

## **THE ROLE OF HUMAN FACTORS IN SUPPLY CHAINS**

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### **ABSTRACT**

A supply chain consists of all parties involved, directly or indirectly, in fulfilling a customer request. The supply chain not only includes the manufacturer and suppliers, but also transporters, warehouses, retailers, and customers themselves. Within each organization, the supply chain includes all functions involved in receiving and filling a customer request. These

functions include, but are not limited to, new product development, marketing, operations, distribution, finance, and customer service.

Global supply chains are evolving into dynamic process networks in which companies connect in novel combinations based on the context and requirements of individual projects. This dynamic environment requires effective communication, team management, and constant lifecycle innovation. Human factors insights in these areas are critical for the effective development of global process networks.

The importance of human resources has increased significantly due to new places and the role of men in all sectors of society. It is a rational, human being, which runs all the activities, and whose results depend on the knowledge, abilities, skills, motivation.

The purpose of the paper is to call attention to the importance of human factors in the activity of each enterprise and the necessity of creating the structure of enterprises and caring for organizational culture in line with available human resources. This paper also presents an overview of the structure of global supply chain networks and the human factors dimensions that affect their success.

### **1 INTRODUCTION**

It is becoming impossible to remove or ignore sources of turbulence and volatility in markets. Hence, supply chain managers must accept uncertainty, but they still need to develop a strategy that enables them to match supply and demand at an acceptable cost. Global supply chains are evolving into dynamic process networks in which companies connect in novel combinations based on the context and requirements of individual projects. This dynamic environment requires effective communication, team management, and constant lifecycle innovation. Human factors insights in these areas are critical for the effective development of global process networks.

Successful companies are those that consider their human capital as their most important asset. Facts and figures are the quantitative elements of successful management, yet the qualitative, i.e. the cognitive aspects, are those that actually make or break an organization. Assuming that the employees of an organization in some supply chain are individuals with own mental maps and perceptions, own goals and own personalities and as such they cannot be perceived as a whole, HRM holds that the organization should be able to

employ both individual and group psychology in order to commit employees to the achievement of organizational goals.

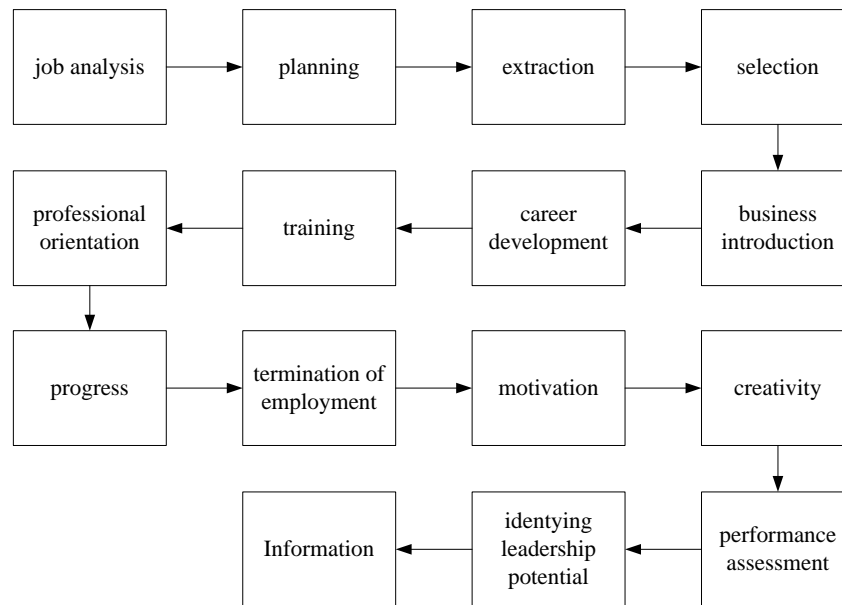
This paper presents an overview of the structure of global supply chain networks and the human factors dimensions that affect their success.

