The Effect of People on the Supply Chain World: Some Overlooked Issues

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Abstract

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Abstract

Some scholars have been so blunt as to claim that information technology is the answer to all the problems facing supply chain managers. We posit that, although information technology integration is necessary for a supply chain to succeed, people are also crucial for supply chain management to succeed. We further propose that managers must take into consideration organizational culture and the education and training of employees to facilitate supply chain collaboration and success. We interviewed 51 senior-level supply chain managers across five channel positions. Findings support our position that management of people is crucial to supply chain integration, and is improved through an accommodating organizational culture. Also, from our findings, we supply a prescription for building supply chain cross-functional manager.

Key Words: Supply Chain Management, Organizational Culture, Education and Training, Information Technology.

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1. Introduction

Among many managers, information technology (IT) is viewed as the answer to problems ranging from supply chain integration to attaining high levels of customer satisfaction. In fact, some advocates for IT have been so blunt as to claim that IT can solve *all* of these problems. In a recent *Human Systems Management* article, Alkadi *et al.* [3] examined the effects of IT on business. One of their five case studies involved a high-tech fitness-goods manufacturer, and their adoption to various IT to improve supply-chain performance. At the end of their study they concluded:

> *Everything from supply chain management to customer satisfaction can be solved using IT.* … Clearly, IT will continue to change the way we do business in the world today. *Many aspects of business have been drastically changed by advancements in technology.* New technologies are allowing us to communicate better and … *All of these technological advances have greatly increased the speed and efficiency with which people do business.* By taking full advantage of technology, businesses can achieve profits and success beyond their wildest dreams [3: p.103], *italics added*).

Information technology is an enabling dimension in supply chains [3, 13, 14, 40, 60]; however, we must remember that supply chains cannot be studied in isolation—namely in regards to only information technology. For example, Kakati's [32] critical analysis of mass customization in supply chains concluded that managers must not look to technology as the only means to attain monetary gains and a competitive advantage. Kakati further posited that for managers to attain the benefits of mass customization they must remember "they are managing organizational change, not just technological change" [32: p.93].

Another example is in built-to-order supply chain management (SCM). In their literature review, Gunasekarana and Ngai [27] noted that built-to-order SCM has been well researched regarding IT, yet has been rather sparse with research dealing with human resources and people

management issues. These examples—along with others [28, 42, 45]—suggest the need for an investigation as to how supply-chain managers view and manage their people to facilitate success in supply-chain initiatives.

In this study, we posit that—along with IT—people issues must be considered when creating and attempting to sustain successful supply-chain networks. By people issues, we mean management's consideration of organizational culture and the education and training of employees to facilitate supply chain collaboration and success. To investigate this position, we use 51 in-depth case studies across five channel positions. Aside from exploring the gap between the reality and rhetoric of using people in supply chain networks, we further explore whether people play as crucial—if not more crucial—of a role than IT in a supply chain's success.

2. Literature Review

2.1. Information Technology's Affect on Supply Chains

IT is a key enabler to SCM, and can be labeled a "high technology" which has affected the very structure and organization of supply chain alliances [78: p.113]. This is so because IT developments (e.g. email, electronic messaging, EDI, RFID, etc) now allows firms to collaborate internally, and up and down the supply chain to share valuable information that they could not share before (e.g. inventory levels, delivery schedules, best practices in process and management, etc). Furthermore, IT development has affected with whom a firm can partner— from suppliers and customers within the same city or state, to suppliers and customers across international and geographic borders. Some of the benefits to supply chains from IT include inventory reduction, faster product cycle times, decreased costs across the chain [3, 11, 12, 18, 21, 33, 34, 51), and the gaining and maintaining a competitive advantage [17, 63, 73].

The research just cited—as well as many others—have quantitatively and qualitatively

shown the need for IT in supply chain networks, and that effective use of IT yields significant

benefits for supply chain partners. However, IT is not without its limitations in supply chain

networks. For example, a common problem impeding collaboration is in consistent IT systems

among chain partners [6, 8, 49]. This system inconsistency can be in the form of technology or

the people using the system.

