respondents were asked to indicate their firms' primary purchasing and supply management training organizational structure (Table 41). The training structure reflects a trend toward centralization in the overall purchasing structure and indicates the respondents need to coordinate their training efforts. Currently, 41 percent had centralized training structures, and this was forecasted to increase to 46 percent by 2010. Meanwhile, centralized/decentralized — currently at 39 percent — was forecasted to increase to 50 percent by 2010. The organizational structure for training looks quite similar to that of a decade ago. It follows the general structure of the organization, and there is certainly a trend to coordinate it through either acentralized structure or a centralized/decentralized structure.

Purchasing Training Catalog
As an indicator of having purchasing training as a priority, researchers asked the respondents if their firms had a purchasing training catalog. Of the sample, 75 percent indicated that they had a purchasing training catalog, and 25 percent did not have one.

Purchasing Councils
Keeping up to date on the changing needs for training requires input from operating units. Respondents were

Table 39
Common Knowledge Areas' Mean Ratings in Order of Importance*

Knowledge	Actual 1993	Actual 1999	Forecast 2000	Current 2003	Future 2010
Supplier relationship management	3.91		4.47	3.53	4.39
Analysis of suppliers	3.84	4.27	4.43	3.60	4.30
Total quality management/Six Sigma	3.83	4.00	4.54	3.04	3.87
Quality assurance practices	3.79		4.28	3.26	3.78
Price/cost analysis	3.74	4.27	4.3	3.43	4.13
Total cost analysis	3.73	4.29	4.36	3.57	4.37
Commodity expertise	3.71	3.97	4.12	3.53	4.07
Supplier development	3.71	4.32	4.3	3.21	4.13
Cost of poor quality	3.68	3.94	4.53	3.28	3.84
Competitive market analysis	3.51	4.21	4.18	3.54	4.22
Supply chain management	3.41	4.37	4.21	3.45	4.17
Understanding markets/industries	3.41	4.08	3.98	3.43	4.00
Value analysis	3.40	3.81	4.05	3.17	3.83
Legal issues	3.38	3.86	3.71	3.30	3.83
Environmental regulations	3.33	3.48	4.10	2.96	3.24
Government regulations	3.29		3.64	3.13	3.41
Understanding technical terms	3.27	3.54	3.61	3.19	3.54
Financial evaluation of suppliers	3.27	3.71	3.85	3.06	3.76
Just-In-Time (JIT)	3.22	3.38	3.92	2.91	3.31
Operations management issues	3.17	3.54	3.65	2.94	3.24
Material requirements planning (MRP)	3.14	3.52	3.71	3.11	3.39
Safety issues	3.10	3.37	3.57	3.28	3.54
Project management	3.09	3.81	3.69	3.09	3.87
Electronic data interchange (EDI)	3.09	3.58	4.14	2.94	3.17
Logistics/distribution strategy	3.08	3.82	3.73	3.11	3.74
International sourcing	3.08	3.81	3.93	3.07	3.84
Cycle time management	3.04	3.65	3.79	3.04	3.54
Make versus. buy	3.04	3.74	3.54	2.76	3.67
Database management	3.03	3.26	3.57	2.72	3.11
Managing and analyzing inventory	3.02	3.92	3.56	3.15	3.61
Inbound transportation	2.98	3.46	3.46	2.81	3.24
Manufacturing processes	2.98	3.37	3.58	2.79	3.11
Learning curve or experience curve	2.91	3.37	3.35	2.87	3.20
Economic and market principles	2.88	3.22	3.39	3.04	3.70
Cultural awareness	2.83	3.86	3.67	3.30	3.78
Fundamental statistics	2.81	3.22	3.41	2.74	3.24
Concurrent engineering concepts	2.80		3.38	2.43	2.89
Cost accounting principles	2.76	3.12	3.15	2.73	3.23
Managing currency fluctuations	2.75	3.32	3.46	2.51	3.22
Production planning	2.73	3.06	3.28	2.47	2.80
Activity-based costing	2.70	3.24	3.24	2.62	3.13
Reengineering principles	2.59	3.64	3.16	2.57	3.13
Warehouse management	2.37	2.80	2.73	2.67	2.91
E-commerce/e-purchasing systems		4.04		3.23	4.04
Enterprise resource planning (ERP)		3.51		3.02	3.46

*Scale: "1" = not important; "3" = important; "5" = most important

Table 40
Organizations' Primary Purchasing/Supply Management Organization Structure

	1993	2000	2003	2010
Centralized/Decentralized	47%	47%	54%	44%
Centralized	36%	36%	30%	42%
Decentralized	17%	17%	16%	14%

Table 41
Centralized Versus Decentralized Training Structures

Training Structure	1993	2000	2003	2010
Centralized	45%	44%	41%	46%
Centralized/Decentralized	36%	36%	39%	50%
Decentralized	19%	20%	20%	4%

asked if their organizations had a purchasing training council, which was defined as one that consisted of operating unit representatives who assisted in guiding training efforts. The current sample indicated that 32 percent had a training council composed of operating unit representatives to assist in guiding training efforts (Table 42). This was the same percentage that indicated having a council a decade earlier. However, this was expected to increase to 67 percent of the firms in 2010. The objectives of these councils were varied.

As shown in Table 43, the primary purpose of these training councils is to help develop course content. Secondly, they are used to evaluate the various trainers used by the organization and conduct reviews of the instructional methods used in the various training courses. Finally, councils approve the trainers that are used by the organizations.

Respondents were also given the freedom to list the other tasks that these councils perform. These included

direction and priority of training programs, approving programs, approving budgets, and determining what individual positions should attend what training programs. One firm indicated that the management team sat in on its council and offered suggestions regarding general management training. It was also a way to show the results of training in purchasing and supply management and obtain the necessary budget for these programs.

Individual Responsible for Training
There were several varied titles of the individual responsible for training, but in most cases it was a high-ranking executive in the organization. An attempt was made to group these individuals into several categories to reflect job status. The most frequently mentioned title was that of *Director* either of purchasing, strategic sourcing, or supply chain. The next most popular titles mentioned were those of *Chief Purchasing Officer, Vice President* or *Purchasing Director.* Several had titles in the supply chain organization but were specifically in

Table 42
Percent of Respondents Utilizing a Training Council

Percent Having Training Council	1993	2000	2003	2010
	32%	37%	32%	67%

Table 43
Objectives of a Training Council

Objectives	Current 2003	Future 2010
Develop Course Content	85%	100%
Evaluate Trainers	50%	71%
Review Instruction Methods	65%	71%
Approve Trainers	47%	59%

charge of purchasing and supply management training such as *Manager of Supply Chain Learning* or *Manager of Purchasing Initiatives and Development* or *Strategic Sourcing Training and Development Manager.* Others responsible for training were located in the human resources function. Their titles reflected broader training than just the purchasing and supply management function and included titles such as *Manager of Organizational Training, Manager of Workforce Development, Training Coordinator,* and *Director of Training.* Several respondents indicated that no one person was responsible. Others mentioned the existence of a team or purchasing council or that it was a shared responsibility. Finally there were some titles outside of purchasing and human resources, such as the *Quality*

Director, Product Manager, or *Process Improvement Leader.* Table 44 shows a representative list of titles of individuals responsible for training.

Dollars Spent on Training
Firms who are committed to training in purchasing and supply management must commit the necessary dollars in order to support these efforts (Table 45). Thus, respondents were asked to indicate their expenditures in three categories: first, total annual dollar expenditures; second, total annual dollars of training per employee; and finally, percentage of the purchasing operating budget devoted to training. Respondents were also asked to provide the total annual days of training per employee. The responses shown in Table 45

Table 44
Titles of Individuals Responsible for Purchasing/Supply Training

Chief Purchasing Officer
Vice President — example titles reported in this category:
VP of Purchasing
Vice President Global Procurement
Director — example titles reported in this category:
Director of Business Planning
Director of Vendor Programs
Director, Strategy & Process Improvement
Director of Purchasing
Director, Supply Chain
Director, Training
Locally HR/Purchasing Director
Purchasing Director
Director, Subcontract and Supplier Management.
Director, Strategic Sourcing
Quality Director
Manager — example titles reported in this category:
Corporate Purchasing Manger
Commercial Manager-Competencies, Americas Region
Manager of Workforce Development/VP of Human Resources
Manager Purchasing Initiatives and Development
General Manager, Enterprise
Manager, Supply Chain Learning
Material Planning & Procurement Director
Manager of Organizational Training
Strategic Sourcing Training & Development Manager
Purchasing Training Manager
Other — example titles reported in this category:
Staff Development Specialist/Advisor
The Leadership Team
Procurement Council
Process Improvement Leader
Senior Buyer
Shared Responsibility
Training Coordinator

Table 45
Annual Expenditure for Training

	Current 2003 Average	Future 2010 Average	Current Min	Future Min	Current Max	Future Max
Annual Training Expenditures	$773,655	$1,065,583	$5,000	$10,000	$5,000,000	$10,000,000
Training Dollars per Employee	$1,813	$3,401	$60	$75	$7,000	$12,000
Training Days per Employee	8.61	10.31	1	2	40	40
Training as Percent of Purchasing Budget	2.49%	3.42%	0	0	8%	15%

indicate that the average respondent firm spends almost three quarters of a million dollars annually on purchasing training. This was expected to increase to more than a million dollars by the year 2010. This worked out to an average of $1,813 per employee now and expected to increase to $3,401 in the future.

This training expenditure amounted to about 2.5 percent of the training budget currently and was expected to grow to 3.4 percent in the future. On average, purchasers are now given the equivalent of about nine full days of training annually. This is expected to grow nominally to a little more than 10 days in the future.

Perceived Status of Purchasing and Supply Management and Support for Training
Directly tied to organizational status is how purchasing is perceived within the organization. Respondents were asked to rate the perceived status of the purchasing and

supply management function within their organizations. As shown in Table 46, they currently feel it rates a moderate status and will increase to a higher status in the future. In the original PET study, purchasers were only asked to indicate if it was perceived as a function of "high" or "low" status and 88 percent indicated "high" status. This current study better captures a range of responses and is probably a more accurate representation of the status of the function.

The higher the status of the function, the more that upper management will be likely to support training efforts. Respondents were asked to indicate how their executive management teams viewed purchasing training — as a low priority or high priority.

Table 47 indicates that it is viewed as a moderate priority item and will increase to a higher priority in the future.

Table 46
Perceived Status of the Purchasing Function*

	Current 2003		Future 2010	
	Average	Mode	Average	Mode
What is the perceived status of the purchasing function in your organization?	3.17	3	4.29	5

*Scale: "1" = Low Status; "3" = Moderate Status; "5" = High Status

Table 47
How Executive Management Views Purchasing Training*

	Current 2003			Future 2010		
	Average	Mode	N	Average	Mode	N
How does your executive management team view purchasing training?	3.26	3	53	3.96	4	52

*Scale: "1" = Low priority; "3" = Moderate priority; "5" = High priority

If purchasing is viewed as a higher-status function and executives view training as more of an investment, then when economic times get tougher training may survive budget cuts. Some might say this is a very optimistic view since training is one of the first things cut when budgets are reduced. As is shown in Table 48, purchasing and supply management budgets will also be reduced, however the modal rating of "3" indicates that the largest number of respondents felt budgets would be held constant and be spared the cuts.

Finally, looking at the type of training offered depends to some extent on how purchasing is viewed within the corporation. In some firms the purchasing and supply management function is viewed as a career; in others it is a rotational job assignment on the way to management or it could be both a rotational and career area. Respondents were asked to indicate if purchasing was viewed as a career track or more of a rotational area. As shown in Table 49, in the current sample it is considered a career area or both a career area and rotational track. In the future it will be considered both a career track and rotational area. The numbers match up fairly well with the data from a decade earlier with a slightly higher percentage of respondents in the current survey seeing it more as a rotational area. This is why ISM developed the A.P.P — to give those who would not be in the function for their entire career a chance to be certified while they were in the purchasing and

supply management field.

Training Development, Courses, and Delivery
Career Development Programs
Training to attain the necessary knowledge and skills requires a systematic approach and resources dedicated to a comprehensive training program. This all starts with a systematic career development program. Career development programs are characterized by a holistic approach that attempts to guide, track, and monitor the career path of purchasing and supply management employees. Career development is broader than training in that it addresses the individuals' career goals and objectives. Forty percent of the respondents indicated they currently had a formal career development program. This was expected to jump dramatically by 2010, to 89 percent (Table 50).

Looking back at the original PET study, respondents indicated that 75 percent would have a formal career development program by 2000. While the two samples are not identical, they are both composed of larger firms. This longitudinal comparison indicates that purchasing organizations have not developed formal career development to the extent that they predicted 10 years ago. On the positive side, a greater percentage of firms had formal career development programs now than had them in 1993.

Table 48
Current and Future Impact on Purchasing/Supply Training of Business Volumes/Profits Decline*

	Current 2003			Future 2010		
	Average	Mode	N	Average	Mode	N
When business volume/profits decline, training budgets [decreased, held constant, or increased].	2.11538	3	52	2.55102	3	49

*Scale: "1" = Decreased; "3" = Held Constant; "5" = Increased

Table 49
Purchasing a Career Track or Rotational

	1993 PET I	2000 Forecast PET I	Current 2003	Future 2010
A career track within the function	43%	42%	40%	37%
A rotational job assignment	9%	8%	19%	14%
Both career and rotational	48%	50%	40%	49%

Table 50
Comparison of Percentage Having Formal Career Development Programs

1993 PET I	2000 Forecast PET I	2003 PET II	2010 Forecast
26%	75%	40%	89%

Formal Training Programs
While less than 50 percent of the firms had formal career development programs, this is expected to increase to 93 percent by 2010. Comparison to the original study shows higher percentages now than in 1993, but again, current percentages are lower than what was forecasted for 2000 in 1993. As can be seen in Table 51, it was expected that 77 percent of the firms would have formal training programs by the year 2000.

Determining which specific courses to attend in the formal training program requires a needs assessment of purchasing personnel. Seventy percent of the respondents had some form of a needs assessment in place and 95 percent indicated they would have them in place by 2010 (Table 52). The 70 percent matches the percentage that had needs assessments in place a decade ago. Interestingly forecasts of the firms that would have needs assessment in place in the future were very similar in both the PET 1 and PET 2 studies, at 93 percent and 95 percent, respectively

Of those doing the needs assessment, the most common evaluation period was annually. Sixty-nine percent of respondents currently performed a need assessment annually. However, in the future, annual assessments were forecasted to decline to 50 percent, with an increase in semiannual assessments to 32 percent. In the previous study 76 percent evaluated needs annually. A decade ago the total annual and semi-annual needs assessment were 89 percent as compared to 78 percent

in 2003 and 82 percent in 2010. The difference is that a greater percentage of firms performed needs assessments every two years in the current study (Table 54).

If an organization performs needs assessments, how will the assessments will be implemented? Participants were asked to indicate the specific way in which comparisons were made to job requirements. A list of seven commonly used techniques, taken from the 1999 World-Class Study and various focus groups, were provided on the questionnaire. These seven are shown in Table 55 and are compared to job requirements to determine needs analysis. Currently, comparing job requirements to required skills, annual performance evaluations, and perceived gaps in employee skills are the most popular ways to evaluate needs assessments.