## **2 FUNDAMENTALS OF HUMAN RESOURCES**

Every man, bearing in mind their wishes and possibilities, selects occupation and any organization, keeping in mind the requirements of the environment and available resources will decide how to set up its organizational structure, define jobs and develop recognizable culture. Formation of certain structures of the company, except for activities with which it deals, depends on the willingness of old employees to adapt to environment changes and the readiness of new staff to embrace the culture of the organization. If appropriate organizational structure is established, its individual members and team activities can create a stimulating and pleasant environment, to educate, adjust and to reach their goals. Otherwise, undefined tasks, inability to self-decision making and the affirmation and unpleasant working atmosphere which results with dissatisfaction, higher staff turnover and poor business results.

Human Resources Management (HRM) as a business function encompasses the duties and tasks related to the people, their acquisition, selection, training and other activities that ensure the development of employees. The goal of human resources management is to help the company reach its strategic goals. The basic assumption of human resources management is that people are not machines and therefore we need an interdisciplinary approach for observe people in their work environment.

From the manager is requested to respect the essential characteristics: trust, decentralization and distribution of information and knowledge, education, clear roles and responsibilities, freedom of action, feedback, motivation and resources necessary for action. Framework of action consists of business priorities and objectives that need to know all the employees. Managers are bond between employee and company and exercise their functions in order to achieve the integrity of the system and achieve the satisfaction of the people and the aim of the company.



**Figure 1:** Major processes and functions of human resources

Human Resources Management includes the activities, organizational procedures and plans that affect the behavior, attitudes, organizational culture and achievements of staff in the business system in a way that increases the productivity of workers, their flexibility and capacity for creating competitive advantages that are difficult to copy in the short term.

Many theorists are exploring the phenomenon of Japanese success and competitiveness, and highlight the importance of organizational policies and good practice in human resources management, such as the following principles:

- recruitment and promotion based on knowledge, skills and competencies
- high level of investment in training and training of employees at work
- high level of team work and team culture
- development of multiple skills of employees
- better communication of managers and employees and better working relations
- commitment to quality
- stimulation of initiatives and suggestions of employees
- creation of organizational status symbols: organizational restaurant, coffee shop, uniform, sports facilities, club officers...

It turned out that the application of such policies result in higher employee job dedication, higher motivation, lower total cost of operations, greater productivity and better overall results of operations.

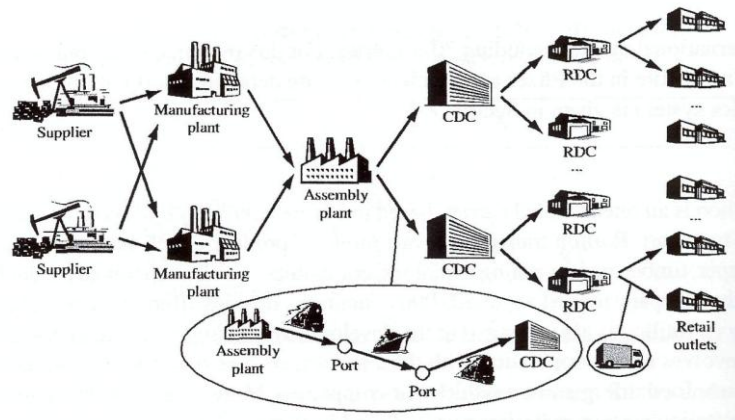
Increasing worldwide competition for physical and human resources also suggests that the more innovative approaches to supply chain management will acquire a greater proportion of global trade.

### 3 SUPPLY CHAINS

Supply chain is a term “now commonly used internationally – to encompass every effort involved in producing and delivering a final product or service, from the supplier’s supplier to the customer’s customer”. As the name implies, the primary focus in supply chains is on the costs and efficiencies of supply, and the flow of materials from their various sources to their final destinations.

Supply chains encompass the companies and the business activities needed to design, make, deliver, and use a product or service. Businesses depend on their supply chains to provide them with what they need to survive and thrive. Every business fits into one or more supply chains and has a role to play in each of them. The pace of change and the uncertainty about how markets will evolve has made it increasingly important for companies to be aware of the supply chains they participate in and to understand the roles that they play. Those companies that learn how to build and participate in strong supply chains will have a substantial competitive advantage in their markets.