IT is not independent of people, because it is the human ability to use and apply the

technology for benefit that is a prime component of technology itself [78]. In short, regardless of

how technologically advanced a supply chain network is, it is still people that man and operate

the flow and sharing of information and resources that technology facilitates and provides [20,

37, 46].

2.2. Organizational Culture and Supply Chains

Combining a firm's information technology and people using that technology, we have two

dimensions that are critical resources to an organization's functioning and survival [2, 5, 38, 52,

56, 76]. Further, both dimensions have been shown to be connected to an organization's culture

[7, 16, 20, 31, 43, 47, 72]. Each organizational member of a supply chain brings to the alliance

an unique culture. These various chain-member cultures are similar to sub-cultures that exist

within many large companies in their various internal functions (e.g. manufacturing, engineering,

and purchasing) [36, 61]. An organization's culture is an aggregate of many influencing factors.

Some of these factors include nationality, type of industry, the task the organization performs,

the people working in the organization, and information technology [4, 15, 29, 43, 75].

When supply chain partners form an alliance, the differences in organizational cultures can

either be a bridge or a barrier [30, 35, 53, 59, 68]. The firms' cultural compatibility must be

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taken into consideration by the supply chain manager, because those chain cultures can directly and indirectly affect supply chain performance [10, 35, 59, 62]. Only after managers assess the compatibility of a potential chain partners and form supply chain alliance can they begin the challenge of working internally to equip their employees with the skills and vision of educating one another through knowledge and skill sharing [22, 23, 41].

2.3. Supply Chain Education and Training

In *The Fifth Discipline*, Peter Senge [65] describes a learning organization where the members are continually gaining knowledge and enhancing their capabilities to aid the organization in adapting to dynamic environments and remain competitively superior over competitors [54]. The driving force behind such an organization is its ability to effectively manage knowledge [66].

Knowledge is not the same as information; but rather knowledge is "purposeful coordination of action" [80: p.184, 79]. A learning organization is able to use knowledge so to accomplish their goals. Peterson [54] extended this idea further to saying that as supply chain partners (individual organizations) become learning partners, the supply chain then becomes a "learning supply chain" that is able to use knowledge to attain its purposes and remain competitive in dynamic markets [80]. For supply chain partners to turn information into knowledge and manage that knowledge effectively, education and training of employees becomes key [1, 19, 57].

Supply chain education and training provides employees with vision and understanding as to why SCM need and how it yield benefit [26]. Such education and training is further necessary because people tend to resist change, especially when change requires yielding up control, exposing weakness or valuable information to others, and changing one's mindset [58, 70, 74]. SCM requires more than a change in mindset from adversarial to collaborative company

interaction. It requires a change in day to day decision making strategy, practices, and human interaction. This means that people will have to change their mindset and behavior. People cannot be forced to change; rather they must be enrolled to generate buy-in to allow their passions to manifest in making the supply chain succeed [65].

3. Case Study Methodology

Because supply-chain management is intrinsically collaborative [9], a cross-channel, in-depth case study will allow analysis at multiple layers within the chain and provide insight into human behavior in the natural environment [64]. The case study method has grown in interest among business scholars as a "research strategy" that allows in-depth qualitative analysis for answering questions regarding what, why, and how [77: p.59, 25, 48, 50].

To allow cross-channel analysis, five chain positions were pre-determined [24]. Such a case variety "fosters the development of a more creative and generalizable theory" [39: p.460]. Fifty-one in-depth interviews were conducted, surpassing Yin's [77] recommended sample size so as to provide compelling evidence to support theory. The average interview lasted from four to six hours with the shortest interview lasting a little over an hour and the longest taking over 10 hours. The break down by channel category is as follows: fourteen retailers, thirteen finished goods assemblers, twelve first-tier suppliers, three lower-tier suppliers, and nine service providers.