Gap analysis was forecasted to become the most popular method of determining needs assessments in the future. Gap analysis is the assessment technique that compares the skill level the employee has attained on a particular dimension to what is required for that position. For example if a senior supply position requires the employee to have mastered advanced negotiation techniques and the individual is judged to be at only a basic level, then a gap exists. The employee will then be given a plan to increase this level to the required level of expertise. The gap analysis ties into the ideal skill set for the position and assesses the actual skill level attained. As these more advanced techniques are used to assess purchasers' needs, there will be less

Table 51
Comparison of Percentage Having Formal Training Programs

1993 PET I	2000 Forecast PET I	2003 PET II	2010 Forecast
44%	77%	50%	93%

Table 52
Comparison of Percentage Having Formal Needs Assessment Programs

1993 PET I	2000 Forecast PET I	2003 PET II	2010 Forecast
70%	93%	70%	95%

Table 54
Frequency of Needs Assessments for Purchasing and Supply Management Employees

Frequency	Pet I 1993	Pet II 2003	Pet II 2010
Semi-annually	13%	9%	32%
Annually	76%	69%	50%
Every 2 years	7%	19%	13%
Every 5 years	N.R.*	3%	5%

*N.R.= Not Rated

Table 55
Needs Assessment Comparison Methods

Factor with which Requirement is Compared	Frequency 2003	Percent	Frequency 2010	Percent
Required skills	30	56%	32	59%
Annual performance evaluation	28	52%	29	54%
Perceived gap in employee skills	27	50%	35	65%
Job description	22	41%	24	44%
Ideal skill set	22	41%	31	57%
Actual skill level attained	20	37%	31	57%
Skill development model	18	33%	27	50%

use of comparing job requirements to the job description.

The annual appraisal is also a technique that is popular among firms to assess needs. During the evaluation process, the employee's strengths and weaknesses are identified as well as a specific action plan for the employee to address his or her weaknesses. This could include new skill requirements and training to address the perceived weaknesses, as well as developing specific action plans for the employee to address his or her specific shortcomings. Other popular methods of needs analysis included comparing the current level of skill attainment to the ideal skill set for the positions. Finally, 18 respondents indicated they compared job requirements to a skill development model. This model would list the ideal skill set and specific career stage or positions in which the employee should attain the requisite skill level.

Purchasing and Supply Management Participation in Training
In order to carry out training, the organization must have the resources available to train its people. Thus, the respondents were asked to indicate the percentage of their purchasing personnel that attended training courses annually. The results were encouraging as the average respondent organization sent 64 percent of its purchasing personnel to training courses annually (Table 56). The modal response was 100 percent and the median 75 percent. In the future, it was expected this would increase to 87 percent and the mode and median were both 100 percent.

Training Methods
The purchasing literature describes various approaches to purchasing training, which includes on-the-job training and functional rotation. During functional rotation, individuals spend time in various areas such as inventory control, receiving, and quality. Formal classroom training is the most structured approach to training and stresses both theory and actual practice. Often various training approaches are combined. For example, one firm used informal on-the-job training but regularly sent its purchasing people to formal training sessions.

A variety of training methods were utilized for training purchasing employees. The most popular was informal on-the-job training. However when looking back at the PET I study, the informal on-the-job training is used less than a decade ago and is very close to the projected usage for 2000. Seventy-eight percent of the respondents indicated they used on-the-job training. Fewer organizations (67 percent) used formal classroom training than a decade earlier (76 percent). This is less than what was projected for 2000 (85 percent), but it is projected to increase from 67 percent currently to 76 percent in the future.

This study added two new training techniques. A decade ago purchasers did not have the Internet to perform training and the technique of coaching was not asked of respondents. Both these training methods were popular. Coaching was rated as high (67 percent) as formal classroom training, and Internet- or electronic-based training was used by 54 percent of the

Table 56
Percentage of Purchasing Personnel that Annually Attend Purchasing Training Courses

Current 2003			Future 2010		
Average	Mode	Median	Average	Mode	Median
63.9%	100%	75%	87%	100%	100%

respondents. These two techniques were both forecasted to increase in the future. Internet training showed the largest projected gain, to 76 percent, and coaching was forecasted to become the most popular training method (78 percent).

Finally, functional rotation was the least popular training method, with 35 percent using this technique. However, it was forecasted to increase to 61 percent by 2010. An historical comparison indicates that the 2010 forecast (61 percent) is close to the 2000 forecast (63 percent) of 10 years earlier (Table 57).

In summary, there are more ways to provide training to employees today than there were in 1993 — particularly with the Internet-based training models that have been developed in the past five years. Thus, while classroom training is important, there are other viable alternatives that organizations can make use of in training their employees. Coaching is a popular technique that managers feel is very useful. One-on-one training and private instruction characterize coaching. It is also characterized by shorter reinforcement cycles. In other words, behavior is observed during job activity, and the employee is then instructed about improvement techniques for subsequent activities. One of the focus group participants indicated she believed that coaching is increasingly neglected in American business. "There is a lot of performance planning, a lot of reviewing, and performance appraisals but very little coaching." The problem is that many managers confuse coaching with directing. Giving orders or telling an employee how to do a job is not coaching. Coaching — similar to teaching — is listening, suggesting, and mentoring to help the employee become self-sufficient and build competence.

Certainly Internet-based training will also continue to grow. This mode of training is not only for short-term courses but degree programs. For example, the University of Phoenix has popularized online degree based programs for working professionals to obtain either a bachelor's or master's degree online. On their Web site it describes its development as follows: "University of Phoenix was founded in 1976 and accredited in 1978. University of Phoenix offers a unique approach to education, with a multitude of targeted academic programs and locations that stretch across 25 states, the Commonwealth of Puerto Rico, British Columbia and through our Distance Education. Over the years, we've grown to become the largest private university in the nation for working adults." In response to this, many traditional universities have responded with their own distance learning programs. For example, Florida State University will begin offering a professional MBA online starting in the fall semester of 2004, offering courses in supply chain management and purchasing. This Internet-based training growth will displace other formal techniques, particularly formal in-class instructor-based training. North Carolina State University has also developed customized distance education certificate programs for several major *Fortune* 500 companies in logistics, purchasing, and supply chain management.

Tools Used to Support Training
As indicated above, it is evident that technologies have changed purchasing and supply management training from a decade ago. Thus it was important to see what specific technologies were impacting training efforts. Respondents were provided a list of tools that their organizations used to support training after discussions with several of the respondents during the pilot testing phase of the questionnaire. They were given newer (such as the Internet and teleconferencing) as well as the more traditional (formal classroom) techniques and asked to indicate which of these tools were used. Currently the traditional techniques of informal on-the-job training and formal classroom training led by an instructor are still the most popular methods, used by more than 70 percent of the respondents (Table 58).

Technology is having an influence on how training is conducted, as 57 percent of the sample is using self-paced e-learning courses employing Internet-based technologies. In the future it is expected that Internet-

Table 57
Methods Used in Training Purchasing Employees

	1993	2000	2003	2010
Informal/"On the Job"	92%	79%	78%	69%
Formal Classroom	76%	85%	67%	76%
Coaching	N.R*	N.R.	67%	78%
Internet	N.R	N.R.	54%	76%
Functional Rotation	44%	63%	35%	61%

*N.R.= Not Rated

Table 58
Methods Used to Facilitate Training (Percent Using by Frequency of Mention)

Facilitation of Training Method	Percent using	
	2003	2010
On the job/informal	78%	72%
Formal classroom/instructor-led	72%	76%
Self-paced e-learning via intranet/Intranet	57%	74%
Workbooks and manuals self-paced	43%	39%
CD-ROM/DVD/diskettes self-paced	37%	56%
Virtual classroom video conferencing	35%	54%
Teleconferencing	31%	48%
Video tapes self-paced	26%	22%
Satellite/broadcast TV.	15%	30%
Audiocassettes self-paced	15%	15%

based training will replace all techniques (other than the formal classroom technique) as the method most likely to facilitate training.

Other areas of self-paced learning were also popular. Currently, traditional workbooks and manuals were most popular. However in the future, these traditional workbooks will move to a more CD-ROM/DVD/diskette format. Currently 43 percent indicated using workbooks and self paced manuals, but this was expected to decline slightly in the future to 39 percent. Meanwhile, CD-ROMs and DVDs were expected to increase from their current 37 percent usage to 56 percent in 2010.

These respondents also forecasted increases for videoconferencing (35 percent to 54 percent) and teleconferencing (31 percent to 48 percent). These technologies are often associated with what is termed the virtual classroom, i.e., training can be distributed from a central site to any number of individual locations.

These training programs can be viewed individually from one's personal computer or transmitted to a formal classroom. Satellite/broadcast television was also forecasted to increase in use. The VCR technology, which was used a decade ago, will also experience a decline in usage (26 percent to 22 percent) while self-paced audio cassettes remain in use by 15 percent of the respondents now and into the future.

Frequency of Using Training Methods
Next the respondents were asked to rate the frequency with which they used these techniques to facilitate training on a scale of one to five ("1" never, to "3" sometimes, to "5" always). The results in Table 59 show, as would be expected, that on-the-job and informal training would be used with the greatest frequency, as most all firms use some form of informal job training. Similar to the ranking of frequency of use above, this was followed by formal classroom instructor-led training. Again an Internet-based, self-paced learning method was third and is expected to be used more frequently in the future. Self-paced manuals and

Table 59
Frequency of Training Methods*

	Current 2003		Future 2010	
	Average	Mode	Average	Mode
Formal classroom/instructor-led training	3.48	3	3.45	3
Virtual classroom via video conferencing	2.08	2	3.00	3
Self-paced e-learning courses offered via intranet/Internet/extranet	2.50	3	3.33	3
Videotapes, self-paced	1.78	1	2.18	1
Workbooks and manuals, self-paced	2.10	1	2.40	3
Audiocassettes, self-paced	1.39	1	1.68	1
CD-ROM/DVD/diskettes self-paced	1.84	1	2.73	3
Satellite/broadcast TV	1.67	1	2.47	3
On the job/informal	4.05	4	4.10	4

*Scale: "1" =never, "3" =sometimes, "5"= always

workbooks were the fourth most frequently used. However they fell to seventh in the future (Table 59). Meanwhile, other technologies such as videoconferencing and CD-ROM/DVDs were expected to be used more frequently in the future in place of hard copy paper manuals. Videotapes and audiocassettes were in seventh and eighth place currently and dropped one place in the future. The modal rating for both these techniques was "1," never used. Satellite/broadcast television was the least frequently used technique currently but jumped to sixth place with a modal rating of "3" in the future.

Overall this question confirmed what was found in the previous question. Firms are making and will continue to make use of training technology to deliver training. However, informal on-the-job training and instructor-led traditional classroom formats are most popular currently and in the future. What is evident is that self-paced training through the virtual classroom and CD-ROM/DVD technology will grow in use. It will become another outlet for individuals in purchasing and supply management to achieve the necessary skill and knowledge levels they require to be successful. Older technologies such as the videotapes and audio cassettes will still be used but with much less frequency. Finally satellite/broadcast television is expected to also see an increase in future use.

Specific Courses Offered When Training Purchasing and Supply Management Employees
A complete list of courses available to purchasers would be quite lengthy. Further, quite often courses that cover the same material have different names, and conversely, courses with similar names cover different topic areas. For example, a course entitled "Fundamentals of Purchasing" at one firm is called "Basics for Buyers" at another firm. Also, the content and what is emphasized in these courses will vary depending on the industry and the relative importance. Thus buyers in the defense industry will focus more on the technical parameters of specification development than those in the food industry.

However, research by Muller (2001) has shown that certain broadly defined task categories have commonalities across all buying sectors of private corporations, governmental, and institutions.

A list of common courses was developed from the previous PET study and in conjunction with focus group discussions. A list of the nine courses and the percentage of respondents that took these courses are shown below in Table 60. As can be seen, the three most popular courses offered to purchasing and supply management employees in the current sample are negotiations, ethical conduct, and legal/UCC. However fewer respondents offered these courses than those indicated offering such courses a decade earlier. Some of the reasons for the lower percentage of offerings is that there appears to be a more modular approach to training, where an employee is given a particular skill to improve on and then assisted in finding a path to that goal. This could include attending a seminar sponsored by a professional association such as ISM, doing a self-paced instruction, or receiving on-the-job training. Thus, rather than using a blanket approach (requiring everyone to take these courses), firms seem to be more targeted in their training approaches. However, they still see the numbers increasing into the future. Specifically, the areas of "supply chain management" and "inventory management" were expected to have the largest increases in the future followed by "managing the purchasing function" and "total quality management/Six Sigma."

Purchasers also indicated other specific training courses that they offered to their P/SM employees (Table 61). They are grouped in major headings but each course was listed as a standalone course whose time could vary from four hours to one or two days. Under the financial

Table 60
Specific Training Course Offered to Purchasing Employees

Courses	1993	2000	2003	2010
Negotiation	85%	84%	63%	69%
Ethical Conduct	N.R.*	N.R.	56%	57%
Legal/UCC and Contracts	67%	70%	48%	63%
Total Quality Management/Six Sigma	70%	81%	43%	54%
Basics for Purchasers	77%	77%	41%	44%
Supply Chain Management	N.R.	N.R.	31%	56%
Certification Training (C.P.M./CPIM)	43%	56%	30%	37%
Inventory Management	N.R.	N.R.	28%	41%
Managing the Purchasing Function	N.R.	N.R.	33%	43%

*N.R.= Not Rated

Table 61
Other Training Courses Offered

Financial/Cost Management
Currency
Spend Stream Analysis
Price Adjustment Clauses and Indices
Strategic Cost Management
Supplier Financial Analysis
Finance Basics
Supplier Management
Supplier Relationship Management
Subcontract Management
Supplier Diversity
Skills Training
Influencing Skills
Negotiating Skills
Presentation Skills
Project Management
Purchasing/Sourcing Management
Strategic Sourcing
Purchasing Policies and Processes
Buying Techniques and Theories
Knowledge Management
Personality/Leadership Training
Process Improvement Training
Market Intelligence/Analysis
Value Stream/Process Mapping
Decision Analysis
Performance Management Training
Automation
Safety
Security
Transportation
Import/Export
Materials Management
Lean Manufacturing
MBA, Supply Chain Management

area were courses dealing with currency, spend analysis, price adjustments, strategic cost management, and supplier financial analysis. Knowledge management, dealing with how to extract and manage the knowledge gained from suppliers and internal customers, was a course that two firms mentioned. Since purchasing is a knowledge center, it is the recipient of many streams of knowledge and managing it is critical to purchasing success. Supplier management, supplier diversity, and supplier relationship management courses deal with various arrangements to optimize the supply base.

Courses related to managing the supply base focused on strategic sourcing, traditional purchasing policies and processes, and buying techniques and theories. Several

firms offered softer skill-type courses. These courses involved influencing, negotiating, presenting, and project management. Also a personality and leadership training course was listed for aspiring purchasing and supply managers.

Finally, there were a group of courses that focused on the process of purchasing and supply management. These ranged from strongly encouraging employees to obtain an MBA in supply chain management to courses in safety, security, transportation, lean manufacturing, and materials management. Newer areas included market intelligence/analysis, value stream/process mapping, and decision analysis.

Extending Purchasing/Supply Management Training to Other Groups

Certainly purchasing and supply management training affects other functions and has an impact on many suppliers. Certain firms limit their training to purchasing and supply management employees, while others open it up to various internal functions and others to their suppliers. Respondents were asked to indicate if they offered formal purchasing training to these other groups. As shown in Table 62 below, there has been an increase in extending formal purchasing training to non-purchasing personnel from a decade earlier. In the current sample, 44 percent of the respondents indicated they offered training to non-purchasing personnel, up from 36 percent a decade earlier (Table 62).

However this was less than the 1993 forecast of 56 percent in 2000. The current sample expects to offer such training to 67 percent of non-purchasing personnel by 2010. Training extended to suppliers was also higher than a decade earlier, 26 percent versus 17 percent, but lower than forecasted for 2000. In the future it is expected that 49 percent of these firms will offer formal purchasing training to their suppliers. While researchers did not explore the specific areas of training that would be offered to suppliers, there is some indication from the literature that training on total quality management/Six Sigma is one area that firms have offered suppliers dating back to the early 1990s. Finally non-exempt personnel were not measured during the previous study, but they are involved in many purchasing processes. It was found that this group was offered training as often as other non-purchasing personnel (44 percent). While this is expected to increase into the future (to 52 percent) it is not as great an increase as expected for non-purchasing personnel.

Sources Used to Deliver Purchasing and Supply Management Training

Respondents were asked to indicate whether training was delivered by internal company personnel or external providers, such as consultants, associations, and universities, and the percentage of training that was delivered by each respective group. Internally, training could be performed by personnel specializing in training, such as the human resources organization, or by those having functional expertise in purchasing and supply management. There are many external sources of training, including professional associations, consultants, and universities.