Figure 2 shows a typical supply chain in which the production and the distribution system are composed of two phases. In the production system, the raw materials and semi-products are produced in two plants, whereas final products are assembled in the third factory. The distribution system consists of two central distribution centres which are supplied directly from the factory, and in turn each of them supplies two regional distribution centres. From these regional distribution centres the final products are distributed to retail shops, i.e. to the end users. Of course, depending on the product and the demand the supply chain can be differently designed, and may contain more or fewer elements.



**Figure 2:** Presentation of a typical supply chain

There is a difference between the concept of supply chain management and the traditional concept of logistics. Logistics typically refers to activities that occur within the boundaries of a single organization and supply chains refer to networks of companies that work together and coordinate their actions to deliver a product to market. Also traditional logistics focuses its attention on activities such as procurement, distribution, maintenance, and inventory management. Supply chain management acknowledges all of traditional logistics and also includes activities such as marketing, new product development, finance, and customer service. In the wider view of supply chain thinking, these additional activities are

now seen as part of the work needed to fulfill customer requests. Supply chain management views the supply chain and the organizations in it as a single entity. It brings a systems approach to understanding and managing the different activities needed to coordinate the flow of products and services to best serve the ultimate customer. This systems approach provides the framework in which to best respond to business requirements that otherwise would seem to be in conflict with each other. Taken individually, different supply chain requirements often have conflicting needs. For instance, the requirement of maintaining high levels of customer service calls for maintaining high levels of inventory, but then the requirement to operate efficiently calls for reducing inventory levels. It is only when these requirements are seen together as parts of a larger picture that ways can be found to effectively balance their different demands.

Effective supply chain management requires simultaneous improvements in both customer service levels and the internal operating efficiencies of the companies in the supply chain. Customer service at its most basic level means consistently high order fill rates, high on-time delivery rates, and a very low rate of products returned by customers for whatever reason. Internal efficiency for organizations in a supply chain means that these organizations get an attractive rate of return on their investments in inventory and other assets and that they find ways to lower their operating and sales expenses.

The participants in a supply chain are continuously making decisions that affect how they manage the five supply chain drivers. Each organization tries to maximize its performance in dealing with these drivers through a combination of outsourcing, partnering, and in-house expertise.

Increasing worldwide competition for physical and human resources also suggests that the more innovative approaches to supply chain management will acquire a greater proportion of global trade. This is true for nations as well as private industry. It may be particularly true given the predictions of Hagel [3], who provides evidence that institutional innovation is harder to copy than product- or process-based innovation, and is therefore a better place for companies to focus their innovation efforts and resources.

#### **4 THE ROLE OF HUMAN RESOURCES IN SUPPLY CHAINS**

There are strong interdependencies between supply chain management and Human Resource (HR) management and thus it is difficult to identify precise boundaries. Furthermore, these boundaries are continuously moving to accommodate an integration of supply chain and HR activities.

The problem that the logistics professional faces is that managing companywide HR policies to effect *coordinated* change is often outside his or her management scope. This removes the greatest point of leverage in accomplishing cross-functional integration for those who have such responsibility without commensurate authority. Moreover, it is extremely difficult to tailor coordinated HR policies that span functional departments; many logistics professionals lack knowledge and experience in this complex area.

If logistics professionals are to be consistently effective, they must have:

- *Integrative vision* - the vision to craft integrative, cross-functional, and cross-company programs that enable product to flow rapidly and responsively through the company and the channel.

- *Human resources ability* - the ability to harness the power of HR policies to ensure that the programs are implemented effectively throughout the company.

The economic power of cross-functional coordination is becoming widely recognized, and the first capability is now increasingly in evidence in our profession. Unfortunately, however, the second is all too uncommon. This is a root cause of the classic logistics dilemma, and it is preventing many companies from achieving their objectives. Because efficient, responsive product flow is essential to strategic success in most companies, focused HRM must become a core element in the logistics professional's portfolio.