All interviews were conducted face-to-face, and promised confidentiality to facilitate candid responses. Case study participants were senior-level managers initially identified based on their participation at annual meetings of leading professional associations where they were presenting cutting-edge findings in SCM. Such a non-randomized selection method allows us to "transparently observe" extreme chain-member practices and shed light as to why some firms

succeed in supply management while others do not [55: p.275, 24]. In most instances, the interview was conducted with multiple managers from the host organization (the number of company representatives ranged from one to eight).

During each interview, a semi-structured interview guide was used. The guide was subdivided into general questions, questions on collaboration among the interviewee's company customers and suppliers, and key practices with particular chain members. The guide questionnaire consisted of both open ended or rating scale questions, enabling a clearer perspective of each interviewee's responses [69]. To become intimately familiar with each case, structured case study write-ups were created to allow further analysis. Such an approach is central to avoiding "data asphyxiation" where enormous volumes of data overwhelm the analysis process [55: p.281]. Further, becoming familiar with each case as a "stand-alone entity" allows for unique patterns from each case to become visible before generalized patterns are attempted to be applied in cross-case comparisons [24: p.540].

4. Findings and Discussion

Almost universally, without regard to channel position, managers acknowledged that people are the key to successful supply chain integration. A breakdown of manager commentary by channel position is supplied in Table 1. At one company, the Director of SCM's slogan is, "People are the bridge or the barrier." Unfortunately, actual practice in the areas of hiring, training, motivating, empowering, measuring, and rewarding people does not support the rhetoric. From the managers interviewed, leveraging the human resource is often not a priority at companies pursuing supply chain strategies. Managers are much more focused on implementing the latest technology and teaming with the best channel partners. It appears that while many organizations embrace technology, efforts to develop human resources are often meager by comparison and

poorly structured. Peter Senge has noted, "We know how to invest in technology and machinery, but we're at a loss when it comes to investing in people" [67: p.90].

Few training budgets equal those designated for technology despite estimates that systematic and structured investments in training can provide up to twice the return as investments in technology [71]. The fact that passionate people creatively engaged in making supply chain integration work are a competitive weapon that is largely overlooked is the fault of top management. Thus, senior management must use their position power and authority to create the vision, allocate the resources needed for training, and establish the measurement and reward systems that are critical to injecting passion into the workplace.

<center>*** **Insert Table 1 about here** ***</center>

4.1. Organizational Culture as a Supply Chain Facilitator

Senior management has the responsibility to cultivate a work environment where participation is not just encouraged but highly valued; where people are empowered to experiment, take risks, and solve problems; and where constant, life-long learning and the sharing of knowledge is the expectation. Notice the phrase "sharing of knowledge." Although information gathering and sharing is important for a supply chain to sustain effective operations, it is the gathering and sharing of (new) knowledge that allows firms to remain competitive [80], and ultimately the supply chin to remain competitive. If individual supply chain partners are not able to change information into knowledge and manage knowledge flow, then the supply chain alliance will not be able to produce the synergy necessary to effectively compete against other supply chains.

To have such a synergistic environment, managers must be able to work with and leverage their employees so that information is transformed into processes and knowledge learned and

shared. As one manager commented, "Changing the culture is the key to leveraging people." If the "right" culture is not in place, then the supply chain will not be able to use their employees effectively to pour their passion into supply chain initiatives. To quote another senior manager, "You can't have hierarchical control if you want to be in a supply chain environment."

4.2. Education and Training

Beyond the need for more proactive leadership, the managers targeted their comments regarding their people on the companies' education and training efforts. Education is needed to create a vision and understanding of SCM as well as to empower people at all levels to become actively engaged in integration and improvement initiatives. Focusing initially on the training theme, both methods and topical coverage were considered important. Efforts to build people skills ranged widely from no formal corporate involvement in SCM training to the establishment of corporate universities. The most impressive participant companies have developed extensive training programs that offer 50 to 100 different supply-chain-management-related courses. One company works actively with three state governments to jointly sponsor training programs. This company makes its classes available to its employees while encouraging supplier personnel to participate. The invitation has been extended for first-tier suppliers to invite a limited number of second-tier suppliers' personnel to join in a variety of classes. An amazing transition takes place when managers from three tiers of the supply chain find themselves cooperating in a classroom setting. Friendships and understanding emerge that enrich the longer-term business relationships.

