

# *The work force and Information Technology (IT)*

**Kaveh Mohammad Cyrus (PHD.)**

Amirkabir University (Polytechnic Tehran)

[Cyrusk@Aut.ac.ir](mailto:Cyrusk@Aut.ac.ir)

**Mohammad Rahimi Moghaddam (BSC.)**

Amirkabir University (Polytechnic Tehran)

[Mrm573@Aut.ac.ir](mailto:Mrm573@Aut.ac.ir)

## *Introduction*

The growth of the concept of Supply Chain Management (SCM) is the direct result of several dramatic changes in the way today's business environment is structured and companies compete for marketplace advantage. Some of these changes are to be found in the methods by which products are developed, manufactured, warehoused, and sold, the way the enterprise is organized and its productivities measured, and the skills required managing, motivating, and empowering the work force. Other changes have come from without. The explosion in the various forms of IT has also acted as the catalyst as well as the foundation of today's revolution in the way customers and suppliers engage in the business of buying and selling.

Of all these changes, none has immediacy and poignancy as do those that have redefined the values of labor and impacted the organization of work. The radical reengineering and restructuring strategies pursued over the past half-decade by all institutions from

commercial business to health care have, however, rendered problematic once well-defined and immutable paths of work-life behavior and often substituted doubt and bewilderment and, sometimes, anger in the place. Although the rise of new business philosophies, like SCM and business process reengineering(BPR), have indeed accelerated these changes, they have also established new directions and new opportunities for the rebirth of work and organizational values. In addition, the value of Information and Communications Technology (ICT) is not restricted to simply being used as tool to accelerate the speed and productivity of business functions.

Exploring how changes to the work force and ITs are impacting SCM is the subject of this paper. Key topics will revolve around discussing the challenge of SCM leadership, the learning organization, and principles of work force activation. Next, the paper moves particularly to establish the effective SCM work force teams and leveraging the "virtual" Supply Channel. At this point, the paper shifts to a review of how

ICT is reshaping the tactical and strategic functions of the work force and supply channel networks.

### ***Today's Work-Force challenge!***

The enabling power of ICT tools, and the need for close undersupply channel partner functional integration have dramatically shifted the management of human resources away from a concern with the maintenance of rigid "command and control" organizational hierarchies to a radically new perspective that considers lasting competitive advantage to be attainable only by liberating and activating the skills, discipline, self-motivation, creativity, ability to solve problems, and capacity for learning that is to be found among the individual managers and functional professionals located throughout the supply channel network. Ultimately, what a company or whole supply channel is really selling their customers is not products and services but the enrichment value of the skills and knowledge possessed by the people who work within the organization and outside in its partner companies and suppliers.

Quality management and BPR have provided today's work force with new tools to create superlative business processes that produced customer-winning service value and unbeatable competitive advantage.

Today's business literature has awakened to the transformation in the nature of work, and there are many excellent books exploring the shift in role of the work force as if migrate from the industrial to the postindustrial world, from being industrial workers to process engineers. All of them point to the same conclusion: The old multi-tiered hierarchical organization is woefully insufficient to handle today's business requirements for global competition,

ever-increasing flexibility of processes and people resources, and creation and continuous development of forms of "Virtual Organizations" composed of alliances of supply chain partners. Instead of laboring in narrow, simple, task-oriented jobs, people now find that their work lives are multidimensional, spanning departments, often times connecting them with counterparts in other companies out in the supply channel. In place of training to achieve optimal task performance, the emphasis has switched to educating people to increase their insight and understanding of the converging enterprise process of which they are a part. Managers, formerly the guardians of authority and knowledge, have had to change from being task masters and scorekeepers to coaches and leaders.

Today, the value of labor is to be found in the level of the skills, knowledge, expertise, and information that the people within the firm, can utilize to provide enrichment value to customers and supply channel partners. Managers that focus solely on short-term gains that leave the company denuded of its best talent and capabilities for innovation have lost sight of the very purpose for its existence. These companies are doomed: Without the ability to evolve and to fight for their place in the business ecosystems they inhabit, they will be quickly devoured by more resilient competitors or even by once-friendly channel partners hungry to strengthen their place in the struggle for marketplace survival.

Another response is to take a hard look at what workers should be doing and thinking about when it comes to their jobs. If the nature of work and the value of the labor of people have changed, today's work force must be prepared to take the bad with the good. In reality, people do not have "jobs" (jobs belong to companies who have the power to change or eliminate jobs at their

discretion); they have careers<sup>2</sup>. A career consists of the skills, aptitudes, and values an individual possesses, based on personal learning, development, and mastery of a range of productive capabilities that provide for self-realization and personal accomplishment. Today's work force enjoys virtually unlimited opportunity to exercise their personal sense of creativity and entrepreneurialism and to sell their knowledge and capability at their own discretion to the highest bidder at any time.