In the previous PET study, respondents were asked to indicate whether training was performed externally or internally. The results revealed that the two scenarios were split evenly at 50 percent each. In the current, study, internal personnel were broken into two groups (functional experts and human resources training group) (Table 63). Adding the two internal providers together indicates that more of the training is being handled internally (66 percent) currently and remains relatively the same into the future (65 percent). The data show that these firms are relying more on their internal expertise as opposed to going out and hiring a trainer or an outside organization to perform the training.

Table 62
Extent to Which Formal Purchasing Training Is Offered to Other Groups

Training Offered to Other Groups	1993	2000	2003	2010
Non-purchasing personnel	36%	56%	44%	67%
Suppliers	17%	49%	26%	50%
Hourly purchasing personnel (non-exempt)	N.R.*	N.R.	44%	52%

*N.R.= Not Rated

Table 63
Sources Delivering Purchasing Training

What sources deliver purchasing training courses in your organization?	Current 2003	Future 2010
Internal company personnel specializing in training (i.e., human resources)	22%	24%
Internal company functional/divisional experts (e.g., purchasing)	44%	41%
Outside resources (e.g., consultants, associations, universities, etc.)	34%	35%

Role of Professional Associations in Purchasing and Supply Management Training
ISM is the primary educational association established to meet the training and educational needs of the purchasing and supply management profession. Respondents were provided a list of professional associations that were training providers. A similar question was asked of respondents a decade ago. The question asked respondents to rate the effectiveness of five different professional groups in meeting their training needs. Because respondents were most familiar with ISM, several choices were provided under their category. The question did not pinpoint specific training programs so it represents a global view from the prospective of high-level managers of large firms.

ISM's standard training programs were the highest rated group (X= 2.81) in terms of meeting training needs. This was followed by the ISM Annual International Conference (X = 2.28), American Management Association (X=2.20), and the American Production and Inventory Control Society (APICS) (X= 2.18). ISM in-company training and local ISM affiliates were in fifth and sixth place with a rating of (X=2.13). The final two providers were the American Society for Quality Control (ASQC) (X=1.78) and National Contract Management Association (NC MA) (X= 1.66).

Respondents in this sample were much more critical of these associations than a decade earlier. Not one group was rated higher than a decade earlier. Only ISM achieved a modal rating of "3" (effective) for its standard training programs and the international conference. A decade earlier all but two of the associations had modal ratings of "3."

Measures Used to Evaluate Training Effectiveness
A major issue regarding training is measuring its effectiveness. While the most common method used is to have attendees evaluate the course offering immediately after the course (or if the course involves multiple instructors, to rate each instructor after they deliver their particular session). Other less commonly used methods include a needs assessment, which tests knowledge levels prior to the session (pre-test), and an assessment later (post-test). Course evaluations can also be given after the employee is back on the job to assess if the training was effective in conveying the knowledge expected. Finally training can be used in conjunction with a performance appraisal whereby the employee's mastery of the subject is compared to actual performance on the job. For example, was he or she more successful in conducting a particular negotiation due to having taken a negotiation course? Certainly many intervening factors and events make it difficult to judge the effectiveness of training, but it still must be measured to evaluate and improve the offerings and subsequent knowledge.

The most prevalent method is to conduct the course evaluation immediately after the course. The percentages using this method were consistent with the numbers a decade ago and consistent with the forecast a decade ago. However, the current respondents indicated it would decline slightly in popularity in the future. There is a sharp drop after course evaluations. Performance evaluations assessing knowledge before and after training were the next most popular (31 percent) followed by needs assessments using pre- and post-tests (24 percent). Course evaluations after a time period were the least used. Changes in evaluation methods from a decade earlier were not substantial, and it appears that the traditional course evaluations will continue to be the main method used to assess training.

The use of performance evaluation to judge training effectiveness is the second most popular and is forecasted to gain momentum. However it should be

Table 64
Effectiveness of Professional Associations in Meeting Training Needs*

	2003 Average	2003 Mode	1993 Average	1993 Mode
ISM standard training program	2.81	3	3.19	3
ISM Annual International Conference	2.28	3	N.R.**	
American Management Association	2.20	2	2.65	3
APICS (American Production Inventory Control Society)	2.18	1	2.74	3
ISM in-house training	2.13	2	N.R.	
Local ISM affiliate training programs	2.13	1	2.93	3
American Society for Quality Control	1.78	2	2.42	1,3
National Contract Management Association (Current)	1.66	1	1.89	1

*Scale: "1"= not effective to "5" = highly effective
**N.R.= Not Rated

Table 65
Measures Used to Evaluate Training Effectiveness

	1993	2000	2003	2010
Course evaluations with the course	73%	73%	74%	61%
Performance evaluation (before and after training)	44%	56%	31%	48%
Needs assessment of knowledge (pre- and post-test)	28%	49%	24%	44%
Course evaluations after the course (three to six months)	20%	44%	13%	28%

noted it was also forecasted to behave similarly a decade ago.

Respondents provided several other methods that were also used to evaluate training effectiveness. These included getting ongoing feedback concerning the training from those having attended such sessions. Other respondents indicated the cost of training was an issue in a time of budget cutting. During these tight times, the cost of training was compared to the overall purchasing budget and attempts were made to maximize dollars given the budget for training. One firm tried to get the biggest bang for its dollar by comparing the costs of training and estimate the maximum number that could attend training without breaking the budget. Others evaluated improvements in actual work goals to check the effectiveness, including such items as on-time deliveries, defects in defective items, and the number of man hours it took to perform a task.

Formal Education and Certification
Formal Education Level in Purchasing and Supply Management
Entry-level purchasing and supply management positions require the candidate to possess a certain level of formal education (Table 66). Since the purchasing and supply management function has been reported to be more strategic and important to the organization, it was desirable to determine what the requirements would be for a position in the field. Respondents were asked to indicate what the minimum level of formal education would be required to be hired into their purchasing department.

Table 66 shows that more than 80 percent of the respondents required a minimum of a bachelor's degree. This will drop slightly into the future as the requirement for a master's degree grows in importance. A high school degree was currently the minimum for 13 percent of the sample, but that will decline in the future, as would the two-year associate's degree. Since a bachelor's (and in the future a master's) degree will become more important, respondents were asked to indicate the desirability of the various degrees. For example, would a business degree be more valuable than one in engineering?

As shown in Table 67, the most desirable degree both now and in the future was a bachelor's degree in purchasing/supply chain management, and this agrees with the study a decade ago. Although, a decade ago the term "supply chain management" was just coming into the purchaser's vocabulary and degrees were in purchasing/materials management. The increasing desirability of an advanced degree is shown by the high level of attractiveness of master's-level degrees. The combination of a technical undergraduate combined with an M.B.A is also attractive and had a modal rating of "5," most desirable. A decade ago, purchasers felt the same way. In fact their forecast for the desirability of the M.B.A. was the exact rating (X= 4.06) given by the respondents in the current sample. A bachelor's degree in business and a bachelor's degree in a technical field were next in desirability and had modal ratings of "3," desirable. A master of science in a technical field drew mixed results. Some preferred this background, while many felt it was not desirable. The modal rating of "2" indicates that the largest number of respondents felt it was less than desirable. However, its overall mean was much higher (3.11) indicating that many ranked it very

Table 66
Minimum Formal Education Levels

	Current 2003	Future 2010
Bachelor's degree	81%	79%
High school education	13%	4%
Associate's two-year degree	4%	2%
Master's degree	2%	15%

Table 67
Desirability of Various Degrees*

	2003		1993	2000
	Average	Mode	Average	Average
Bachelor's, Purchasing/Supply Chain Management	4.09	5	4.17	4.33
M.B.A., (Master in Business)	4.06	5	3.75	4.06
Technical Undergraduate and M.B.A.	3.92	5	4.11	4.3
Bachelor's, Business	3.64	3	3.51	3.54
Bachelor's, Technical (Engineering, Sciences etc.)	3.42	3	3.76	3.92
Master of Science (Technical Field) e.g., computer science, biology	3.11	2	3.32	3.58
Law	2.66	3	2.34	2.56
Bachelor's, Liberal Arts	2.30	2	2.3	2.3

*Scale: "1" = least desirable; "3" = desirable; "5" = most desirable

desirable. Thus it appears that the type of industry would influence the desirability of a master of science in a technical field. A law degree was ranked seventh of the eight degrees presented (X=2.66) and a bachelor's in liberal arts was rated at 2.30.

Overall, respondents prefer someone with a degree in the purchasing and supply management area. This was true a decade earlier and is true now. There is also a growing emphasis on having an M.B.A. Combining an M.B.A. with a technical undergraduate is a very desirable in the purchasing and supply management field. The overall mean ratings regarding the desirability of various degrees remain relatively unchanged from what they were a decade ago.

Professional Certifications
Formal education is the starting point for career progress in purchasing and supply management and once in the field, certifications can be an important part of the individual's progress and indicate mastering a certain level of knowledge required in the field. Various studies have shown that those obtaining the Certified Purchasing Manager (C.P.M.) designation from ISM on average earn more than those without a C.P.M. Additionally, there are other certifications that the purchaser can obtain, such as the Accredited Purchasing Practitioner (A.P.P.) from ISM

and the certifications available from the American Production and Inventory Control Society. These were judged to be the major professional certifications that were closest to the knowledge needed in purchasing and supply management.

Respondents were asked to rate the desirability of a purchasing individual who is certified.

As shown in Table 68, the C.P.M. is currently the most desirable certification and will continue to be so in the future. In the original study, respondents were not asked directly to rate the desirability of the C.P.M. They were asked to indicate how desirable it would be that someone have the C.P.M. who was being hired from outside the organization. Under these conditions having the C.P.M. rated (X=3.2). While the C.P.M. program dates back to the mid-1970s, the Accredited Purchasing Practitioner (A.P.P.) program is less than 10 years old and is designed for the for entry-level supply management professionals, or those primarily engaged in the operational side of the supply function. Because it is newer, the A.P.P. designation is not as well known as the C.P.M., and that is reflected in the respondent rating of (X=2.84) in the future and the current rating (X=2.54). However, the A.P.P. did receive a modal rating of "3" indicating that respondents felt it was desirable.

Table 68
Current and Future Desirability of Professional Certifications*

	Current 2003		Future 2010	
	Average	Mode	Average	Mode
Certified Purchasing Manager (C.P.M.)	3.35	3	3.69	5
Certified Production and Inventory Manager (CPIM)	2.65	2	2.94	2
Accredited Purchasing Practitioner (A.P.P.)	2.52	3	2.84	3
Certified Resource Manager (CRM)	2.35	2	2.70	2

*Scale: "1" = least desirable; "3" = desirable; "5" = most desirable

APICS's certification designation of Certified Production and Inventory Manager (CPIM) was rated at (X=2.65) currently and was forecasted to increase to (X=2.84) in the future. The Certified Resource Manager (CRM) program was currently rated (X= 2.35) and expected to increase to (X=2.70) in the future. The modal ratings for both the CPIM and CRM were "2." Overall purchasers are less familiar with the APICS certifications and they are directed more toward material and inventory functions and less directly tied to purchasing. However, with the movement to supply chain management and the concern for managing inventories, more purchasers may begin pursuing such APICS certification designations after obtaining their C.P.M.

Role of Colleges and Universities
Certainly, a good part of the training responsibility for entry-level positions falls on the academic community. They are a primary source of entry-level talent as well as being a forum for advanced master's level degrees in the purchasing and supply management field. Respondents were asked to indicate what role they felt that universities and colleges should play in improving the effectiveness of their purchasing organizations.

Respondents thought that the most important role was to provide business students with an understanding of purchasing now and in the future. This responsibility was also the highest ranked a decade ago (Table 69). The modal ratings on this dimension were forecasted to be a "5," most important. Next in importance was conducting research on supply management topics. Offering a specific major in supply chain management was ranked third, although it was forecasted to increase to second in the future. Finally providing more technical skills was ranked fourth.

The growing importance of supply chain is illustrated by the number of schools offering courses and majors in this area. The December 2002 issue of *Inside Supply Management®* listed several institutions of higher learning offering specific course work in purchasing and supply chain management.

Student Internships
Internships provide a means for students to gain practical purchasing experience. Depending on the nature of the internship (summer or regular school year) they might extend the students' graduation time. However, it will often make the individual more valuable in the job market and might lead to a job with the firm who sponsored the student for the internship. Respondents were asked if they offered formal internship programs in their purchasing departments. The results show that 72 percent offer some form of an internship and that almost all respondents indicated they would have one in the future.

It is encouraging that these firms felt it was important to get new young employees into their organizations in order to bring new ideas and provide a training experience for students that will remain with them the remainder of their careers.

A Model for Improving Skills and Knowledge in Supply Management

Introduction
The top purchasing trends identified in this study are forcing senior executives in supply management to review the current skill sets that exist in their purchasing functions and to re-evaluate the need for

Table 69
The Role Colleges and Universities Play in Improving the Effectiveness of Purchasing Organizations*

	Current 2003		Future 2010		1993 Average	2000 Average
	2003 Average	2003 Mode	2010 Average	2010 Mode		
Provide business students with an understanding of purchasing	3.68	4	4.32	5	3.58	4.27
Conduct research on current supply chain management topics	3.57	4	4.12	4	N.R.**	N.R.
Offering a specific major in purchasing/ supply chain management	3.47	3	4.19	4	3.43	4.16
Provide more technical (i.e., computer skills) training	3.32	3	3.63	3	3.16	3.59

*Scale: "1" = not important; "3" = important; "5" = most important
**N.R.= Not Rated

Table 70

Table 70
Companies Offering Student Internship Programs in Purchasing/Supply Management

Internship	1993	Forecast 2000	2003	Forecast 2010
Yes	33%	58%	72%	98%
No	67%	42%	28%	2%

additional training and development of key personnel. Executives are increasingly realizing that the systems in place today are not going to succeed without considerable change. At the same time, companies are also realizing that the skills of their purchasing functions are becoming a prized commodity and a core competency, and merit additional investment to develop and improve people, as well as establish career path requirements that will ensure that these skilled individuals are retained within the company for the future. Execution of this is becoming a major cornerstone for deployment of solid strategies in supply management. At the same time, executives realize that internal training functions may not have the ability to develop these requirements, and they are considering outsourcing of training and personnel development to organizations that can execute the training at a lower cost and more efficiently.

The development of a purchasing training and development strategy requires that senior executives identify the current and future purchasing environments their organizations will encounter in the next 10 years, and consider the required skills for success that purchasing managers will require to manage elements of this environment. Once these criteria have been identified, executive management should delegate a team to establish a focused plan for acquiring or developing these skills through focused training, recruiting of new talent, and creating linkages to career
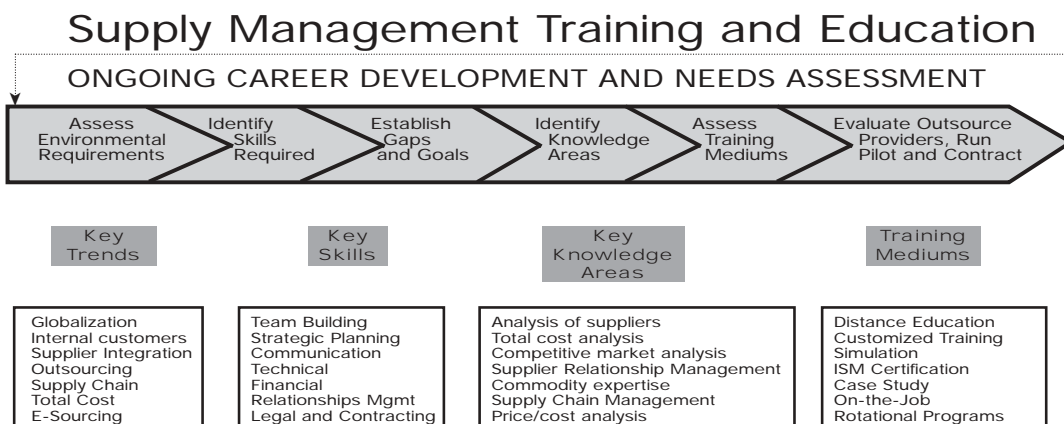
planning and development for the global workforce in supply management. Once these initiatives are in place, it is necessary to establish the specific training subject (knowledge) areas that will tie into the necessary skills. This task can follow many of the requirements for a focused sourcing strategy, involving the identification of potential outsource providers, conducting an insourcing/outsourcing analysis, identifying total cost, performing outsourced supplier evaluations, evaluating bids, negotiating, awarding the contract, and managing and tracking results. Based on the input of the focus groups and the survey results, researchers now present a process model that identifies best practices in execution of such a strategy, shown in Figure 4. Each of the six steps in the model is discussed with references to the results of the focus group and surveys in the study.

