WHITE PAPER:
Key Trends, Skills, and Knowledge Required
for the Supply Chain Manager of the Future

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Triangulation of Findings from Focus Groups and Survey Results

Based on the results of a series of roundtables and the surveys from a recent research project sponsored by the Center for Advanced Purchasing Studies, there appears to be several major themes that emerge from the research that provide some clear messages for supply chain management education and training requirements. This report is based on the general premise that as the supply chain 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 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 and establish the business case
- 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 1, at least eight of the fourteen trends most often brought up as a key trend in the focus groups were also ranked in the top ten 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 as 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. We 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.

Similarly, the congruence of results of key knowledge areas from the focus groups and the survey ranked items was also high. The need for supply chain managers to develop team leadership skills and relationship management skills 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 ten 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 ten items required for competitiveness in the future.

Three of the 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 twenty-five elements rated, but were not a top priority. One possible explanation is that these skills may be required for key supply chain positions, but as supply chain becomes more of a cross-functional element with increased rotational assignments, these skills may well become pre-requisites for assignments in supply chain positions.
### Table 1 – Trends

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

### Table 2 – Top Training Requirements

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

The top supply chain management trends identified in this study are forcing senior executives in supply management to review the current skill sets that exist in their supply chain function, and re-evaluate the need for 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 supply chain function is becoming a prized commodity and a core competency, and merits 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 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 supply chain training and development strategy requires that senior executives identify the current and future supply chain environment their organization will encounter in the next ten years, and consider the required skills for success that supply chain 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 linkages to career planning and development for the global workforce in supply management. This task can follow many of the requirements for a focused sourcing strategy, involving the identification of potential outsource providers, conducting and insourcing/outsourcing analysis, identifying total cost, performing outsourced supplier evaluations, evaluating bids, negotiation, awarding the contract, and managing and tracking results. Based on the input of the focus groups and the survey results, we next present a process model that identifies best practices in execution of such a strategy, shown in Figure 1. Each of the five steps in the model are discussed with references to the results of the focus group and surveys in the study.

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 the environmental changes that organization is likely to face in the next decade. For example, the results of the supply chain trend analysis suggest that the current focus on cost reduction is unlikely to subside in the next decade, and that key skills in this area will therefore be in high demand. In addition, the trend towards an increasing responsibility of supply chain as a strategic value-added function, with an increased focus on collaborative relationships with suppliers, customers, and focused integration with internal customers was unanimous. 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.”

An important tool that can assist organizations is establishing current and future environmental challenges, and the need for training requirements, is the use of a “Hoshin Plan” that identifies 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. Once these elements are established, an example of a Supply Chain Management Hoshin plan that is aligned with these trends is shown in Figure 2. Each of the goals is matched with a Key Performance Indicator to establish performance objectives in terms of the Customer, Internal Associates, and Shareholder Value.
Step 2: Identify Skills Required

Once key supply chain 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.

Our results also suggest that the use of cross-functional input into supply chain training cycles is likely to increase, with 67% 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 supply chain 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 we met with has identified a need to increasingly centralizing the sourcing of marketing campaigns and information systems development as focal points for cost savings in the next two years. Integration of key representatives from marketing, desktop technology, systems development, and other key internal customers in 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 3 through 7 identify some of the key skills identified in our 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 3 – Strategic Trends and Skills

Strategic Trends and Skills

- Strategic Relationships
  - Managing relationships with fewer suppliers and developing capabilities
  - Correlation: 0.76

- Integrated Systems and Collaboration
  - Shared information, visibility, supplier collaboration, alignment of systems and objectives
  - Correlation: 0.66

- Strategic versus Tactical Purchasing Orientation
  - "Big Picture" thinking and strategic planning

Team Building Skills
Strategic Planning Skills
Effective Communication Skills
Relationship Building Skills

Numbers reflect average correlation between training and skills.