Because the responsibility for career success belongs to the individual, what are the key attributes characteristic of process-centered professionals? One of the best ways to illustrate the shift in work force values from a task-oriented to a process-oriented organization is to contrast the following critical elements:

- Skills.
- Knowledge and Learning.
- Communications.
- Management Control.

Today's complex global business environment, requires companies not only to do the basic things well but also explore new ways of proactively shaping the marketplace by continuously regenerating themselves, their core strategies, and their capabilities and productive resources. Uncovering tomorrow's opportunities requires more than a single vision: it requires the collective perspective of many groups, both the enterprise and related channel network systems. Companies that separate themselves functionally and geographically are unlikely to gather the intellectual energy and innovative resources necessary to understand and influence the forces shaping tomorrow's marketplace.

Keeping competitive in a global business environment marked by the

---

blinding speed of today's marketplace and the short cycle times of product shelf life, service factors, and operating and planning information means that existing company resources will be, sometimes substantially, out of alignment with Strategic aspiration. By demonstrating the vital role of each member of the work force in attaining clear competitive challenges, such as creating new sources of customer satisfaction or dramatically better products and services, individual employees can develop personalized goals that are supportive of their own objectives as well as those of the enterprise.

Still, regardless of the strength of internal resources, companies have increasingly come to realize that it is only by utilizing the collective to be found in the supply chain management systems to which they belong can they hope to sustain the level of marketplace innovation necessary for competitive leadership. It can be said that the particular suite of products and services offered by a company, is simply the manifestation of boundless of past skills and innovative thinking possessed by its productive competencies. In reality, the value of those competencies is to be found not in past accomplishments, but rather in their future capability to create new and exciting marketplace offerings that can enrich not only their customers but also their supply channel partners.

The exportable work force competencies enable groups of companies to converge specialized resources to exploit new opportunities or solve critical problems that would be impossible if attempted from the standpoint of a single company. In fact, if it can be said that, a company can only progress when it utilizes its learning experiences as a spring board to more effective action, then the ability to exploit the cumulative experiences of whole channel systems in search of critical ideas can generate dramatically

new methods of improvement and innovation. Through alliances, joint venture, licensing, and franchise, companies can gain access to new competencies and resources, and then by internalizing them, they can create new regions of work force skills and capabilities.

The mere possession of or capability for converging resources from several sources does not, by itself, guarantee success. Leveraging channel competencies require their skillful blending in ways that compound the value of each resource. The ability to continuously blend and balance internal resources with the spectrum of shifting competencies to be sound out in the supply channel places a significant burden on strategic foresight teams. Besides, searching for the right match of complementary competencies that will generate high-value processes, companies must also be careful to shield their own work forces from being raided by competitors or even pointers seeking to build internal capabilities.

Supply chain management is management philosophies that can assist companies acquire critical work force skills, talents and business vision by enabling naturally linked supply network partners to integrate complementary competencies focused around common strategic objectives. The work force component of SCM provides a clear vision to the imbalance between available resources and strategic market aspiration today's most aggressive market leaders often experience. Finally, SCM provides managers with new opportunities to creatively leverage the wide range of resources that can be gathered from the typical supply channel.

### ***NEW ENTERPRISE ORGANIZATIONAL FORMS***

The dramatic change occurring in the roles, capabilities, and goals of today's work force could not have occurred without complimentary changes in the way companies are organized. Today's relationship between labor and organizational structures and values is evidence of this principle. The development of global markets, the creation of "virtual" products and services, the networking capability provided by modern information and communications technologies, and the utilization of work force competencies found outside the boundaries of the enterprise have rendered obsolete the operational norms and organizational models that have governed the way companies have been run for almost a century.

The difference between yesterday's task-focused department and today's process-focused teams is dramatic. In the past, companies managed change by unfreezing the organization, developing new standards and procedures, implementing these changes, and then once again freezing his organization. Today, the speed of change and the tremendous risks associated with the loss of competitive advantage have required companies to create fluid organization capable of continuous change and of using knowledge teams composed of people from any place in the supply chain network continuum. A summary of the changes to the different elements required to capitalize on supply chain organizations is as follows:

- Organizational Agenda,
- The Work Force,
- Organizations,
- Work Teams,
- Managers,
- Leadership.