The Six-Step Process
Step 1: Assess Current and Future Environmental Requirements
Before establishing the key requirements for developing a training program, executives need to link this effort to the current and future business requirements, as well as to the environmental changes that the organization is likely to face in the next decade. For example, the results of the purchasing trend analysis suggest that the current unrelenting focus on cost reduction is unlikely to subside in the next decade, and that key skills and knowledge areas, such as relationship management, in this area need to support these objectives. In addition,

Figure 4
The Career Development and Needs Assessment Process

Supply Management Training and Education

ONGOING CAREER DEVELOPMENT AND NEEDS ASSESSMENT

Assess Environmental Requirements → Identify Skills Required → Establish Gaps and Goals → Identify Knowledge Areas → Assess Training Mediums → Evaluate Outsource Providers, Run Pilot and Contract

Key Trends	Key Skills	Key Knowledge Areas	Training Mediums
Globalization Internal customers Supplier Integration Outsourcing Supply Chain Total Cost E-Sourcing	Team Building Strategic Planning Communication Technical Financial Relationships Mgmt Legal and Contracting	Analysis of suppliers Total cost analysis Competitive market analysis Supplier Relationship Management Commodity expertise Supply Chain Management Price/cost analysis	Distance Education Customized Training Simulation ISM Certification Case Study On-the-Job Rotational Programs

the trend toward an increasing responsibility of purchasing as a strategic value-added function — with an increased focus on determining the appropriate set of relationships with suppliers, customers, and focused integration with internal customers — was unanimous. In the past, these collaborations were not very well focused. What is apparent in this study is that collaborating with various stakeholders, purchasing must provide value and yet still balance the unrelenting pressure to reduce total costs. The key question emerging is that purchasers need to understand the appropriate form of relationship, whether it is arm's length and guarded by a contract or more relational and built on trust and codependence. A tough question that executives must ask themselves at this juncture is: "Is our current workforce in supply management prepared to deal with this set of conditions and requirements?" Unless an organization has established a training program that has emphasized these elements, and which has been universally adopted into the requirements for supply management career development, the answer in most cases will be "no."

The Hoshin plan is one tool that can assist organizations in establishing a framework to analyze current and future challenges, and the need for training requirements. This planning technique provides a framework to identify key supply management performance metrics for the future. As identified in an earlier section, strategic relationship management with suppliers, strategic cost reductions, integrated systems, and greater focus on total cost were the top four elements identified as trends. An example of a supply chain management Hoshin plan that is aligned with these trends is shown in Figure 5. Each of the goals is matched with a key performance indicator (KPI) to establish performance objectives in terms of the customer, internal associates, and shareholder value.

Figure 5
Example of a Generic Hoshin Plan

Supply Chain Management VISION		To be recognized as World Class for Supply Chain Management throughout the Industry.
Supply Chain Management MISSION		Create a sustainable competitive advantage by implementing innovative supply chain processes, working as a team, and improving business processes.
GOALS		
CUSTOMER	1.1	Drive suppliers to world-class performance in cost, quality, and technology in support of world-class customer satisfaction.
	1.2	Support the corporate commitment to our multi-cultural and global customers.
Provider of Choice X % Customer/Business Partner Satisfaction	1.3	Develop and implement innovative end-to-end supply chain processes with internal customers to achieve a competitive advantage through team-based integrative sourcing strategies.
ASSOCIATE	2.1	Create a performance driven culture, which attracts, retains, and rewards associates to drive growth.
	2.2	Provide the support and tools that associates need to excel.
Employer of Choice 90% Associate Satisfaction	2.3	Enable associates to achieve professional growth balanced with personal goals.
	2.4	Reflect the diversity of the communities and customers we serve in our workforce.
SHAREHOLDER	3.1	Focus SCM expertise and business acumen to create value for shareholders through increased profitability and shareholder return.
	3.2	Leveraging Six Sigma methodologies, reduce cost of goods sold, improve quality levels, and achieve annual productivity improvements to grow market share.
Investment of Choice Double digit year-over-year productivity	3.3	Reduce risk of supply shortages, satisfying regulatory requirements, and minimize exposure to legal risks.
	3.4	Integrate global business unit supply chain functions and leverage opportunities to grow global market share.

Step 2: Identify Skills Required

Once key purchasing environmental elements have been identified and goals established through a Hoshin Plan or similar strategic planning tool, senior management should work with a high-level team representing human resources, operations, finance, information systems, marketing, and strategy to identify key skills that they perceive as being critical to effective supply management. Input from these internal customer groups in identifying key skill requirements is critical, as the direction of the training must be aligned to the future needs and impacts identified as strategic for the future.

The study also suggests that the use of cross-functional input into purchasing training cycles is likely to increase, with 67 percent of respondents indicating that they will have such councils in place by 2010. The purpose of these councils will be to determine the direction and priority of programs, provide targets, help develop course content, determine training requirements by position, evaluate training, approve budgets, and review instruction methods. More organizations are also assigning high-level directors responsibility for training and results.

The task of creating a training curriculum may require some "blue-sky" thinking to identify how the key trends identified in the purchasing environment translate into organizational requirements, strategic sourcing team structure, and leadership roles for future sourcing initiatives that will span these different areas. This makes it even more important to obtain internal customer input. As an example, one company has targeted two major non-traditional areas for improvement; 1) centralize the sourcing of marketing campaigns and 2) sources of information systems development. These sourcing areas will be focal points for cost savings in the next two years. Integration of key representatives from marketing, desktop technology, systems development, and other internal customers is key. Involving them in creating the requirements for sourcing leaders in these areas would greatly increase the probability that the skills required will in fact meet the needs of these internal customers.

Figures 6 through 10 identify some of the key skills identified in the study that align with each of the major trends identified in the focus groups. Evidence of the linkage between trends and skills in the form of a correlation between the elements is also shown in these figures. For example, the trend of increased strategic relationships with fewer suppliers and increased internal integration and collaboration will require individuals with a high level of team-based skills, strategic planning skills, effective communication, and relationship management skills.
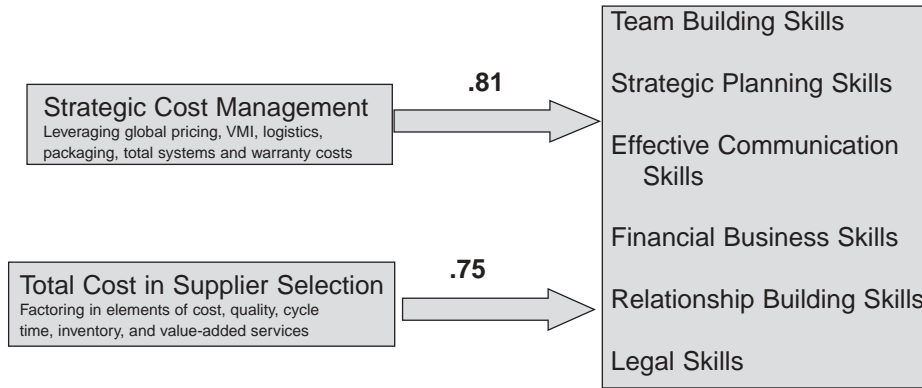
Figure 6
Strategic Trends and Skills

Strategic Trends and Skills
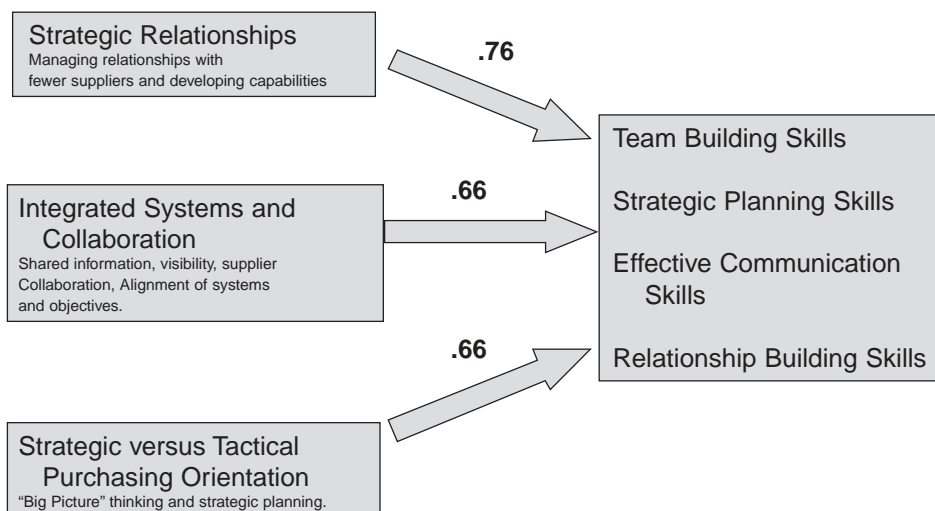
Numbers reflect average correlation between training and skills.
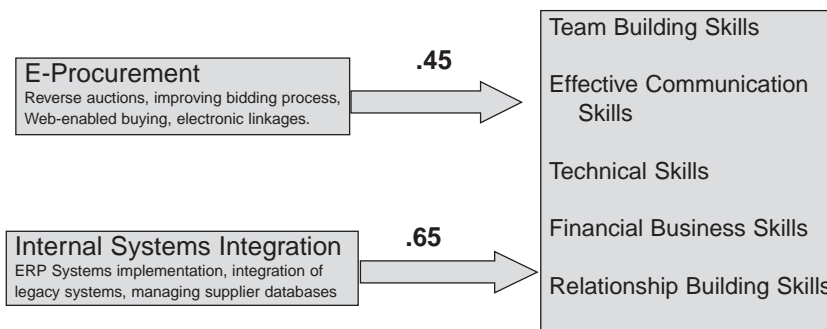
Figure 7
Cost Management Skills and Trends

Cost Management Trends and Skills

Strategic Cost Management
Leveraging global pricing, VMI, logistics, packaging, total systems and warranty costs

.81

Team Building Skills

Strategic Planning Skills

Effective Communication Skills

Financial Business Skills

Relationship Building Skills

Legal Skills

Total Cost in Supplier Selection
Factoring in elements of cost, quality, cycle time, inventory, and value-added services

.75

Numbers reflect average correlation between training and skills.

Figure 8
Systems Trends and Skills

Systems Trends and Skills

E-Procurement
Reverse auctions, improving bidding process, Web-enabled buying, electronic linkages.

.45

Team Building Skills

Effective Communication Skills

Technical Skills

Financial Business Skills

Relationship Building Skills

Internal Systems Integration
ERP Systems implementation, integration of legacy systems, managing supplier databases

.65

Numbers reflect average correlation between training and skills.

Figure 9
Relationship Management Trends and Skills

Relationship Management Trends and Skills

Supply Chain Process Focus Improving processes that span the entire supply chain	**.72** →	
Building Internal/External Customer Relationships Moving towards customer management and aligning with supplier capabilities	**.52** →	Team Building Skills Strategic Planning Skills Effective Communication Skills Financial Business Skills Relationship Building Skills Legal Skills
Cross-functional Virtual Teams Integrate functions and virtual teams	**.70** →	
Global Sourcing International law, culture, currency issues, political risks, and management of global supplier relationships	**.61** →	

Numbers reflect average correlation between training and skills.

Figure 10
General Business Trends and Skills

General Business Trends and Skills

| Broader Financial Business
Internal entrepreneurs and need to understand general business trends and environment | **.81** → | Team Building Skills

Effective Communication Skills

Technical Skills

Financial Business Skills

Relationship Building Skills |
| Capturing Purchasing Performance
Creating incentives and selling the business case for realized savings and budget planning | **.75** → | |
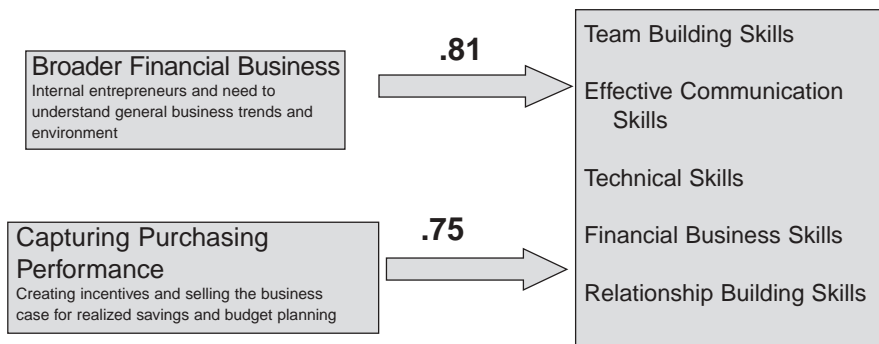
Numbers reflect average correlation between training and skills.

Several elements are notable from this analysis. *First, the key skills of team building, effective communication, and relationship management are critical for success in managing almost every one of the purchasing trends identified in the study.* It also confirms the results of the two previous studies, which rated these skills highly. Also, this provides additional support for prior studies that have identified the demise of the traditional "buyer" who was relegated to managing purchase orders. With the increasing application of e-procurement to these tactical elements, purchasing will be called on to deliver greater value in terms of supply market intelligence, cost management, creative problem solving, and management of internal and external customer requirements.

Step 3: Identify Gaps and Goals
A gap analysis of current skill sets versus an "ideal profile" of purchasing managers is the next step in the process. This may require conducting an audit of current skill sets across business units and global locations. The objective here is not to identify potential headcount reductions, but to better assess the level of education and knowledge that exists across the purchasing function, and assess areas of opportunity. Next, the company should identify the "ideal" organizational structure, given the future requirements, and assess this against current skill sets across the internal purchasing population.

Senior executives are re-shaping future organizational designs for the supply management function. These new organizations will require a greater number of supply chain integration mechanisms (Monczka, Trent, and Handfield, 2002):

- IT systems that facilitate information sharing
- Project teams with supplier and customer involvement
- Shared risk and reward projects with appropriate measures of success
- Customer Advisory Boards with supplier involvement
- Buyer-supplier councils
- Supply chain strategy development involving key customers and suppliers

It should be recognized that the movement towards an integrated purchasing strategy and re-alignment of skill sets could be disruptive in nature. As the need for purchasing talent grows, the following job market trends will be typical:

- Movement of purchasing professionals between organizations often results in compensation discrepancies as new hires arrive with higher pay and benefits.

- The need to elevate the level of purchasing professional often results in "buying" talent in the open market at a premium price.
- New employees are increasingly demanding to work from home or remote sites, presenting communication, coordination, and organizational challenges.
- Professionals from other functional groups will increasingly accept assignments in procurement. These professionals often arrive from groups that historically pay more than procurement, creating pay differentials.

The nature of strategic versus transactional job functions will be dramatically different. As such, a method of establishing skill gaps is critical.

The most common method to assess training needs of procurement employees among many companies is an individual development plan (IDP) (Corporate Leadership Council, 2002). These plans allow an employee and his or her manager to assess an employee's skill in comparison to the competencies needed to advance to a subsequent position in the firm. By comparing the employee's current skills to those he or she needs to advance, a company can target training and development opportunities that will best advance the employee's career. IDPs are created jointly by managers and employees and then are reviewed periodically as part of their performance reviews. One common method of assessing skills and competencies is to use an online learning portal to track training and skills progress. Another company is creating a tailored curriculum for its buyers that will guide their development from entry-level to senior-level buyers. Study results confirm that 50 percent of the firms currently have formal career development programs, and this was expected to increase to 93 percent by 2010. In addition, more than 65 percent will use gap analysis on an annual basis to evaluate employee skills and knowledge in purchasing.