Figure 4 – Cost Management Skills and Trends

Cost Management Trends and Skills

- Strategic Cost Management
  - Leveraging global pricing, VMI, logistics, packaging, total systems and warranty costs
  - Correlation: 0.81

- Total Cost in Supplier Selection
  - Factoring in elements of cost, quality, cycle time, inventory, and value-added services
  - Correlation: 0.75

Team Building Skills
Strategic Planning Skills
Effective Communication Skills
Financial Business Skills
Relationship Building Skills
Legal Skills

Numbers reflect average correlation between training and skills.
Figure 5 – Systems Trends and Skills

Systems Trends and Skills

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

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

Team Building Skills
Effective Communication Skills
Technical Skills
Financial Business Skills
Relationship Building Skills

Numbers reflect average correlation between training and skills.

Figure 6 – Relationship Management Trends and Skills

Relationship Management Trends and Skills

Supply Chain Process Focus
Improving processes that span the entire supply chain

Building Internal/External Customer Relationships
Moving towards customer management and aligning with supplier capabilities

Cross-functional Virtual Teams
Integrate functions and virtual teams

Global Sourcing
International law, culture, currency issues, political risks, and management of global supplier relationships

Team Building Skills
Strategic Planning Skills
Effective Communication Skills
Financial Business Skills
Relationship Building Skills
Legal Skills

Numbers reflect average correlation between training and skills.
Several elements are notable from this analysis. *First, the key skills of Team Building, Strategic Planning, Effective Communication, and Relationship Management are critical for success in managing almost every one of the supply chain trends identified in the study!* This provides additional support for prior studies that have also 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, supply chain 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 supply chain 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 supply chain 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 supply chain 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
- Cross-functional 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

The trend towards increased outsourcing will only escalate this process. As shown in Figure 8, outsourcing of systems and services is very different than 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 supply chain manager will be required.

It should be recognized that the movement towards an integrated supply chain strategy and re-alignment of skill sets will be disruptive in nature (see Figure 9). As the
need for supply chain talent grows, the following trends in the job market and internal for an enterprise are typical:

- Movement of supply chain professionals between organizations often results in compensation discrepancies as new hires arrive with higher pay and benefits.
- The need to elevate the level of supply chain 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 accepting assignments in procurement. These professionals often arrive from groups that historically pay more than procurement, creating pay differentials.

Figure 8 – Supply chain’s Changing Role

*Purchasing’s Changing Role*

<table>
<thead>
<tr>
<th>Component Outsourcing</th>
<th>Outsourcing</th>
<th>System Outsourcing</th>
</tr>
</thead>
<tbody>
<tr>
<td>† Manage thousand of component part numbers</td>
<td>† Manage 100 or fewer critical suppliers</td>
<td></td>
</tr>
<tr>
<td>† Manage thousands of component suppliers</td>
<td>† Manage strategic relationships</td>
<td></td>
</tr>
<tr>
<td>† Manage hundreds of basic contracts</td>
<td>† Develop alliances and partnerships</td>
<td></td>
</tr>
<tr>
<td>† Employ many buyers</td>
<td>† Pursue cross-organizational integration</td>
<td></td>
</tr>
<tr>
<td>† Pursue traditional relationships with most suppliers</td>
<td>† Pursue value-creating strategic sourcing activities</td>
<td></td>
</tr>
</tbody>
</table>

New Forms of Purchasing Skills

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

- Manage strategic relationships
- Develop company-wide electronic systems
- Develop and manage alliances and partnerships
- Develop company-wide contracts
- Manage critical commodities
- 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


Given the escalation of supply chain 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, including (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 supply chain
- Involvement with cross-enterprise negotiations
- Manage integrative activities with suppliers and the rest of the organization
• Become process managers that oversee strategic and tactical responsibilities
• Segment sourcing strategies to match requirements with an appropriate strategy

As shown in Exhibit 10, the nature of strategic versus transactional job functions will be dramatically different. As such, a method of establishing skill gaps 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. IDP’s are created jointly by managers and employees, and then are reviewed periodically as part of their performance reviews. Several common methods 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. Our results confirm that while 50% of the firms currently have formal career development programs, this was expected to increase to 93% by 2010. In addition, over 65% will use gap analysis on an annual basis to evaluate employee skills and knowledge in supply chain.