The basis of today's process-focused organization can be found in the unfolding of two concepts. The first is

the assumption that people (both the work force and management) have the capacity for multitasking. This is possible, because the increment of labor value is not task performance but rather the unrestricted application of highly skilled, knowledgeable people who can use new forms of information, work efficiently with others, and process the critical problem-solving skills necessary to accomplish the objectives of multiple teams functioning concomitantly. The second assumption is that today's most competitive form of organization is the "virtual organization" composed of multiple teams that span enterprise functions and that have the capability to also include the human resources of channel partners existing outside the boundaries of the company. By integrating capability from virtually any node in the supply channel network, their goal is to swiftly and completely turn customer-winning opportunities into market-satisfying solutions. All process-focused organizations are driven by comprehensive strategic goals and missions of the organization that provide not only clear directions but also critical corporate values and cultural norms. Clear business strategies make visible the requirements of productive processes and enable the creation of targeted cross-functional, cross channel virtual teams necessary to accomplish process objectives.

Another critical element of the process-focused organization is the existence of centers of excellence.

The last critical element is the capability of individual enterprise and whole channel systems to activate and network targeted individual people resources to create teams focused around a specific process. Today's continuously advancing world of information and communication technology (ICT) provides the capacity to link both internal and external resources and removes dependence of physical and temporal

proximity of team members. ICT tools enhance and make practical the use of excellence and multiple process teams by liberating the knowledge and problem-solving talents to be found vertically within the enterprise and horizontally among supply channel partners.

The structuring of SCM process team is only one of the ways traditional hierarchies and process team models can be contrasted. The SCM process teams can be thought of as changing constantly mutating collections of coaches, process owners, and skilled professionals that coalesce to perform the work of specific processes, and then are dispersed after specific objectives are achieved. The overall direction of enterprise and supply channel process objectives is the responsibility of top management, who determines cumulative long-term vision and assist in resolving goal conflicts based on individual enterprise and channel business strategies.

Creating SCM process-focused teams require the collective commitment of all business partners that are touched by the channel process. There are six steps that supply channel process owners can follow in their efforts to create effective SCM teams:

1. Develop Objectives.
2. Confirm Commitment.
3. Develop SCM Team.
4. Develop Network Links.
5. Team Management Skills.
6. Performance Measurements.

## ***BENEFITS OF SCM PROCESS FOCUSED TEAMS***

Regardless of whether the SCM initiative is marketing, logistics, or product design based, today's leading companies have all come to recognize the fundamental principle of SCM: Supply chain cooperation can enhance competitiveness. A supply chain should really be defined in its broadest

perspective as the active converging of the competencies and skills of the people resources of companies, sometimes even deadly rivals, to realize order-of-magnitude breakthroughs in some aspect of product /service development, manufacture, or development. SCM, therefore, must be understood as the process of founding, empowering, and continuously reinventing channel process-focused teams in the search for innovative ways to realize radically new forms of competitive advantage.

The utilizing of SCM process-focused teams can be said to provide companies with the following advantages:

1. Sharing Infrastructure Competencies.
2. Leveraging Channel Infrastructures.
3. Reducing Process Cycle Times.
4. Increasing Process Capabilities.
5. Expanding Market Reach.
6. Developing Unique Solutions.

### ***SCM and Today's Information and Communication Technology***

The origins and continued development of the SCM concept is directly dependent on the capabilities of today's Information and Communication Technology (ICT). SCM provides such a critical management and operational approach for competitive advantage because it is inherently intertwined with the networking power to be found in today's computerized information and communications systems.

As a principle, it can be stated that the operational and strategic capabilities of today's SCM-focused organization must be in balance with the functional

dimensions of the information technologies available.

At the core of the concept of SCM stand two critical dimensions of information management. The first is the existence of a technical infrastructure that links computer system and people. The word commonly used for this process is integration. Integration attempts to bring into alignment the challenges and opportunities offered by information technologies and the cultures and capabilities of tightly linked SCM process-centered organization.

The second dimension at the core of the SCM philosophy is networking. With the advent of today's minicomputers and client server architectures, the process of communicating information has shifted from processing hierarchies to connecting different computers and their information data bases together in a network. The peer-to-peer networking enables companies to leverage the capabilities, skills, and experience of people by integrating and directing their talents around focused tasks.

Integrating is the process of linking business functions together; networking, on the other hand, is the activation of those links by enabling and empowering people to cut across functional and company barriers and interweave common and specialized knowledge to solve a wide range of competitive problems.

Integration and networking are complimentary activities that can be combined and defined as the integrative process. This integrative process is the driving force in the acquisition of computerized technology and is, in turn, governing the development of its topology.