Step 4: Identify Key Knowledge Areas that Will Improve Job Competencies
Once the gap analysis identifies the necessary competencies that are required to advance in the particular position, it is necessary to establish the specific knowledge areas that will provide a basis to gain these competencies. One of the key requirements of top training programs is that skill gaps be closed, providing the employee with the appropriate knowledge. This research indicated there were several key knowledge areas, but in particular some were able to withstand the test of time. The top five overall knowledge areas across the three studies were:
1) analysis of suppliers; 2) supplier relationship

management; 3) total cost analysis; 4) price/cost analysis; and 5) supplier development. These are solid knowledge areas that can form the basis for training purchasers. These top knowledge areas were followed in the mean ratings by competitive market analysis and supply chain management. It is worth remembering that knowledge related to Internet-based technology was not listed because it was not included in the 1993 study.

It is evident from this research that supply managers want their purchasers to be able to analyze suppliers, and doing this requires knowledge of the competitive market, knowing the commodity, product, or service they are buying. With this in place, various pricing and cost techniques can be used to achieve the lowest total cost. These buying plans need to be part of a set of purchasing strategies. Finally, suppliers can expect to be evaluated to see if they performed to expectations.

Future knowledge areas that will require some training are supplier development and business process improvement. Supply professionals will also need knowledge on developing purchasing strategies and supporting supplier relationship management programs with the focus on total cost analysis. Supply chain management will continue to receive its share of attention. Supplier analysis and competitive market analysis will be supplemented by supplier development activities and a focus on business processes. Overall, purchasers will focus their knowledge on broader strategies, away from a price focus to total-cost focus, and properly manage different relationships in a total cost framework.

Step 5: Assess Training Mediums
In order to staff the new organization, executives may wish to build a new type of learning organization, with different tiers of executive education and knowledge focused on different objectives for purchasing and supply chain associates. For example, one organization has developed a tiered structure for global learning in supply chain management, shown in Figure 11. Mid-level managers with high potential being groomed for senior positions of responsibility may be directed toward senior executive management programs, such as executive MBA programs with a supply chain focus. A number of weekend, evening, and part-time SCM MBA programs exist at major institutions such as Michigan State University, North Carolina State University, Florida State University, Arizona State University, Bowling Green University, and others. (For a complete listing, refer to the ISM Web site with details on specific schools: (www.ism.ws/ISMMembership/schoolsofferingcourses.cfm)

A basic level of knowledge is required to ascertain that people have the primary skills and knowledge required for programs such as e-procurement, team building, cost management, negotiation, and other key skills identified in this study. Again, mid-level managers wishing to improve their skill sets should be encouraged to pursue SCM certification. Many outsourced training programs and universities are now beginning to develop customized SCM certificate programs that meet specific criteria and learning objectives. Many of these programs can be offered either through direct instructional program offerings, or through distance-education programs. Participation in

Figure 11
Tiered SCM Education Model
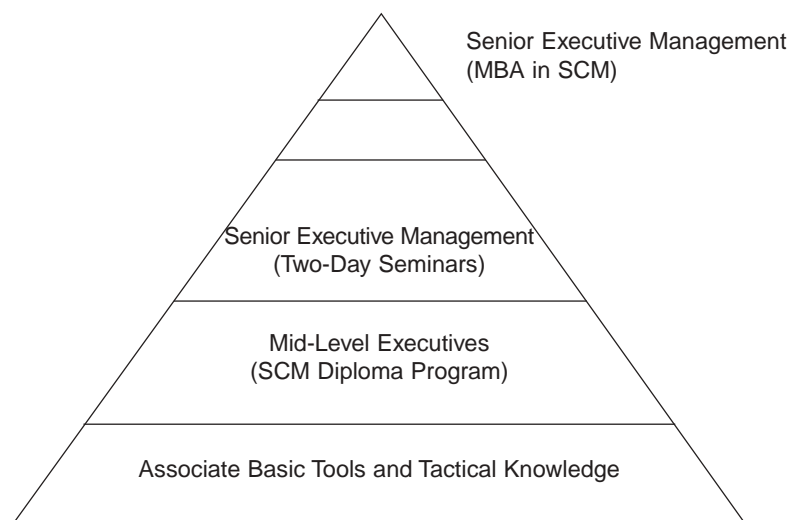
these programs may be voluntary, but is often tied to career development paths or management by objectives (MBO) job performance evaluations. Some organizations have also developed sophisticated career path decision-support tools online that allow associates to determine what courses and credentials are required next in their career development, as well as specific course offerings and schedules that they can tie into their annual career planning goals.

Finally, basic knowledge on purchasing and supply chain fundamentals is now considered fundamental for building a learning organization and deployment of supply chain strategies. These types of offerings may require fundamental knowledge, and may indeed be a primary required element for on-going employment in the company. These programs may also be viewed as "filters" to identify individuals that no longer possess the basic skills required to add value to the purchasing and supply chain organization.

Prior studies, by the Corporate Leadership Council and the ASTD 2002 *State of the Industry Report,* suggest that organizations are decreasing their focus on only classroom-based training and moving much of that training to online or computer-based training media. Revenues for online learning providers are expected to grow. The results from this survey show however, that many companies still find it necessary and beneficial to conduct some training in the classroom. This was reflected in the results: 76 percent of respondents still forecast formal classroom instruction for 2010, while self-paced e-learning courses via the Intranet will increase (from 57 percent of respondents to 74 percent in 2010). On-the-job/informal training will also continue to be important. Clearly, there are financial benefits to be gained from classroom learning, but this raises an important question: What skills are best learned via classroom versus online training mediums?

In one example, researchers encountered a large *Fortune* 500 organization that had developed an internal "Academy" for supply chain knowledge and education. The goal of the Academy is to provide education and training consistently and economically to the global supply chain community of several thousand people, and to achieve excellence in their supply chain.

Developed by the global supply chain organization, the Academy includes the core education and training requirements for cross-enterprise supply chain roles as well as leading-edge knowledge and insight into best practices from other companies and organizations. The Academy operates a multimedia program, developed and delivered by internal and/or external experts, with the objectives of:

- Being a virtual environment, Web-based (intranet and Internet)
- Offering various methods of delivery
- Self-study: CD-ROM, video, audio, workbooks, articles, etc.
- Instructor-led: Web conferences, classroom, workshops, or conferences
- Mentoring programs
- Partnering with leading universities across the globe (North America, Asia, Europe, and Latin America) to provide education and training through distance education programs. These programs cover various levels of knowledge, depending on the requirements at each level.

The Academy covers supply chain learning requirements including core operational training, policies and procedures, professional development, best practices, and leading-edge knowledge.
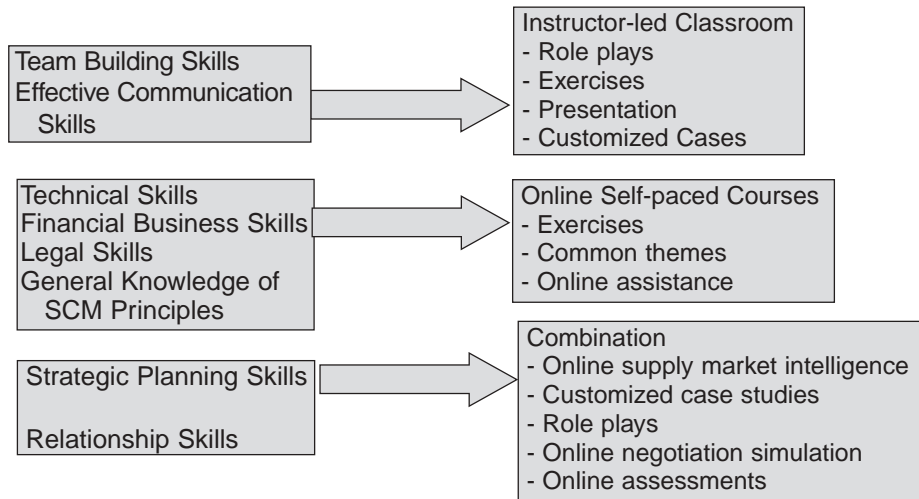
- Policy/Process/Operational:
    - A comprehensive collection of focused one- to two-hour learning modules
    - Designed to build specific skill and knowledge
    - Assembled and taken together as a course or taken individually depending upon the users needs and ability
    - A certification program to support professional development

- Knowledge:
    - News feeds, articles, white papers, etc.
    - Available on demand from a variety of sources, including industry analysts, experts and academic partners
    - Forums/conferences with guest speakers

In general, researchers believe it makes more sense to tailor procurement training programs to distinct procurement groups. A combination of classroom-based instruction and online instruction is often beneficial. It must be emphasized that performance evaluation by attendees is critical to establishing the success of such programs.

As shown in Figure 12, the nature of the training medium may vary based on the nature of skills being developed. Instructor-led courses are increasingly being developed by universities and training outsources with customized course content, case studies, and required in-class exercises. This is particularly beneficial for team building skills, communication skills, strategic management skills, and relationship management skills. The facilitation by an instructor ensures that as much knowledge as possible is communicated, not only by the instructor to the class, but also that the knowledge

Figure 12
Assessing Training Mediums

Assessing Training Mediums

Team Building Skills Effective Communication Skills	→	Instructor-led Classroom - Role plays - Exercises - Presentation - Customized Cases
Technical Skills Financial Business Skills Legal Skills General Knowledge of SCM Principles	→	Online Self-paced Courses - Exercises - Common themes - Online assistance
Strategic Planning Skills Relationship Skills	→	Combination - Online supply market intelligence - Customized case studies - Role plays - Online negotiation simulation - Online assessments

present in the classroom is shared among a highly motivated and educated audience. This will substantially increase the benefits and learning that takes place by all attendees. For higher-level managers, instructor-led courses with customized content are often the most beneficial. However, due to the difficulty of scheduling these individuals for two or more days of training, it is often desirable to combine online and classroom content where possible. For other types of skills and knowledge that is technical or financial in nature, Internet-based learning approaches may work well, given that the material is broad and aimed at a broad-level audience.

The 2002 Corporate Executive Board study found that at one company, in response to employee requests for shorter, more tailored programs, created two separate tracks to receive training. One track was more traditional, with a total of 63 hours. The core courses were: 1) contemporary purchasing; 2) supplier selection; 3) negotiation; 4) legal aspects of purchasing; and 5) ethics. Electives could then be selected from corporate training or outside vendors. Alternatively, employees could take the "boot camp" option with two two-day sessions followed by an online test, then two electives consisting of two days.

Step 6: Evaluate Outsource Providers and Negotiate Contract
Once the requirements for training have been established, the provider should then go about

evaluating potential providers, including an insourcing option to develop and deliver the training via the in-house corporate training group. More and more, companies are electing to outsource this function, as they realize that internal training groups are often not considered on the leading edge of procurement and supply chain knowledge. Some of the criteria to be considered when considering different providers include the following:

❑ Experience in that particular industry or sector
❑ Prior customer references
❑ Actual business experience in purchasing and supply chain management of instructors
❑ Graduate education of instructors
❑ Prior customer references and evaluations
❑ Ability to deliver customized course content and cases versus "off the shelf"
❑ Ability to serve Internet- and distance-based requirements across the global organization
❑ Ability to provide 24/7 capabilities of using online education
❑ Cost per instructor hour
❑ Prior instructional materials, cases or books developed for other customers
❑ Development and delivery costs

It should be noted that a great many providers of purchasing training and education have focused their material on *manufacturing purchasing,* with an emphasis on developing sourcing strategies for discrete piece

parts, using portfolio analysis and well developed methods for supplier evaluation, contracting, and negotiation. However, with the increasing number of companies that are purchasing services, there is a limited number of providers able to provide purchasing education in the area of services and information technology.

Generally, once a provider is selected, a pilot program will be run prior to commitment to a full contract. The pilot may be evaluated based on an initial group of selected experts who may already have mastered the material themselves, but will be cognizant of the skills required by their associate base. Changes or suggestions based on comments from the pilot group can be used to alter or modify the training as required.

Ongoing: Evaluate Training Performance and Results
In the longer term, a training program should be evaluated via a combination of different tiered structures identified by the Kirkpatrick model of training evaluation (Corporate Leadership Council, 2001):

Level 1: Reaction – The most common type of evaluation, usually measured via a "smile sheet" or reaction evaluation that participants complete at the end of a training session.

Level 2: Learning – Measures if training caused an increase in knowledge or skills, (i.e., whether employees learned a new skill or job that they did not know prior to training).

Level 3: Behavior – Assess if the trainee's on-the-job skills or behavior have changed as a result of what he or she has acquired during training.

Level 4: Results – Quantifies exactly how much training and development efforts affect bottom-line measures (i.e., how much training increases sales, reduces costs, lowers overhead, increases productivity, or improves quality).

The question of evaluating the effects of training remains problematic, especially with the different types of changes and environmental shifts in today's economy. However, there is no doubt that purchasing training remains as important as ever, and that purchasing training budgets will likely increase in the future as the contribution of this function to the competitiveness of the firm continues to increase.

Phase 4: Results and Conclusions

Triangulation of Major Results

Based on the results of the roundtables and the surveys, there appears to be several major themes that emerge from the research that provide some clear messages for supply management education and training requirements. This report is based on the general premise that as the supply management environment is changing, there is a changing skill set required for success. Some of the primary elements identified with respect to the new set of requirements for supply management include:

❑ Great pressure for cost reduction due to heightened competition and globalization
❑ A greater demand for performance from internal customers
❑ A greater need to integrate and exploit supply base technologies and capabilities
❑ An increased focus on outsourcing and strategic value-added relationships
❑ Increasing focus on the supply chain
❑ Increasing need to capture total cost
❑ Increasing need for technology integration and e-procurement deployment

The top trends mentioned in the focus groups effectively triangulate with the results of the survey. As shown in Table 71, *at least eight of the 14 trends most often brought up as a key trend in the focus groups were also ranked in the top 10 trends ranked by executives in the survey.* This analysis ensures that the results triangulate effectively and provides additional validity to the trends discussed in this report. Four of the trends discussed in the focus groups were not explicitly identified in the top survey ranked elements: increased outsourcing of services, need for broader business skills, closer relationships with customers, and greater internal integration of ERP systems. Researchers interpret this result to suggest that

these elements may vary based on the relative level of maturity of the strategies being developed within the company, and may also be attributed to differences in industry practices and environments.

Three of the skill elements identified by the focus group respondents were not highly ranked by survey respondents: the need for technical/computer skills, broader financial management skills, and legal skills. These elements did appear within the top 25 elements rated but were not a top priority. One possible explanation is that these skills may be required for key purchasing positions, but as purchasing becomes more of a cross-functional element with increased rotational assignments, these skills may well become pre-requisites for assignments in purchasing positions.

Similarly, the congruence of results of key knowledge areas from the focus groups and the survey-ranked items was also high. The need for purchasing managers to develop team leadership skills and relationship management skills, as identified in the focus groups, was overwhelmingly supported by the results of the survey. Items that related to these two areas accounted for eight of the top 10 knowledge elements identified by survey respondents as being critical for the future. The need for effective communication and interpersonal skills was also deemed important by survey respondents. Strategic planning skills was not identified as a current knowledge element in 2003, but was listed as one of the top 10 items required for competitiveness in the future.

