LOJİSTİK HİZMETLERİNDE ENFORMASYON YÖNETİMİ STRATEJİLERİ

Derya TELLAN*

ÖZET

Günümüz dünya ekonomisine egemen olan çokuluslu şirketler, farklı mal ve hizmetlerin uluslararası ölçekteki üretim ve dağıtımı bağlamındaki akış ve dolaşımın temel belirleyicisidirler. Bu dolaşımın, hedeflenen verimlilik düzeyine ulaşması yönündeki çabalar ise lojistik hizmetlerinin önemini artırmıştır. Dünya lojistik sektörünün önemli bir kısmı çokuluslu şirketlerin kontrolünde olup; sektör aktörlerinin ulusal olduğu Türkiye'de lojistik hizmetlerinde enformasyon planlanmasının önemi henüz yeterince kavranabilmiş değildir.

Lojistik hizmetleri, üreticiler, toptancılar, dağıtıcılar, büyük mağaza zincirleri ve tüketicilerle bağlantılı olan iş akış süreci platf- ormunda, ürünü kaynağından nihai tüketicisine taşımak için gerekli olan tüm etkinlikleri kapsayan bir eylemler bütünüdür. Bu nedenle, personel, hizmet ve enformasyon yönetimi ile güvenlik, tedarik, depolama, taşıma, dağıtım, bakım, yapı ve boşaltım gibi etkinliklere yönelik kaynaklara ve donanım-yazılım ile ilişkili etkili bir enformasyon yönetimine gerek- sinim duyulmaktadır. Bu çalışmada, işleme, depolama ve taşıma hizmetleri ile bağlantılı olan enformasyon kullanımının teorik, teknik ve pratik boyutlarına ilişkin tanımlayıcı bir analiz yapılması yoluna gidilmiş ve sorunlara getirilen yanıtlar konuya giriş kapsamında betimlenmiştir.

Anahtar Sözcükler: Enformasyon yönetimi, E-Ticaret, Ağlar, Küreselleşme, Ulaştırma, Sayısal ekonomi.

INFORMATION MANAGEMENT STRATEGIES IN THE LOGISTIC SERVICES

ABSTRACT

Multinational companies those are dominant in today's economic sectors are basic determinants of circulation and flow in the context of production-distribution of various goods/services in the international scale. The efforts directed towards to make the circulation to reach a desired productivity, improved the importance of logistic services. The world's logistic market is largely in the control of multinational companies and in Turkey, with the national companies as sector actors, the importance of the information planning in these services are not yet being comprehended enough.

Logistic services are integrated operations including all the needed activities to convey a product from source to final consumer in the work flow process platform that has connections with producers, wholesalers, distributors, large stores and customers. Consequently, there is a need of personnel, service and information management and efficient information management in the relation of sources, hardware and software to the activities of assurance, procurement, storage, conveying, distribution, care, construction and discharging, etc. In this study, a descriptive analyse is aimed related to processing, storage and conveying services regarding to the theoretical, technical and practical sides of information usage, and the answers of the issue are scrutinized in a basic concept.

Keywords: Information management, E-Commerce, Networks, Globalisation, Transportation, Digital economy.

* Doç.Dr. Atatürk Üniversitesi, İletişim Fakültesi, Halkla İlişkiler Bölümü
dtellan@atauni.edu.tr

INTRODUCTION

In the recent century, technological innovations provided different advantages to the companies -especially multinationals- of all economic sectors, especially in the context of production and distribution of various goods and services, and made these companies dominant world-widely. Widely usage of the technologies related to computers and information technologies in every sector, made time and place control possible in the global economic structures. "The new economy is the result of the information revolution, of shrinking and ever more powerful computers, intelligent software, and the emergence of an efficient, everywhere available and invisible communication infrastructure" (Liikanen, 2000:2). Telematics[1] and information technologies have important impacts on the applications of circulation and flow of goods/services in a desired productivity and efficiency of multinational companies. Convergence between the information and content technologies transformed the main structure of organisations, sectors and economies. By different interacting and inter-linking ways, all the customers in the world want to get their orders rapidly, safely, without any deformation and any problem. Consequently, the changing needs and expectations of customers are directing the growth of logistic services. At the same time, the mode of the procurement chain that consist of producers, wholesalers, distributors, large stores and customers, has changed in the direction of effectiveness with personnel, service and information management in logistic services.