In addition to providing the actual training, many companies link employee pay to education. As employees build skills and demonstrate new competencies, their compensation is increased. One company even offers stock options for the completion of training. Other training approaches that were highlighted during the interviews included the following:

1) **Rotation programs.** Many companies now hire bright young people who have just completed their undergraduate or MBA training and bring them into a cross-functional rotation program. The typical program lasts 18 months to two years and involves four to six different assignments in the areas of purchasing, production, logistics, research and development, marketing, and finance. Some of the programs require that the manager spend one of the rotations on the production or retail floor. This training takes place before the manager arrives in the position for which he or she was hired.

2) **Workshops and seminars.** Many companies augment their in-house training through week-long seminars offered by universities, consulting companies, and professional associations. These workshops present cutting-edge experience and give the managers an opportunity to benchmark their companies' practices with those of other managers in attendance.

3) **Computerized training and simulations.** Computerized training modules have become popular because they offer a level of flexibility that cannot be matched through more traditional approaches. Whenever managers have 30 minutes to an hour, they can work through a training module at their own pace. Computer simulations also have gained in popularity in recent years. Simulations help make complex tradeoffs more visible, providing a holistic vision of the supply chain that cannot be easily gained otherwise. Many simulations involve competition among teams of managers, creating an opportunity to develop camaraderie and to practice team management skills.

4) **Learning through experimentation.** A few companies have cultivated a work environment that allows managers to experiment with new approaches to traditional business situations. One company has built some slack time into its production lines specifically so that workers can use that part of the line as a laboratory— testing new assembly techniques to see if the existing system can be improved. This particular company already is recognized as one of the world's most productive and highest-quality manufacturers. Another company actually encourages its employees to fail. That is, people are expected to try things that have never been done before. If the new approach works, then it is documented and shared throughout the organization. If it fails, then the employee is expected to learn enough not to repeat the same mistake.

5) **Knowledge sharing.** Getting people to share what they know best can help instill a quest for learning throughout the organization. Simple efforts to promote knowledge sharing involve publishing a directory that contains telephone/fax numbers and e-mail addresses so that people can contact each other without wasting time trying to track down a number. Some organizations have set up a web-based directory that contains names and contact data along with information about areas of expertise and current "pet projects." Leading organizations make it a part of each person's job to act as a consultant to other areas of the firm when the need arises. This consulting role helps specialists share their knowledge and promotes a learning organization. Knowledge sharing helps people get to know one another and establish relationships that reduce the transaction costs of collaboration.

6) **Professional certifications.** Several professional organizations such as the National Association of Purchasing Management, the American Production and Inventory Control Society, and the American Society for Transportation and Logistics maintain certification

programs in areas that are very relevant to SCM. Numerous companies pay for membership in these associations and make resources available to help employees prepare for and pass the certification exams. A manager from one of the participant companies actually noted that his company places greater value on being certified than it does on a person having an MBA. Certification develops skills and brings credibility.

Turning to a discussion of training content reveals a great deal about how companies view SCM. Some companies are very focused on building skills for day-to-day decision making in targeted domains such as inventory management, production control, or supplier evaluation. Others take a more expansive view of training and strive to create an overall SCM perspective. The best companies blend the two approaches to instill a sense of purpose and vision while providing a set of skills that can add immediate value. Some of the skill sets that are viewed as most important are listed below.

- Supplier evaluation and selection
- Negotiation
- Systems thinking and analysis
- Team building and management
- Tradeoff analysis
- Quality control
- Benchmarking
- Problem solving
- Computer (basic programs to web design)
- New product development
- Relationship management
- Process improvement and integration
- Brand management
- Customer service
- Costing—ABC, target, and total
- Six Sigma
- Outsourcing and the use of 3PLs
- Process integration
- Cycle time reduction
- Value analysis/value engineering

Of course, a comprehensive list would include hundreds of topics. However, the wish list of skills most often sought after implies that companies are looking for people who have the depth of knowledge to perform as specialists while at the same time understanding the big picture and being able to make decisions that support corporate rather than functional objectives.