Summary of Survey Findings

The Sample: Fifty-five (55) high level purchasing/supply management executives responded for a response rate of 27.5 percent. These individuals were at the level of Vice President, Director, or Manager

Table 71
Comparing Trends in Focus Groups and Survey

	Focus Group Rank	2003 Survey Rank	2010 Survey Rank
Strategic Relationship Management with Suppliers	1	4	5
Strategic Cost Reduction	2	1, 3	1, 2
Integrated Systems and Collaboration	3	7	8
Greater Focus on Total Cost in Supplier Selection	4	2	3
Strategic versus Tactical Purchasing Orientation	5	6	9
Outsourcing Services	6	17	25
E-Procurement/Reverse Auctions	7	10	4
Internal Systems Integration	8	20	12
Capturing Purchasing Performance	9	5	10
Need for Broader Business Skills	10	31	26
Supply Chain Business Process Focus	11	9	17
Building Customer Relationships	12	21	22
Cross-Functional Teams	13	11	8
Global Sourcing	14	8	6

Table 72
Comparing Training Requirements in Focus Groups and Survey

	Focus Group Rank	2003 Survey Rank	2010 Survey Rank
Team Building: Leadership, Decision-making, Influencing, and Compromising	1	3, 5, 7, 8, 9, 10	3, 5, 6, 7, 8, 9, 10
Strategic Planning Skills: Project Scoping, Goal-Setting, and Execution	2	16	4
Communication Skills: Presentation, Public Speaking, Listening, and Writing	3	4	2
Technical Skills: Web-enabled Research and Sourcing Analysis	4	14	12, 16
Broader Financial Skills: Cost Accounting and Making the Business Case	5	22	22, 23
Relationship Management Skills: Ethics, Facilitation, Conflict Resolution, and Creative Problem Solving	6	1, 2, 6	1, 2
Legal Issues, Contract Writing, and Risk Mitigation in a Global Environment	7	27	20

with 83 percent having corporate-wide responsibility. As expected, individuals at these levels were highly educated, holding either a bachelor's or master's degree and having significant business experience (61 percent 20 years or more).

The sample represented 15 industry groups with the largest number coming from the pharmaceutical and biotechnology companies. These were large corporations with mean annual sales revenue of $21.7 billion dollars and employing 48,000 individuals. The average

purchasing/supply organization consisted of 385 individuals and had 53 managers. The purchasing organizational structure was likely to be centralized or centralized/decentralized.

Major Trends: There is a great deal of pressure to reduce costs, engage in strategic cost management, and automate the purchasing function. In this cost-conscious environment, purchasing performance will be measured and they will be expected to produce results. It is anticipated there will be no letup in the drive to reduce

costs, as "pressure to reduce costs" was rated first currently and into the future. However, suppliers will not win the business on low price because they are expected to provide lowest total costs and purchasers should be able to measure to lowest total cost.

The impact of e-commerce will take hold and eliminate paper-based systems. When analyzing the trends that are expected to make the largest gains in the future, they revolve around supply chain initiatives of controlling inventories throughout the entire supply chain and sharing data to help accomplish this. E-commerce and the automation of tactical buying will become a reality. When comparing the common trends in both PET I and PET II studies, purchasers will "manage supplier relationships," "increase the amount of global sourcing," and "manage/drive shorter cycle times." These trends were highly rated a decade ago and continue to be important. "A smaller number of suppliers will be used" was the highest rated mean a decade ago but has dropped to 14th in 2003. Firms that have been reducing their supply bases for a decade are seeing less of a need for major reductions but continue to search for the ideal supply base.

Major Skills: A skill that many organizations did not emphasize in the past, *ethics*, has jumped to number one in this study. Respondents expressed their feelings that supply professionals must act ethically in business dealings with their suppliers. Purchasers must also be communicators, negotiators, able to make decisions, and able to solve problems. In the future, leadership and working in teams become more important. When analyzing the skills that will make the largest gains we see *leadership, strategic thinking, contract writing, managing change, managing the supply base,* and *managing risk.* When common skills were rated over the decade, a picture emerges of those that supply managers feel are important regardless of the time period. Those skills that have stood the test of time are: *interpersonal communications, the ability to make decisions, negotiation, influencing and persuasion, conflict resolution, analytical, problem solving, managing change, customer focus,* and *leadership.*

Major Knowledge Areas: Top knowledge requirements tie to the trends and support the necessary skills. These include: *analysis of suppliers* ranked first, closely followed by *total cost analysis, pricing techniques* and *purchasing strategies and plans. Supplier relationship management, commodity expertise* and *supplier evaluation* were next. In the future *supplier relationship management* was the highest-rated knowledge requirement. This was followed by *total cost analysis, purchasing strategies, analysis of suppliers, competitive market analysis, supply chain management, supplier evaluation,* and *price/cost*

analysis. When analyzing the knowledge areas that will make the largest gains in the future, we see *outsourcing, total quality management/Six Sigma, make versus buy, value chain,* and *project management.*

Those knowledge areas that have stood the test of time were: 1) analysis of suppliers; 2) supplier relationship management; 3) total cost analysis; 4) price/cost analysis; and 5) supplier development.

Conclusions about Purchasing and Supply Management Training

In terms of *structure* for conducting the training, the method of organization follows the overall purchasing organizational structure. If the firm's primary organizational structure is centralized, then the purchasing training will be centralized. Eighty percent of the firms in this study were either centralized or centralized/decentralized. The person ultimately responsible for training is at the director, vice president, or manager level. In some cases this was outside the purchasing function, in a human resources or training function.

Obtaining input from various business units to develop the specific training content and evaluate instructors was carried out through *purchasing training councils* in 32 percent of the firms. The use of training councils was expected to increase to 67 percent in the future. The average amount spent per employee on training was $1,800, and this was expected to increase to $3,400 in the future. On average, purchasers are now given the equivalent of about nine full days of training annually. This is expected to grow nominally to a little more than 10 days in the future. Seventy-five percent of the firms had a purchasing training catalogue.

The *minimum formal education* required of purchasers is a bachelor's degree. The three most desired degrees are a bachelor's in purchasing/supply chain management, an M.B.A., or a bachelor's in a technical field coupled with an M.B.A. After formal education, attaining the designation of Certified Purchasing Manager (C.P.M.) was viewed as desirable. In line with education and certification, it was felt the purchasing organization was perceived as one having "moderate status" now and increasing to "high status" in the future. As a result, executive management puts a "moderate priority" on purchasing training now, and this is expected to increase to a higher priority in the future. Training for purchasing tends to hold constant despite decreases in profits or sales in difficult economic times.

Purchasing is viewed either as a career area or one that is *both career and rotational.* In other words, purchasing can be a stepping stone to upper management either within the function or by moving into it and out to other functions. This is supported by the organization, with 40 percent of the firms having career development programs for their purchasing personnel. In addition, 50 percent of the sample had formal purchasing training programs. Seventy percent conducted a needs assessment to determine what specific training programs the individual should attend. Most often this needs assessment was performed annually. Most firms had developed a list of required skills by position and compared this to the skills attained by the employee. Those skills thought to need an upgrade were identified and a training program established. Most purchasers received some training. On average, 67 percent of the individuals received some training annually with the expectation that this would rise to 87 percent in the future.

A variety of *methods* were used to implement training. These ranged from informal techniques of "on the job" and "coaching" to more formal techniques of formal classroom instruction. The *Internet* is now being used as a training media by more than 50 percent of the respondents, and this is expected to increase to 76 percent in the future. Formal classroom training will still be the most popular method of instruction, but there are other technologies to support and supplement the classroom. These include self-paced CD ROMs and DVDs and the virtual classroom using video and teleconferencing.

Regardless of the delivery method, the three most popular standard courses are negotiations, ethical conduct, and legal/UCC. Total quality management/Six Sigma, and basics for purchasers followed these courses. Supply chain management and legal/UCC were expected to experience the largest increases in the future. Respondents also mentioned several other courses being offered, such as strategic cost management, supplier relationship management, and value stream/process analysis.

Forty-four percent of the respondents offered these courses to non-purchasing personnel and 26 percent extended them to suppliers. Sources of training were most likely internal (65 percent) with the remainder being delivered by sources outside the organization (35 percent). With regard to outside providers, the Institute for Supply Management™'s (ISM) standard programs and its international conference were judged to be "effective" in meeting the training needs of these respondents. Training effectiveness is most likely to be evaluated using course evaluations. Pre-and post-tests of

knowledge were also used, but much less likely than course evaluations. Colleges and universities were expected to provide students an understanding of purchasing as well as to keep abreast of the changes occurring in the field through research. Seventy-two percent of these firms offered internships to students in the purchasing/supply management area.

Lessons Learned

Many issues about purchasing education and training were uncovered in this study. In particular, there were 10 that were consistently mentioned in the focus groups, identified by research questionnaire respondents, and uncovered when doing longitudinal analysis to the first PET study and the World-Class Skills study.

1. Training programs have made modest gains over the past decade.
While the function is moving in a more strategic direction, coordination of the overall training effort through purchasing councils and other mechanisms is essentially unchanged from a decade earlier. Given the centralized and centralized/decentralized structure of most organizations today, such councils are a necessary ingredient to effective development, delivery, and evaluation of training. The need for such mechanisms is evident in that 67 percent plan to have a council in the future. This can be accomplished since the person responsible for training was usually at a high level in the organization. The economic slowdown of the past two to three years has also tested training budgets. Although, many of the respondents indicated their training budgets were held constant. Despite this, training expenditure per employee has decreased from a decade earlier yet the number of days have increased. A possible explanation to this anomaly is that organizations are getting more efficient on training and relying more on internal groups within the organization to provide this training. Regardless of the efficiencies achieved, there needs to be a greater emphasis on structuring and delivering purchasing training in the future.

2. Career development of purchasing and supply management professionals needs more emphasis.
Career development programs are characterized by a holistic approach that attempts to guide, track, and monitor the career path of purchasing and supply management employees. Career development is broader than training in that it addresses career goals and objectives for individuals in the function. Career development is critical for the function since it is viewed either as a career path unto itself or as a career

and rotational type track. From a rotational standpoint, the more time future top managers spend in purchasing the more likely they will be to allocate the appropriate resources to the function when they reach executive level positions. Correspondingly, in order for more purchasing and supply management professionals to make the career moves to top management, some formal career development program needs to be applied. Currently 40 percent of the respondents indicated having formal career development programs, which is more than the 26 percent having them in 1993, but less than the forecasted goal for 2000 of 75 percent. By 2010, 89 percent of these respondents expect to have formal career development programs in place for supply professionals. This is a goal that organizations serious about the purchasing and supply management function need to hit or else the profession will continue to see top level purchasing positions filled by individuals from other functions.

3. Technology is impacting all areas of purchasing training.

Many in the field are familiar with the changes the Internet is having on how more business is being conducted electronically with suppliers. This is also true for training. The Internet as a training tool is now being used by almost 70 percent of these respondents in forms such as distance learning courses and interactive Web-based training modules. Self-paced learning in other forms such as CD-ROM and DVD formats are also very popular alternatives to Web-based learning. Further, it is anticipated that the use of teleconferencing, videoconferencing, and satellite/broadcast television will grow in the future. While the traditional classroom training is still the most popular format, practicing professionals and their companies have a much wider range of training media to select from when implementing their training programs. It may also be one of the reasons that training cost per employee has dropped over the past decade.

More creative approaches to training can combine the popular "on-the-job" and "coaching" techniques with CD-ROMs or DVDs to quickly instruct the supply management professional on a knowledge area that relates to the actual job problem being faced. A good sports analogy relates to a device developed by Iris Technologies that allows coaches to categorize and play various aspects of their opponents' behaviors. One can review all third-down plays or all third downs with greater than seven yards for a first down. The coaches like the device as it enables them to understand their opponents' tendencies while watching less film and spending more time practicing. Similarly, rather than attending a two-day course on supplier relationships, an employee may be able to better understand how to deal with a problem supplier through viewing a self-paced CD-ROM on the topic while he/she is experiencing this problem.

4. After acquiring the essential knowledge base, required training knowledge will be targeted specifically to the individual's needs based on a gap analysis.

All individuals will be required to master the basic functional knowledge through a combination of formal education and C.P.M. or A.P.P. certification. Once these basic knowledge areas are established, continual monitoring — comparing job performance to the required knowledge — is performed. Gap analysis is the assessment technique that compares the skill level the employee has attained on an individual skill dimension to what is required in the ideal skill level for the position. For example, if a senior supply position requires the employee to have mastered advanced negotiation techniques and the individual is judged to be at only a basic level, then a gap exists. A plan is then developed to close this gap by acquiring the needed knowledge to upgrade the current skill level.

5. There are key skills needed for success in purchasing and supply management.

One of the advantages of having longitudinal data is to illustrate those skills that were highly rated at different times over the past 10 years. A comparison of three studies, and the triangulation with focus groups and the mail questionnaire responses highlight these key skills. Those skills that have stood the test of time are:

- Interpersonal communications
- Ability to make decisions
- Negotiation
- Influencing and persuasion
- Conflict resolution
- Analytical
- Problem solving
- Managing Change
- Customer focus
- Leadership

6. Ethics has become a very important issue in purchasing and supply management training and education, and this emphasis is expected to remain strong into the future.

There is a great deal of concern about ethics in the minds of today's purchasing and supply management executives. The entire business world has been shocked by events at Enron, World Com, Adelphia Communications, and other corporations. Accountability to key stakeholders is an important issue facing executives today. This concern appears to have been passed down to purchasing and

supply management executives. New situations, such as closer relationships, can pose ethical issues that may affect the profitability of the firm or cast it in an unfavorable light with suppliers, customers, and shareholders. Courses on ethical conduct were offered to their employees by 56 percent of the sample. MIT's Sloan School of Management recently announced it would put a renewed focus on ethics in business for its MBAs. With the increasingly complex web of supplier alliances, customer alliances, mergers, and acquisitions, as well as sensitive data being transferred, ethical behavior is important as is illustrated by its number one rating now and in the future.

7. Supplier relationship management is a critical knowledge area.

As purchasing becomes more strategic, the need to manage supplier relationships becomes a critical knowledge area required of supply professionals. This was critical a decade ago and is still important. In the focus groups this was the most frequently mentioned item. When comparing the three studies, it ranked second in terms of mean importance. The other four were complimentary knowledge items that would support supplier relationship management and included: 1) analysis of suppliers; 2) total cost analysis; 3) price/cost analysis; and 4) supplier development.

8. Pressure to reduce costs is unrelenting and has escalated into a major part of the purchaser's job.

Intense global and domestic competition and reduced market growth are major factors in the drive to reduce costs. "Pressure to reduce costs" was the most highly rated trend both currently and into the future. However, suppliers will not win the business on low price since they are expected to provide lowest total costs and purchasers should be able to measure to lowest total cost. If purchasing wants to gain status as a strategic player, reducing costs will be one of the key drivers. This means the firm must come up with a strategic cost management plan to satisfy management. Top management expects purchasing to contribute to bottom-line profits through strategic cost initiatives. This does not mean lower prices but lower total cost under the framework of a supply strategy. The top ranked skill and knowledge areas tie into this goal. For example, the skills forecasted to require the largest gains in the future were strategic thinking, contract writing, managing change, managing the supply base, and managing risk. Meanwhile key knowledge areas involved included: analysis of suppliers, total cost analysis, pricing techniques, and purchasing strategies and plans.

9. Tactical buying will be automated.

If purchasing is to become more strategic, its professionals will not have the luxury of spending a majority of their days placing orders and expediting.

Benchmarking studies have shown that despite all the talk of a strategic posture, purchasers still spend a significant part of their days in administrative tasks. Automation of the function bodes well for e-purchasing systems, which can streamline the routine low-dollar sourcing process. Web-based buying and other "e" tools such as eRFIs and eRFQs will replace traditional paper-based methods. One of the largest jumps in the trends into the future was that e-commerce systems will replace paper-based systems, increasing from 15th currently to fourth in the future.

10. The pressure to reduce the supply base is being replaced with managing the supply base.

After a decade of cutting supply bases, firms have moved to a posture of managing the supply base. There appears to be no magic number. In some areas, the supply base is increasing due to supplier diversity issues while in others it is shrinking due to leverage and consolidation. Certainly the overall trend is not to add great numbers of suppliers. Mergers, consolidations for leverage, and the desire to have one or few sources supply a firm globally are but a few of the reasons that supply bases will remain lean. It's just that the pressure for massive supply base reductions doesn't appear to be as prevalent as it was a decade earlier when firms had far too many suppliers. "Pruning" the supply base may be a better term in today's environment.

Looking in from the outside, it might be easy to say that a firm has too many suppliers, but what was found in the focus groups is that many felt determining the number of active suppliers and cleaning up databases to determine their current supply base was a first step to determining the ideal supply base. In 1993, the top-rated trend was "fewer sources of supply will be used" and it was forecasted to be the top trend in 2000. In 2003, it was rated 22nd. Further, the issue of "single sourcing will increase" dropped from fifth in 1993 to 35th in 2003. To illustrate the changing nature of the field, the top five trends of 2003 were not on the list in 1993.