Step 4: 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 supply chain and supply chain associates. For example, one
organization has developed a “tiered” structure for global learning in supply chain management, shown in Figure 10. Mid-level managers with high potential being groomed for senior positions of responsibility may be directed towards 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, Arizona State University, Florida State University, Bowling Green University, and others. (For a complete listing, the reader is referred to the ISM website with details on specific schools: [http://www.ism.ws/ISMMembership/schoolsofferingcourses.cfm](http://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 which 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 these programs may be voluntary, but is often tied to career development paths or 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 supply chain 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 supply chain 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 our survey also However, many companies still find it necessary and beneficial to conduct some training in the classroom. This was reflected in our results: 76% of respondents still believe formal classroom instruction is still forecast for 2010, while self-paced e-learning courses via the Intranet will increase (from 57% of respondents to 74% 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 we encountered, a large Fortune 500 organization has 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 & 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 1 - 2 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, we 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 11, 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 is communicated not only by the instructor to the class, but indeed that the shared knowledge present in the classroom by a highly motivated and educated audience will substantially increase the benefits and learning that takes place by all attendees. For higher level managers, instructor-led courses with customized content is therefore often the most beneficial. However, due to the difficulty of scheduling these individuals for two or more days of training, it is often possible 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, the company created two separate tracks to receive training. One track was more traditional, with 63 hours of credit three core courses (contemporary supply chain, supplier selection, negotiation, and legal aspects of supply chain), an ethics course, and two electives. 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.

Figure 11 – Assessing Training Mediums

Assessing Training Mediums

- Instructor-led Classroom
  - Role plays
  - Exercises
  - Presentations
  - Customized Cases

- Online Self-paced Courses
  - Exercises
  - Common themes
  - Online assistance

- Combination
  - Online supply market intelligence
  - Customized case studies
  - Role plays
  - Online negotiation simulation
  - Online assessments

Step 5: 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 supply chain 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 global organization
- Ability to provide 24 by 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 supply chain training and education have focused their material on manufacturing supply chain, 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 supply chain services, there is a limited number of providers able to provide supply chain education in the area of services and information technology.

Generally, once a provider is selected, a pilot of a 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, but may be cognizant of
the skills they need to have embedded in their associate base. Changes or suggestions based on comments from the pilot group can be used to alter or modify the training as required.

**On-going: 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 supply chain training remains as important as ever, and that supply chain training budgets will likely increase in the future as the contribution of this function to the competitiveness of the firm continues to increase.
CONCLUSIONS

The main results of this study are as follows:

The impact of the changing supply chain 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 and customers
- A need to focus more on total cost in supplier selection
- Supply chain organizations focusing more on strategic versus transactional processes with internal customers and suppliers
- Increased outsourcing of services and non-traditional areas of spending
- Great use of e-procurement and reverse auctions, with a corresponding reduction in the number of tactical buyers required in the future
- Increased need to integrate internal supply chain information systems with other functional legacy systems
- A greater focus on capturing supply chain performance and making a business case for investment in supply chain strategies
- A need for a broader range of business skills and financial acumen in the supply chain 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

Increase use of global sourcing strategies

Increased use of alternative training methods via distance education

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

- Team Building: Leadership, Decision-making, Influencing, Compromising
- Strategic Planning Skills: Project Scoping, Goal-Setting, and Execution
- 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 supply chain executives are increasingly creating supply chain training councils, composed of cross-functional executives who provide their input in describing the key skills and requirements. A five-
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
- Assess Training mediums and align with skills required
- Evaluate outsource providers, run pilot, and award the contract

In general, the need for supply chain 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 supply chain professionals such as team-building, communication, strategic thinking, and relationship management. The trends identified in this study suggest that supply chain training will continue to grow, as the importance of supply chain as a source of competitive business performance gains recognition by senior management.