In summary, supply chain managers need to understand the nature of their organization's culture and processes, be able to work in teams, maintain a customer focus, and have the capacity and desire to learn constantly. They need to be proficient analysts and great

communicators and be able to facilitate communication about firm and alliance members. And they need to be flexible, and willing and able to adopt new technologies or step out of the box to solve customer problems. One company's education philosophy nearly captures the overall thrust of supply chain skills desired in only a few words—"Lifelong training in customers, quality, and technology." We can modify this quote slightly to conclude, "Life long training is customers, quality, technology, and learning to work effectively with others."

5. Building Cross-Functional Managers

The objective of corporate supply-chain education appears to be to create the cross-experienced management team. The intent is to provide managers with an understanding of the roles and challenges inherent to managing diverse value-added activities throughout the organization. A cross-experienced management team facilitates integration, making it possible to build broad-based core competencies. The effort to develop cross-experienced managers can be summarized into three phases—begins in the hiring process. A number of companies have developed web-based application processes that help profile potential hires to see if they have the demeanor, aptitude, and skills needed to fit the company's needs and culture. Phase two, once hired the manager enters into a cross-functional rotation program like the ones previously described. Finally, phase three continues to inculcate the attitude and skills needed to be a cross-experienced manager by allowing life-long learning through professional development and periodic assignments to cross-functional task forces and project teams. A synopsis of the three-phase process for cross-functional management training is shown in Figure 1.

*** **Insert Figure 1 about here** ***

According to the managers interviewed, a truly cross-experienced manager accomplishes the following:

1) Develops an appreciation for the needs and wants of customers

2) Becomes intimately familiar with the product and the value-added process

3) Gains a better perspective of what goes on in the different functional areas and how the functional areas work (or don't work) together to meet organizational goals

4) Learns the "language" spoken in each area (in preparation for future intra-organizational communication)

5) Establishes relationships with other managers that will be useful in future decision-making responsibilities

6) Develops an appreciation for the workers who make the product or, in the case of service industries, who interface with customers

7) Gaines an understanding of the role that outside suppliers (both product and service) play in product development, production, and distribution.

As managers become cross-experienced, their ability to make process-oriented decisions as well as work on supply chain teams improves dramatically.

6. Caveats Regarding People in Supply Chain Management

6.1. Employment Loyalty and Mobility

Unfortunately, cross-experienced managers are highly valued and marketable. Cost justifying programs to cultivate cross-experienced managers is difficult when managers change jobs every three to five years. Scarce resources compound the problem. One company with a reputation for developing outstanding cross-experienced managers was forced to scale back its training program after competitors made a practice of hiring away newly "minted" managers. Competitors had found that it was easier and less expensive to "headhunt" bright and capable managers than to establish their own training programs. Effective SCM requires competent, secure people. Finding and/or developing these people is a huge challenge, especially in a world where employment mobility dominates. High turnover rates greatly inflate training costs and reduce training effectiveness. The lack of loyalty—running both directions—is perhaps the

most prominent impediment to leveraging the human resource as a supply chain facilitator. As previously mentioned, many companies would rather hire experienced managers from the outside than develop great managers internally.

6.2. Lack of Follow-Through

A second people challenge has emerged from corporate America's penchant for fads. Many companies spend a great deal of time and money looking for the panacea. As one manager said, "There are no silver bullets, but there are a lot of people willing to sell you one." Pursuing the latest technology or newest management philosophy dilutes focus, wastes resources, and diminishes follow through. This lack of follow-through has led to "cynicism" among the ranks of many organizations' management teams. Far too many managers now operate with a "show-me-first" attitude and are unwilling to accommodate innovative philosophies, new practices, or modified roles and responsibilities. When people adopt this intransigence, they become barriers to supply chain integration and an entire cultural makeover is required.