It is suggested that logistics is a sub-function of the supply chain. While logistics may be involved to some extent in an increasing number of supply chain activities, it will never include the complete supply chain spectrum. For example, functions such as sourcing, manufacturing, customer service and retailing involve logistics in their planning and scheduling in order to optimize the end-to-end supply chain, but their core operation is depend upon the functioning of HR.

The ability to manage customer relationships, both internal to the organization and external, and supplier relationships is fundamental to success in supply chain management. The key elements that human resource management in supply chains must have are:

### **Technology**

While process and production technology change has been profound, information management systems and related technology have evolved at a more rapid pace and have had a more profound impact on job design and skill requirements. Technology is most commonly employed for inventory and warehousing management. Looking forward, employers are considering employing technology for transportation, and customer and supplier relationship management. Not surprisingly, larger organizations have implemented more supply chain-related information systems than smaller ones. Interestingly, despite the number of organizations that indicate that technology is applied in their organization, few indicate they currently have the requisite skills to fully employ technology. Organizations are continually updating their technology to improve efficiency and indicate that their ability to keep pace with technological change is a challenge.

### **Skills and Education**

Skill requirements do not vary significantly by company size or region, which suggests that supply-chain employees can move between regions with some degree of ease. Employers indicate that communications and analytical skills are a requirement for all occupation categories across all sub-functions. Other common skill requirements include technology, interpersonal and customer service skills. These skills and knowledge include:

- Financial planning
- Forecasting
- Cost analysis
- Knowledge of international business practices

- Knowledge of laws and regulations
- Knowledge of logistics functions and the supply chain
- Optimization of workflow
- Knowledge of transportation
- General management and business
- Languages Tactical Operational
- Contract administration and management
- Regulatory knowledge and Negotiation skills
- Vendor relations/ management
- Performance measurement and quality management
- Knowledge of currency markets and business implications
- Emerging emphasis on process and change management skills
- Employee Engagement

### **Demand of a Supply Chain Talent**

Demand for specific supply chain positions is predominantly expected to remain constant, with some growth predicted for positions in logistics information systems tactical and operational, warehousing operational, customer service tactical and transportation operational. There was an overall increased reliance on knowledge-based positions (e.g., technical logistics knowledge, information technology knowledge, supply chain specialists) and customer service positions (sales, customer service, client management). Manager-level positions were commonly cited as difficult roles to fill (e.g., functional managers, general managers, project managers, etc.), with supervisor and analyst roles also identified as a challenge.

### **Training & Career Development**

Employers indicate that technical development courses are essential for supply chain personnel to stay current. The most common means of employee development are on-the-job training and external courses. For the most part, employees indicate that they are satisfied with the training they have received and that it has met their needs. Generally, effective training investments, greater than the Canadian average, are made across the sector; however, investment in smaller organizations is less than optimal. The most common forms of support provided to employees are tuition reimbursement, time off for external courses and the provision of in-house training. Work/study programs for supply chain employees are not widely used; however, all types are employed to some degree. Internal training tends to be focused on technical supply chain and logistics development, interpersonal and people management skills (e.g., supervisory skills, team building, negotiations, leadership and coaching) and health and safety.

## **5 CONCLUSION**

A new set of strategic imperatives is transforming corporate logistics management. The focus of logistics executives must shift from managing assets and direct reports to creating a new vision of coordinated product flow, and implementing it by influencing the actions of others. Logistics professionals must learn to harness the power of human resources management to effect sweeping programs of change, not only in their own companies but in other companies in their supply and distribution channels as well.

Farsighted top managers will see the huge strategic and financial gains of coordinated product flow and will give their logistics executive's new avenues of influence commensurate with their crucial responsibility. Perceptive logistics executives will realize that crafting company-wide HR policies is much more difficult than it might seem, and they will focus on acquiring this proficiency.

Ultimately, the vision and savvy with which logistics professionals tailor companywide HR policies that drive coordinated product flow will go far to determine both their own effectiveness and their companies' long-run success.

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