General Conclusions

This research has extensively studied purchasing and supply management training efforts in conjunction with the major trends, skills, and knowledge required for success in the function. As a result, researchers developed these general conclusions.

The impact of the changing purchasing environment is reflected in the identification of the following trends deemed by managers to be prevalent across multiple industries:

❏ Strategic relationship management with suppliers.
❏ An increased focus on strategic cost management across the supply chain.
❏ The need for enterprises to create integrated systems and to collaborate with suppliers, internal customers, and eventually the firm's customers.
❏ A need to focus more on total cost in supplier selection.
❏ Purchasing organizations focusing more on strategic versus transactional processes with internal customers and suppliers.
❏ Increased outsourcing of services and non-traditional areas of spending.
❏ Greater use of e-procurement systems and technology tools to streamline the purchase process and reduce costs of material and services. Such systems will reduce the number of tactical buyers required in the future.
❏ Integrating internal purchasing information systems with other functional legacy systems.
❏ A greater focus on capturing purchasing performance and making a business case for investment in purchasing strategies.
❏ A need for a broader range of business skills, such as understanding markets, products, and finances in the purchasing function.
❏ A need for purchasers to adopt a supply chain-wide perspective of business processes.
❏ The need for increased relationship building with internal and final external customers.
❏ The continued increasing use of cross-functional and virtual teams for sourcing strategy.
❏ Increased use of global sourcing strategies.
❏ Increased use of alternative training methods via distance education.

In conjunction with these trends, the results of this study found that the core skills and knowledge deemed critical for purchasing associates to be able to successfully manage these environmental trends will include the following:

❏ **Team Building:** Leadership, Decision-making, Influencing, and Compromising
❏ **Strategic Planning Skills:** Project Scoping, Goal-Setting, and Execution
❏ **Interpersonal Communication Skills:** Presentation, Public Speaking, Listening, and Writing
❏ **Technical Skills:** Web-enabled Research and Sourcing Analysis
❏ **Broader Financial Skills:** Cost Accounting and Making the Business Case
❏ **Relationship Management Skills:** Ethics, Facilitation, Conflict Resolution, and Creative Problem Solving

❏ **Legal Issues, Contract Writing, and Risk Mitigation in a Global Environment**

In order to successfully create these skills, senior purchasing executives are increasingly creating purchasing training councils, composed of cross-functional executives who provide their input in describing the key skills and requirements. A six-step process for establishing the requirements for training, and deploying the training program, is as follows:

❏ Assess environmental requirements
❏ Identify skills required
❏ Establish current skills gaps and goals
❏ Determine the specific knowledge areas needing improvement
❏ Assess training mediums and align with skills required
❏ Evaluate outsource providers, run pilot, and award the contract

These steps are complimented by continual monitoring, evaluation, and adjustment of goals based on performance.

In general, the need for purchasing training will continue to grow, with an increasing focus on distance-based learning. However, the need for on-going instructor-led classes will remain high, particularly in order to develop key skills valued in purchasing professionals, such as team-building, communication, strategic thinking, and relationship management. The trends identified in this study suggest that purchasing training will continue to grow as the importance of purchasing as a source of competitive business performance gains recognition by senior management.

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Appendix 1:
Survey

CAPS Purchasing Education and Training Questionnaire: SECTION 1

1. PERSONAL DATA

A. First Name :   _____

                                          ___Mr. ___Mrs. ___Ms. ___Dr.

B. Last Name :   _____

C. Middle Initial :   _____

D. Company :   _____

E. Type of Company :   _____ (Refer Appendix-A for choice)

F. Job Title: _____

G. Phone :   (___)___-____   Alternate or non-US Phone: _____

H. Fax :   (___)___-____

I. Email :*   _____

J. Gender :   ___Male ___Female

K. Level of Education :   ___High School ___Some College ___2Yr Degree ___4 Yr Degree

                                          ___Grad School

L. Years of Business Experience :   ___1-5 ___6-10 ___11-15 ___16-20 ___21-25 ___26-30

                                          ___31-35 ___ greater than 35

M. Years of Purchasing Experience :   ___1-5 ___6-10 ___11-15 ___16-20 ___21-25 ___26-30

                                          ___31-35 ___ greater than 35

PET QUESTIONNAIRE: SECTION 2

2. DEMOGRAPHIC DATA

A. Your Responsibility: ___ Corporate Wide
                                               ___ Division/Strategic Business Unit.

B. Title of Highest Purchasing Executive: _____

C. Title of the person that the Highest Purchasing Executive reports to: _____

D. Approximate total corporate annual purchase dollars: _____

E. Approximate total corporate annual sales dollars: _____

F. Approximate number of company employees   _____

G. Total number of full-time Purchasing employees: (include temporaries)
     at US and(or) North American Locations
     1) Purchasing/supply management employees   _____
     2) Purchasing/supply management managers   _____

PET QUESTIONNAIRE: SECTION 3

III. IDENTIFICATION OF TRAINING GOALS AND EDUCATIONAL SKILLS REQUIREMENT

1. What is your firm's primary purchasing and supply management organizational structure? (Please check one)

	Current 2003	Future 2010
1. Centralized (most annual purchase expenditures committed by corporate office)	____	____
2. Centralized/Decentralized (many annual purchase expenditures coordinated through joint activities of corporate office & operating units)	____	____
3. Decentralized (most annual purchase expenditures committed by operating units)	____	____

2. What is your firm's primary purchasing and supply management training organizational structure? (Please check one)

	Current 2003	Future 2010
1. Centralized (training courses developed and coordinated by corporate office)	____	____
2. Centralized/Decentralized (formalized training responsibilities shared between corporate office and operating units)	____	____
3. Decentralized (training courses developed and coordinated by operating units)	____	____

3. Does your organization have a purchasing and supply management training council composed of operating unit representatives to assist in guiding training efforts?

	Current 2003	Future 2010
	___Yes ___No	___Yes ___No

4. If yes, please describe the objectives of this group? (Check all that apply)

	Current 2003	Future 2010
1. Approve Trainers	☐	☐
2. Evaluate Trainers	☐	☐
3. Develop Course Content	☐	☐
4. Review Instruction Methods	☐	☐
5. Other _____		

5. What is the title of the individual responsible for directly managing your firm's purchasing training efforts? (e.g., Manager of Corporate Purchasing Planning & Development)

_____

6. Provide the specific training goals in days and dollars your corporation sets for purchasing and supply training (including travel).

	Current 2003	Future 2010
1. Total annual dollar expenditure for training (in 000's)		
2. Total annual dollars of training per employee (in 000's)		
3. Total annual days of training per employee		
4. Percentage of purchasing operating budget		

7. What is the minimum formal education level required when hiring professional into your Purchasing/Supply organization?

	Current 2003	Future 2010
1. High school	☐	☐
2. Associate's 2 Year	☐	☐
3. Bachelor's Degree	☐	☐
4. Master's Degree	☐	☐

8. Rate the desirability of the following degrees in your organization. Scale: "1" = least desirable; "3" = desirable; "5" = most desirable

	CURRENT 2003
1. Bachelors - Business	1 2 3 4 5
2. Bachelors - Purchasing/Supply Chain Management	1 2 3 4 5
3. Bachelors - Technical (Engineering, Sciences etc)	1 2 3 4 5
4. Bachelors - Liberal Arts	1 2 3 4 5
5. M.B.A. (Master in Business)	1 2 3 4 5
6. Master of Science (Technical Field) e.g. computer science, biology	1 2 3 4 5
7. Law.	1 2 3 4 5
8. Technical Undergraduate & M.B.A.	1 2 3 4 5

9. Rate the desirability of the purchasing individual(s) being Certified. Scale: "1" = least desirable; "3" = desirable; "5" = most desirable

	Current 2003	Future 2010
1. Accredited Purchasing Practitioner A.P.P	1 2 3 4 5	1 2 3 4 5
2. Certified Purchasing Manager C.P.M.	1 2 3 4 5	1 2 3 4 5
3. Certified Production and Inventory Manager CPIM	1 2 3 4 5	1 2 3 4 5
4. Certified Resource Manager CRM	1 2 3 4 5	1 2 3 4 5

10. What is the approximate annual percentage of employee turnover in your purchasing and supply management organization? (e.g., if you employ 100 purchasers and 10 leave in one year, the turnover is 10%)

_____

11. What is the perceived status of the purchasing function in your organization? Scale: "1" = Low Status; "3" = Moderate Status; "5" = High Status

Current 2003	Future 2010
1 2 3 4 5	1 2 3 4 5

12. How does your executive management team view purchasing training? Scale: "1" = Low priority; "3" = Moderate priority; "5" = High priority

Current 2003	Future 2010
1 2 3 4 5	1 2 3 4 5

13. When your business volume/profits decline our training budgets are: Scale: "1" = Decreased; "3" = Held Constant; "5" = Increased

Current 2003	Future 2010
1 2 3 4 5	1 2 3 4 5

14. In your corporation is purchasing considered: (Check all that apply)

	Current 2003	Future 2010
1. A career track within the function	☐	☐
2. A Rotational job assignment	☐	☐
3. Both career and rotational	☐	☐

PET QUESTIONNAIRE: SECTION 4

IV. TRENDS, SKILLS AND KNOWLEDGE

1. Rate the following PURCHASING TRENDS occurring within the function from the standpoint of your corporation. Scale: "1" = strongly disagree; "3" = neutral; "5" = strongly agree.

	Current 2003	Future 2010
1. There will be fewer people in purchasing	1 2 3 4 5	1 2 3 4 5
2. There will be fewer purchasing managers and more supply chain managers	1 2 3 4 5	1 2 3 4 5
3. An advanced certification designation will be needed	1 2 3 4 5	1 2 3 4 5
4. There will be a greater emphasis on supply chain management	1 2 3 4 5	1 2 3 4 5
5. Two levels of purchasing personnel will evolve: a) strategic supply manager and b) transactional-day to day buying.	1 2 3 4 5	1 2 3 4 5
6. Purchasers will manage supplier relationships	1 2 3 4 5	1 2 3 4 5
7. Sourcing management will replace order placement	1 2 3 4 5	1 2 3 4 5
8. Cross-functional teams will coordinate sourcing efforts	1 2 3 4 5	1 2 3 4 5
9. The authority to buy will be located at the operating unit	1 2 3 4 5	1 2 3 4 5
10. Outsourcing will increase	1 2 3 4 5	1 2 3 4 5
11. There will be more coordinated buying across operating units	1 2 3 4 5	1 2 3 4 5
12. Demand-pull systems will drive purchasing	1 2 3 4 5	1 2 3 4 5
13. Strategic cost management will increase	1 2 3 4 5	1 2 3 4 5
14. The performance of purchasing will be more closely monitored	1 2 3 4 5	1 2 3 4 5
15. Purchasers will be more concerned with the final customer's satisfaction	1 2 3 4 5	1 2 3 4 5
16. Strategic sourcing will increase in importance	1 2 3 4 5	1 2 3 4 5
17. Purchasers will manage/drive shorter cycle times	1 2 3 4 5	1 2 3 4 5
18. The order release function will be delegated to users	1 2 3 4 5	1 2 3 4 5
19. The purchasing function will be more centralized	1 2 3 4 5	1 2 3 4 5
20. Increased emphasis will be placed on formal training versus on-the-job training	1 2 3 4 5	1 2 3 4 5
21. Rotational career tracks will include time in purchasing	1 2 3 4 5	1 2 3 4 5
22. Single sourcing will increase	1 2 3 4 5	1 2 3 4 5
23. Tactical purchasing (i.e. day to day) will be automated	1 2 3 4 5	1 2 3 4 5
24. Global sourcing will increase	1 2 3 4 5	1 2 3 4 5
25. Service purchases will increase as a percentage of total purchases	1 2 3 4 5	1 2 3 4 5
26. A smaller number of suppliers will be used	1 2 3 4 5	1 2 3 4 5
27. Sourcing will focus more on strategic issues	1 2 3 4 5	1 2 3 4 5
28. Pressure to reduce costs will increase	1 2 3 4 5	1 2 3 4 5
29. Supplier selection will focus on total cost analysis	1 2 3 4 5	1 2 3 4 5
30. There will be global pricing arrangements	1 2 3 4 5	1 2 3 4 5
31. Sales, engineering, and purchasing personnel will be co-located in suppliers and customers facilities	1 2 3 4 5	1 2 3 4 5
32. Electronic Commerce applications will replace paper based systems	1 2 3 4 5	1 2 3 4 5
33. Use of reverse auctions will increase	1 2 3 4 5	1 2 3 4 5
34. Suppliers will propose more innovations	1 2 3 4 5	1 2 3 4 5
35. Inventories will be managed supply chain wide	1 2 3 4 5	1 2 3 4 5
36. Sharing of forecasting data with suppliers will increase	1 2 3 4 5	1 2 3 4 5
37. Use of Supplier Scorecards will increase	1 2 3 4 5	1 2 3 4 5
38. There will be more reward-risk sharing arrangements with suppliers	1 2 3 4 5	1 2 3 4 5
39. Purchasers will be more involved with potential acquisitions of suppliers	1 2 3 4 5	1 2 3 4 5

2. Rate the importance of the SKILLS you require of your purchasing personnel. Scale: "1" = not important; "3" = important; "5" = most important

	Current 2003	Future 2010
1. Analytical	1 2 3 4 5	1 2 3 4 5
2. Computational	1 2 3 4 5	1 2 3 4 5
3. Computer literacy in using popular application software packages	1 2 3 4 5	1 2 3 4 5
4. Technical	1 2 3 4 5	1 2 3 4 5
5. Blueprint reading	1 2 3 4 5	1 2 3 4 5

	Current 2003	Future 2010
6. Specification development	1 2 3 4 5	1 2 3 4 5
7. Ability to make decisions	1 2 3 4 5	1 2 3 4 5
8. Interpersonal communication	1 2 3 4 5	1 2 3 4 5
9. Conflict resolution	1 2 3 4 5	1 2 3 4 5
10. Influencing & persuasion	1 2 3 4 5	1 2 3 4 5
11. Understanding general business conditions	1 2 3 4 5	1 2 3 4 5
12. Negotiation skills	1 2 3 4 5	1 2 3 4 5
13. Managing internal customers	1 2 3 4 5	1 2 3 4 5
14. Being organized/time management	1 2 3 4 5	1 2 3 4 5
15. Leadership	1 2 3 4 5	1 2 3 4 5
16. Inquisitive nature	1 2 3 4 5	1 2 3 4 5
17. Salesmanship	1 2 3 4 5	1 2 3 4 5
18. Managing risk	1 2 3 4 5	1 2 3 4 5
19. Entrepreneurial behavior	1 2 3 4 5	1 2 3 4 5
20. Customer focus (on final to customers)	1 2 3 4 5	1 2 3 4 5
21. Managing change	1 2 3 4 5	1 2 3 4 5
22. Creativity	1 2 3 4 5	1 2 3 4 5
23. Planning	1 2 3 4 5	1 2 3 4 5
24. Tactfulness in dealing with others	1 2 3 4 5	1 2 3 4 5
25. Problem solving	1 2 3 4 5	1 2 3 4 5
26. Written communication	1 2 3 4 5	1 2 3 4 5
27. Process mapping	1 2 3 4 5	1 2 3 4 5
28. Assessing ethical situations	1 2 3 4 5	1 2 3 4 5
29. Financial management	1 2 3 4 5	1 2 3 4 5
30. Accounting skills	1 2 3 4 5	1 2 3 4 5
31. Presentation skills	1 2 3 4 5	1 2 3 4 5
32. Ability to work in teams	1 2 3 4 5	1 2 3 4 5
33. Strategic thinking	1 2 3 4 5	1 2 3 4 5
34. Listening	1 2 3 4 5	1 2 3 4 5
35. Broad based business skills	1 2 3 4 5	1 2 3 4 5
36. Common sense	1 2 3 4 5	1 2 3 4 5
37. Structuring supplier relationships	1 2 3 4 5	1 2 3 4 5
38. Managing the supply base	1 2 3 4 5	1 2 3 4 5
39. Using the Internet	1 2 3 4 5	1 2 3 4 5
40. Project management	1 2 3 4 5	1 2 3 4 5
41. Economic literacy	1 2 3 4 5	1 2 3 4 5
42. Motivating others	1 2 3 4 5	1 2 3 4 5
43. Managing others	1 2 3 4 5	1 2 3 4 5
44. Innovation Management	1 2 3 4 5	1 2 3 4 5
45. Contract writing	1 2 3 4 5	1 2 3 4 5
46. Personal learning / self development	1 2 3 4 5	1 2 3 4 5
47. Contract management	1 2 3 4 5	1 2 3 4 5
48. Inter-personal communications	1 2 3 4 5	1 2 3 4 5
49. Motivational principles	1 2 3 4 5	1 2 3 4 5
50. Decision making and problem solving	1 2 3 4 5	1 2 3 4 5
51. Ethics	1 2 3 4 5	1 2 3 4 5
52. Cross functional teams	1 2 3 4 5	1 2 3 4 5