6.3. Talking the Talk, but Not Walking the Walk

A third related hurdle is that many companies pay lip service to the importance of the human resource. They talk the talk of people being the most important asset, but in the words of one manager, "They have taken people out of the picture more than they should have been." Simply stated, many managers and workers alike no longer believe that they can make a difference; they do not feel that their experience or passion is valued. They therefore hoard a wealth of ideas that would lead to better products and processes and could greatly increase customer loyalty. As a result, a critical resource goes underutilized. The bottom line is that many companies (even highly admired companies) have created an environment where people

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lack the power to make something happen, but possess the power to keep something from happening.

7. Conclusion

Managers interviewed across the five-channel positions believe that people are vital to supply chain success. Interestingly, the amount of time and money spent by organizations to develop its people for supply chain collaboration pails in comparison to other budget expenditures—namely technology and alliance formation. To utilize their people, supply chain managers must remember the following four points:

- An organization's people are a competitive weapon in supply chain integration; however, it is largely overlooked by top management. It is the duty of senior management to create vision, allocate necessary training and educational resources, and establish measurement and reward systems that inject passion into the workplace.

- Senior management must cultivate a working environment where participation is not just encouraged but highly valued. In such environments, people are empowered to experiment, take risks, and solve problems; and constant, life-long learning and the sharing of knowledge is the expectation not the ideal. To repeat one manager's commentary: "Changing the culture is the key to leveraging people."

- The best supply chain companies blend continual education and training programs to instill a sense of purpose and vision while providing a set of skills that can add immediate value.

- Cross-functional managers are developed in phases, beginning before the manager is even hired and continuing throughout the tenure of the manager (Figure 1).

While daunting challenges still persist, important progress toward people integration is being made. See our summary on Table 2. Our findings suggest that future study is needed to understand how people facilitate supply chain success, and what factors aid people in being a valued asset to supply chain alliances. Human effects on supply chain initiatives are real and must be taken into consideration along with other factors when managers meet to form supply chain alliances.

*** Insert Table 2 about here ***

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Table 1: Status of People in SCM by Channel Position

Retailer Perspective:

• People success begins with leadership. Extensive senior mgmt education. Tie rewards to results. 360 degree feedback

• Integration training focuses on 3 areas: supplier evaluation, relational mgmt, & use of 3PLs. Lack common vision & passion.

• Active effort to hire SCM mgmt skills externally. Skill building & people development viewed as key, but training not in place.

• In-house university provides training on systems view, process improvement & brand management.

• People are key, but "have been taken out of picture more than they should have been." Working to educate on collaboration.

• Changing culture is key to leveraging people. Training all senior managers in team building. Cross-functional rotations.

• Weekly meeting to coordinate activities & resolve problems. SCM education across senior management.

• People must be educated about the nature of SCM. Customer service training. Some cross-functional teams. Stock options.

• Hire good people, empower them, & hold them accountable. Emphasize individual learning & sharing. Matrix organization.

• People are key—training & trust. Emphasize culture of trust through clear objectives, aligned measures & reliable systems.

• People are key—every individual must be passionate. Daily meetings to review results & coordinate plans/programs.

• Extensive education via workshops, seminars & training rotations. Constant learning via experimentation. Stock options.

• People are a critical barrier. Having trouble changing the mindset, traditional practices, & roles/responsibilities.

Finished Goods Assembler Perspective:

• Extensive learning—100s of courses available. Stock options offered for completion of training. Annual development plans.

• Human resource is vital. Need expanded training & empowerment. Making SC visible so people understand tradeoffs.

• People viewed as one of 3 pillars of successful SCM. Training is critical; also, open communication & trust.

• SCM requires competent, secure people. 50+ SCM classes taught in-house & to first-tier suppliers. Expanding to second tier.

• SCM is human resource issue. Everyone must be on same page. Vision, training, & measurement are critical to passion.

• People are viewed as key & recognized as barrier. Few formalized efforts in place to leverage people.

• Must bring right people together on SC teams. Team members must have expertise & credibility. Best practice training.

• People are key; technology is enabler. New SC training program. Cross-experienced managers. Use cross-functional teams.