The implementation of ICT systems can assist companies realize a number of critical SCM operational and strategic opportunities. Although ICT can provide entire channel systems with the ability to achieve order-to-magnitude

breakthroughs in productivity and competitiveness, companies must be careful to match ICT solutions with overall strategic business scope. The following principles will greatly assist supply network members in leveraging ICT systems for competitive advantage.

1. Assess Information Intensity.
2. Performance.
3. Industry Impact.
4. Search for Ways ICT can Increase Competitive Advantage.
5. Analyze System Scalability.
6. Developing Long-Term plan that seeks to Continuously Leverage New ICT.

In the final, the success of ICT solution is measured on how closely the resources and capabilities of that enterprise comprising the supply channel network can be merged and focused on customer satisfaction.

### ***Summary and Transition***

The ability of companies to realize superior levels of performance is ultimately focused on the capabilities and creative visions of the people who comprise the organization and the robustness of the information and communications technologies used to run both internal and external supply channel processes. In today's business environment, the growing importance of core competencies and work force empowerment and the virtual explosion in information technologies has created a revolution in organizational structures and values and activated radically new ways of leveraging productive processes in the pursuit of global competitive advantage.

The implications for the work force of the end of the traditional hierarchical organization have been staging. Instead of laboring in narrow, simple, task-oriented jobs, people now find that their work lives

are multidimensional, spanning departments, often times connecting them with counterparts in other companies out in the supply channel. Today, the value of labor is to be found in the level of the skills, knowledge, expertise, and information that the people within the firms can utilize to provide enrichment value to customer and supply channel partners.

In addition to leveraging internal people resources, companies have increasingly come to realize that it is only by utilizing the collective work-force competencies to be found in the supply chain management systems to which they belong can they hope to sustain the level of marketplace innovation necessary for competitive leadership. The work-force component of SCM provides a clear solution to the imbalance between available resources and strategic market aspirations today's most aggressive market leaders often experience.

A summary of the changes to the different elements required to capitalize on supply chain organizations is as follows:

1. Organizational Agenda.
2. The Work Force.
3. Organizations.
4. Work Teams.
5. Managers.
6. Leadership.

The origins and continued development of today's view of role of the work force, the structure of the organization, and the utilization of management philosophies such as BPR and SCM are directly dependent on the capabilities to be found in the Information and Communication Technology (ICT) available to companies. SCM is such a critical management and operational approach for competitive advantage

because it is inherently intertwined with the networking power to be found in today's computerized information and communication system.

As a principle, it can be stated that the operational and strategic needs of the organization must be in balance with the dimensions of the information necessary for effective action and decision making. Today, the explosion in information technologies has provided companies with the ability to integrate once-isolated business functions into unified supply channel organizations. The integrative process requires

managers to restructure the culture and capabilities of their organizations around values promoting continuous process improvement and teamwork. The integrative ICT systems enable the organization not only to rethink traditional enterprise information flows but also to leverage new information tools such as graphics, workstation technology; and network-to-network computer integration. At last, the effective application of new information technologies requires a redefinition of the goals and skills of the enterprise people resources.

### **Keywords:**

1. Supply Chain Management (SCM)
2. Business process reengineering (BPR)
3. Information and Communications Technology (ICT)
4. SCM leadership
5. Virtual Supply Channel
6. Supply channel networks
7. Command and control
8. Quality management
9. Global competition
10. Virtual Organizations
11. Knowledge management
12. Supply channel partners
13. Job
14. Management Control
15. Global business environment
16. Virtual products and services
17. Organizational Agenda
18. Centers of excellence
19. Business strategies
20. Integrative process
21. Global competitive advantage
22. Enterprise Resource Planning
23. Information management

## **Recourses:**

- 1. Sunil Chopra & Peter Meindl, Supply Chain Management (Strategy, planning, and operation). Prentice Hall, 2001, 0-13-026465-2.**
- 2. David F. Ross, Competing through supply chain management. Illinois: Chapman & Hall, 1998, pp.109-111.**
- 3. This crucial point is elaborated upon by Hammer, Beyond Reengineering, and p.50.**
- 4. See the excellent discussion on build enterprise competencies in Micheal Hammer and James Champy, Reengineering the corporation. New York: Harper Business, 93, pp.163-193.**
- 5. See the discussion in Steven L.Goldman, Roger N.Hagel, and Keneth Preiss, Agile competitors and virtual organizations. N.Y.: Van Nostrand Reinhold, 1995.**
- 6. This section was drawn from David F.Ross, Distribution: Planning control. N.Y.: Chapman & Hall, 1996, pp.714-715.**