3. Rate the importance of the KNOWLEDGE you require of your purchasing personnel. Scale: "1" = not important; "3" = important; "5" = most important

	Current 2003	Future 2010
1. Production planning	1 2 3 4 5	1 2 3 4 5
2. Operations Management Issues	1 2 3 4 5	1 2 3 4 5
3. Material Requirements Planning (MRP)	1 2 3 4 5	1 2 3 4 5
4. Enterprise Resource Planning (ERP)	1 2 3 4 5	1 2 3 4 5
5. Just-In-Time (JIT)	1 2 3 4 5	1 2 3 4 5
6. Logistics/distribution strategy	1 2 3 4 5	1 2 3 4 5

7. Warehouse management	1 2 3 4 5	1 2 3 4 5
8. Inbound transportation	1 2 3 4 5	1 2 3 4 5
9. Packaging	1 2 3 4 5	1 2 3 4 5
10. Simulation analysis	1 2 3 4 5	1 2 3 4 5
11. Value chain analysis	1 2 3 4 5	1 2 3 4 5
12. Managing and Analyzing Inventory	1 2 3 4 5	1 2 3 4 5
13. Manufacturing processes	1 2 3 4 5	1 2 3 4 5
14. Cycle time management	1 2 3 4 5	1 2 3 4 5
15. Cost of poor quality	1 2 3 4 5	1 2 3 4 5
16. Quality assurance practices	1 2 3 4 5	1 2 3 4 5
17. Total Quality Management / Six Sigma	1 2 3 4 5	1 2 3 4 5
18. Fundamental statistics	1 2 3 4 5	1 2 3 4 5
19. Concurrent engineering concepts	1 2 3 4 5	1 2 3 4 5
20. Analysis of suppliers	1 2 3 4 5	1 2 3 4 5
21. Understanding technical terms	1 2 3 4 5	1 2 3 4 5
22. Commodity expertise	1 2 3 4 5	1 2 3 4 5
23. Supply Chain Management	1 2 3 4 5	1 2 3 4 5
24. Supplier Relationship Management	1 2 3 4 5	1 2 3 4 5
25. Competitive market analysis	1 2 3 4 5	1 2 3 4 5
26. Supplier development	1 2 3 4 5	1 2 3 4 5
27. International sourcing	1 2 3 4 5	1 2 3 4 5
28. Cultural awareness	1 2 3 4 5	1 2 3 4 5
29. Managing currency fluctuations	1 2 3 4 5	1 2 3 4 5
30. Financial evaluation of suppliers	1 2 3 4 5	1 2 3 4 5
31. Price/cost analysis	1 2 3 4 5	1 2 3 4 5
32. Economic and market principles	1 2 3 4 5	1 2 3 4 5
33. Understanding markets/industries	1 2 3 4 5	1 2 3 4 5
34. Cost accounting principles	1 2 3 4 5	1 2 3 4 5
35. Activity based costing	1 2 3 4 5	1 2 3 4 5
36. Learning curve or experience curve	1 2 3 4 5	1 2 3 4 5
37. Total cost analysis	1 2 3 4 5	1 2 3 4 5
38. Database management	1 2 3 4 5	1 2 3 4 5
39. Data warehouse management	1 2 3 4 5	1 2 3 4 5
40. Business process improvement	1 2 3 4 5	1 2 3 4 5
41. E-commerce/E-purchasing systems	1 2 3 4 5	1 2 3 4 5
42. Project management	1 2 3 4 5	1 2 3 4 5
43. Electronic Data Interchange (EDI)	1 2 3 4 5	1 2 3 4 5
44. Value analysis	1 2 3 4 5	1 2 3 4 5
45. Safety issues	1 2 3 4 5	1 2 3 4 5
46. Legal issues	1 2 3 4 5	1 2 3 4 5
47. Demand Chain Management	1 2 3 4 5	1 2 3 4 5
48. Government regulations	1 2 3 4 5	1 2 3 4 5
49. Environmental regulations	1 2 3 4 5	1 2 3 4 5
50. Lean Manufacturing Techniques	1 2 3 4 5	1 2 3 4 5
51. Reengineering principles	1 2 3 4 5	1 2 3 4 5
52. Decision support software	1 2 3 4 5	1 2 3 4 5
53. Make vs. Buy	1 2 3 4 5	1 2 3 4 5
54. Outsourcing	1 2 3 4 5	1 2 3 4 5
55. Service buy analysis	1 2 3 4 5	1 2 3 4 5
56. Group dynamics	1 2 3 4 5	1 2 3 4 5
57. ISO 9000 - 2000 regulations	1 2 3 4 5	1 2 3 4 5
58. Supplier evaluation	1 2 3 4 5	1 2 3 4 5
59. Early Supplier Involvement	1 2 3 4 5	1 2 3 4 5
60. Pricing techniques (e.g bidding)	1 2 3 4 5	1 2 3 4 5
61. Financial and accounting basics	1 2 3 4 5	1 2 3 4 5
62. Capital equipment purchases	1 2 3 4 5	1 2 3 4 5
63. Purchasing strategies and plans	1 2 3 4 5	1 2 3 4 5
64. Standardization programs	1 2 3 4 5	1 2 3 4 5

PET QUESTIONNAIRE: SECTION 5

V. TRAINING PROGRAMS AND EFFECTIVENESS

1. Is there a formal <u>career development program</u> for purchasing professionals in your organization?

	Current 2003	Future 2010
	___Yes ___No	___Yes ___No

2. Does your company have a formal <u>training</u> program for purchasing professionals within your organization?

Current 2003	Future 2010	
	___Yes ___No	___Yes ___No

3. Does your company conduct <u>needs assessment</u> of your purchasing personnel?

	Current 2003	Future 2010
	___Yes ___No	___Yes ___No

4. If YES, how frequently does your company conduct a needs assessment? (Check one)

	Current 2003	Future 2010
1. Semi-annually	☐	☐
2. Annually	☐	☐
3. Every 2 years	☐	☐
4. Every 5 years	☐	☐

5. In our needs assessment of each purchasing employee, we compare the job requirements to: (check all that apply)

	Current 2003	Future 2010
1. Job description	☐	☐
2. Required skills	☐	☐
3. An ideal skill set for the position	☐	☐
4. Actual skill level attained	☐	☐
5. A perceived gap in employee skills	☐	☐
6. A skill development model	☐	☐
7. The annual performance evaluation	☐	☐

6. What METHODS are utilized for training your purchasing employees? (check all that apply)

	Current 2003	Future 2010
1. Informal (OJT)	☐	☐
2. Functional rotation training (Receiving, Inventory, etc,)	☐	☐
3. Formal classroom training	☐	☐
4. Electronic or Internet based training	☐	☐
5. Coaching / mentoring	☐	☐

7. What tools does your company use to support training? (Check all that apply)

	Current 2003	Future 2010
1. Formal classroom/Instructor lead training	☐	☐
2. Virtual classroom (facilitation via video conferencing)	☐	☐
3. Teleconferencing (facilitation via teleconferencing)	☐	☐
4. Self paced e-learning courses offered via Intranet/Internet/Extranet	☐	☐
5. Videotapes-self paced	☐	☐
6. Workbooks & manuals-self paced	☐	☐
7. Audiocassettes- self-paced	☐	☐
8. CD-ROM/DVD/Diskettes-self-paced	☐	☐
9. Satellite/Broadcast TV	☐	☐
10. On the job/Informal	☐	☐

8. What specific training courses does your company offer your purchasing employees? (Check all that apply)

	Current 2003	Future 2010
1. Basics for purchasers	☐	☐
2. Negotiation / Advanced Purchasing techniques	☐	☐
3. Legal (UCC & contracts)	☐	☐
4. Inventory management	☐	☐
5. Total Quality Management / Six Sigma	☐	☐
6. Supply Chain Management	☐	☐
7. Certification Training (C.P.M / C.P.I.M.)	☐	☐
8. Managing the Purchasing function	☐	☐
9. Ethical conduct	☐	☐
10. Other courses (list) :		

9. What is the frequency that your company uses the following training methods? ("1" =never, "3" =sometimes, "5"= always)

	Current 2003	Future 2010
1. Formal classroom/Instructor lead training	1 2 3 4 5	1 2 3 4 5
2. Virtual classroom (facilitation via video conferencing)	1 2 3 4 5	1 2 3 4 5
3. Self paced e-learning courses offered via Intranet/Internet/Extranet	1 2 3 4 5	1 2 3 4 5
4. Videotapes-self paced	1 2 3 4 5	1 2 3 4 5
5. Workbooks & manuals-self paced	1 2 3 4 5	1 2 3 4 5
6. Audiocassettes- self-paced	1 2 3 4 5	1 2 3 4 5
7. CD-ROM/DVD/Diskettes-self-paced	1 2 3 4 5	1 2 3 4 5
8. Satellite/Broadcast TV	1 2 3 4 5	1 2 3 4 5
9. On the job/Informal	1 2 3 4 5	1 2 3 4 5

10. Does your company offer formal purchasing training to: (Please check if "Yes")

	Current 2003	Future 2010
1. Non-Purchasing personnel	☐	☐
2. Suppliers	☐	☐
3. Hourly purchasing personnel (non exempt)	☐	☐

11. What sources deliver purchasing training courses in your organization? (list percentages)

	Current 2003	Future 2010
1. Internal company personnel specializing in training (i.e., human resources) (0 -100%)	☐	☐
2. Internal company functional / divisional experts (e.g. purchasing) (0 -100%)	☐	☐
3. Outside resources (consultants, associations, universities, etc.) (0 -100%)	☐	☐

12. What measures does your company use to evaluate training effectiveness? (check all that apply)

	Current 2003	Future 2010
1. Course evaluations with the course	☐	☐
2. Course evaluations after a time period (e.g. 3 months, 6 months, etc.)	☐	☐
3. Needs assessment (Pre-test and Post-test) of knowledge	☐	☐
4. Performance evaluation (before training and after training)	☐	☐
5. Other (please specify) _____		

13. Approximately what percentage of your purchasing personnel attends purchasing training courses annually?

Current 2003	Future 2010
☐	☐

14. What role should colleges and universities play in improving the effectiveness of your purchasing
organization? Scale: "1" = not important; "3" = important; "5" = most important

	Current 2003	Future 2010
1. Offering a specific major in purchasing / supply chain management	1 2 3 4 5	1 2 3 4 5
2. Conduct research on current supply chain management topics	1 2 3 4 5	1 2 3 4 5
3. Provide business students with an understanding of purchasing	1 2 3 4 5	1 2 3 4 5
4. Provide more technical (i.e., computer skills) training	1 2 3 4 5	1 2 3 4 5

15. Does your company offer student internship programs in your purchasing department?

Current 2003	Future 2010
___Yes ___No	___Yes ___No

16. Rate the effectiveness of following professional associations in meeting your training needs. Scale: "1" = not
effective; "3" = somewhat effective; "5" = highly effective

	CURRENT 2003
1. ISM Standard Training Program	1 2 3 4 5
2. ISM Annual International Conference	1 2 3 4 5
3. ISM In-House Training	1 2 3 4 5
4. Local ISM affiliate training programs	1 2 3 4 5
5. APICS (American Production Inventory Control Society)	1 2 3 4 5
6. National Contract Management Association	1 2 3 4 5
7. American Management Association	1 2 3 4 5
8. American Society for Quality Control	1 2 3 4 5

17. Compared to our major competitors the overall effectiveness of our purchasing skills are: Scale: "1" = much less;
"3" = about the same; "5" = greater

Current 2003
1 2 3 4 5

18. Compared to our major competitors the flexibility of our purchasing operation in meeting the volume
fluctuations of your major customers : Scale: "1" = much less flexible; "3" = about the same; "5" = more flexible

Current 2003
1 2 3 4 5

19. Compared to our major competitors the flexibility of our purchasing operation in meeting our customer
requests for non-standard items is Scale: "1" = much less flexible; "3" = about the same; "5" = more flexible

Current 2003
1 2 3 4 5

20. Compared to our major competitors the cycle time of our product or service is Scale: "1" = much slower; "3" =
about the same; "5" = much faster

Current 2003
1 2 3 4 5

21. Our organization's competency in purchasing assures greater profits for our firm. Scale: "1" = strongly disagree;
"3" = neither agree nor disagree; "5" = strongly agree

Current 2003
1 2 3 4 5

22. Our organization's competency in purchasing assures greater profits for our customers. Scale: "1" = strongly
disagree; "3" = neither agree nor disagree; "5" = strongly agree

Current 2003
1 2 3 4 5

23. Our organization's competency in purchasing assures greater profits for our suppliers. Scale: "1" = strongly disagree; "3" = neither agree nor disagree; "5" = strongly agree

Current 2003
1 2 3 4 5

24. Our approach to managing suppliers is viewed by upper management as a source of competitive advantage. Scale: "1" = strongly disagree; "3" = neither agree nor disagree; "5" = strongly agree

Current 2003
1 2 3 4 5

25. The sense around here is that employee learning is an investment, not an expense in the purchasing organization. Scale: "1" = strongly disagree; "3" = neither agree nor disagree; "5" = strongly agree

Current 2003
1 2 3 4 5

26. The basic values of the purchasing process include learning as a key to improvement. Scale: "1" = strongly disagree; "3" = neither agree nor disagree; "5" = strongly agree

Current 2003
1 2 3 4 5

27. Once we quit learning in purchasing we endanger our future. Scale: "1" = strongly disagree; "3" = neither agree nor disagree; "5" = strongly agree

Current 2003
1 2 3 4 5

28. We agree that our ability to learn is the key to improvement in the purchasing. Scale: "1" = strongly disagree; "3" = neither agree nor disagree; "5" = strongly agree

Current 2003
1 2 3 4 5

In order to aid us in cataloging purchasing training we would greatly appreciate your sending us your purchasing training catalog. (If you have one)

We have a purchasing training catalog   ___Yes ___No
Indicate the internet address for your on line catalog   _____

Return questionnaire to:

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Raleigh, NC 27695-7229

Phone: (919) 515 4674
Email: robert_handfield@ncsu.edu

Appendix 2:

Industry Type

Choice	Industry Type
1	Aerospace and Defense
2	Automotive and Transport Equipment
3	Banking, Financial Services and Insurance
4	Chemicals
5	Computer Software and Electronics
6	Computer Software and Services
7	Consulting Services
8	Consumer Products Durables i.e. Home Furnishings etc
9	Consumer Products Non-Durables i.e. Clothing, Footwear
10	Educational Institutions
11	Energy
12	Food, Beverage, & Tobacco
13	Government
14	Health Products and Services
15	Industrial Equipment and Pollution Control
16	Leisure, Hotels, Gaming
17	Materials and Construction
18	Media
19	Metals and Mining
20	Not for Profits
21	Paper, Rubber, Lumber, Glass, Textiles and Packaging
22	Pharmaceuticals and Biotechnology
23	Real Estate
24	Retail
25	Telecommunications
26	Transportation Firms
27	Utilities
28	Others

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