• People are vital to SCM; therefore, major effort in education, development, & hiring. Cross-functional teams are used.

• Training & motivation are critical. Also, very important to maintain stable (longevity) mgmt team which is cross-experienced.

• People have to "believe it is the right thing to do." "Book club" provides common forum. Computerized training & simulation.

First-Tier Supplier Perspective:

• People are bridge/barrier. Training & consistent measures to change mindset/overcome NIH. Cross-functional teaming.

• Training, teaming, shared rewards & work environment key to participation. Use workforce to sell to customers.

• People are source of expertise & provide means for staying in touch with SM members. Strong emphasis on teams.

• Training in area of leading-edge procurement. Provide overall SC visibility. Personal development plans to guide training.

• People are key—must have same vision, receive training, & be held accountable. Cross-functional & commodity teams used.

• Buyers trained to lead supplier development teams. Cross-functional commodity teams. Emphasize shared learning.

• People are bridge or barrier. Teams used to build relationships. In-house university. Training offered to first-tier suppliers.

• Lip service to people as critical. Materials mgr pushing for mentor program. Scarce resources hinder people development.

• Training required to understand process integration & tradeoff analysis. Provide process eng. training to key suppliers.

Lower-Tier Supplier Perspective:

• Employee commitment is key. Trust means doing what you say you will do. Reward input; use teams; training.

• "Empower people to do the right thing." "You can't have hierarchical control if you want to be in a SC environment."

Service Provider Perspective:

• "People key to 3PL success." Careful hiring & training to build skills & loyalty. Workers are rewarded to share ideas.

• People are critical to tailored services & key account mgmt. Information access & centralized purchasing support field staff.

• People are key. Operate in-house university for training & leadership education. Lack of follow up has led to "cynicism."

• Emphasis on internal collaboration. Better cooperation between sales & operations. Joint problem solving. Mutual respect.

• Project mgmt., problem solving, & teaming skills must improve. Developing training. Promote NAPM/APICS certifications.

• People, especially mgmt talent, are vital to creation of new value-added services. Empowerment & openness/honesty vital.

• Invest in people & passion. Cross train employees. Share knowledge. Life-long training in quality, customers, & technology.

• SC & 3PL service are people driven. High turnover raises costs & reduces training effectiveness. Competition for people.

• People are important, but with 30% annual growth it is difficult to provide training. Key managers are stretched very thin.

Table 2: Progress and Deficiences of People Utilization in Supply Chains		
Points of Progress		**Deficiencies**
People are recognized as vital to SCM		High degrees of lip service
Establishment on in-house universities		Creativity of people remains untapped
More use of rotation programs		Lack of layalty both ways
greater emphasis on teaming		Meager training budgets
		Cultures of trust are rare
		Too much hierarchcal control
		Risk taking discouraged
		Cynicism is common

<h1 style="text-align:center">**Self-Explanatory Caption for Figure 1**</h1>

The purpose of Figure 1 is to graphically display the three-stage cross-functional manager process. Potential cross-functional manager (PCFM) are targeted by the firm in the first stage, before employment is even offered. The manager is then placed in an extended functional training and education program where he/she is rotated throughout different functions within the firm. The final stage is a continual process where the manager must acquire new skills and abilities through education and training programs. These education and training programs can take place inside or outside the firm.

Figure 1: Cross-Functional Management Training and Education Process

Phase 1: Hiring Process	Phase 2: Initial Cross-Functional Training	Phase 3: Continuing Education & Training

Continual Education & Training:
- Periodic assignments to cross-functional task forces and project teams.
- Week-long workshops and training seminars.
- Linking compensation to certification and skill training.

Cross Functional Rotation Program:
- Program involves four to six different assignments in the areas of purchasing, production, logistics, research and development, marketing, and finance.
- Program lasts 18 months to two years.
- Training takes place before the manager arrives in the position for which he or she was hired.

Screening Process:
- Application processes that helps to profile hires.
- Attributes such as demeanor, aptitude, and skills are profiled against company needs and culture.