In today's conditions, businesses rely on intangible assets as knowledge, information, interactivity (between computer, audio-visual technologies, mobile phones, etc.), specific marketing and public relations techniques (consumer behaviour change, brand management, risk management, issue management, crises management, stress management, etc.) and the potential for innovation. In this process, the new economy has resulted in a shift from value in physical production to value in information processing, information ownership and information services (Westland and Clark, 1999). For this reason, the new economic environment is characterised by (i) hyper-dynamism, (ii)

[1] The concept of 'telematics' -offering a meaning that a process of long-distance transmission of computer-based information (especially sending, receiving, monitoring and storing information via telecommunication devices- derives from the combination of telecommunications and informatics traditionally. Lately, the term has become the predominant definition for wireless communication in or to motor vehicles (specifically use of Global Positioning System (GPS) satellite tracing technology). A narrower and more recent meaning of the term is the integral system of data traffics in transportation sector (Thompson, 2003). For instance, for a special sector, vehicle telematics systems are used for different purposes such as coordination of different transportation ways, managing road usage, tracking fleet vehicle locations, recovering stolen vehicles, providing automatic collision notification, location-driven driver information services, distant control of loading, discharging and lifting services, etc.

high complexity and added value of enhanced products, (iii) new skills and (iv) experienced personnel. By the way, the emergence of global information infrastructure and standardisation all over the world lead to value networks that replaced the traditional supply chains and changed the mode of producing, marketing and distribution. Above all, information society leads to (i) more transparency in the value chain, (ii) more effective performance of information flows and electronic data transfer, (iii) higher scheduling accuracy, (iv) reduced transaction costs and (v) optimum uses of resources (Liikanen, 2000:3).

All around the world, electronic commerce became the main marketing strategy of large enterprises. In fact, today's visage shows that e-commerce is intensively preferred service style, not only for marketing and sales but also for purchasing and procurement. "The prices of Information and Communication Technology (ICT) have been reduced dramatically so that private firms and consumers are now changing their behaviours, and without doubt it has influenced the urban logistic system" (Nemoto, Visser and Yoshimoto, 2001:1). At the same time e-commerce is understood as an easy application for the consumers to purchase products from their homes and get the offered products right to their doors without any effort. With this rapid transformation, the private sectors -to make the customers more satisfied- started to respond to needs via the applications of Internet and Intelligent Transportation Systems (ITS) for the simulation, real-time control and communications networks. ITSs are consist of various technological applications such as basic management systems, control systems, variable message and/or signal monitoring systems, integrate live data and feedback systems and the like.

Related to the technological changes and transformations in the market, this study focuses on the role of information systems at the progress of logistic services. As of 2006, logistic services, reached a sector income of 5.000 billion U.S. Dollars world-widely and 10 billion $ in Turkey, are aiming to increase their profit of 3.5 billion $ and employment of 400.000 personnel via establishing logistic villages in spite of global financial crisis (Yıldıztekin, 2007:11-12). The natures and the strategies of organisational structures are all changing at the national, international and global levels. Improvement in the information and communication technologies are directing the integration between systems; makes the interactive product transfers possible and provides new opportunities in the transmission, security and control systems. In this study, the structures, conditions, connections and the activities of information management in logistic services are presented in order to illustrate the new organizational communication process. Orga-

nizational communication has a tendency of relations from 'intra' to 'inter', and this new mode has a main characteristic which outsourcing became major rather than institutional sources. Prevalence in using the information technologies in the logistic services, which is the rapidly growing area of services sector, causes (i) the domination of multinational firms in inter-organizational communication, (ii) the integration of information management in the interest of larger firms, (iii) the control of information management by the global enterprises, and (iii) e-commerce, to become the main consuming practice. With this case study, descriptive analyse is preferred to get a general idea about these mentioned subjects.

1. BACKGROUND AND TRENDS

In the twenty-first century, all around the world, the strategies of internationalisation and globalisation, organisational structures and also business activities have been changed in different ways. In 1960-70s, specialisation and diversification of services were dominant trends in the international businesses. But, in 80s, the service strategies were directed to large regions, not just individual countries, and corporations got mergers and acquisitions, and mostly they became international. In 90's most of the logistics service providers (LSPs) have expanded their activities in the international market and used multidomestic approaches (Lemoine and Dagnaes, 2003:2). For the reason of taking the control of transport market and being a part in the international and global arena, most of the companies began to have complex and enlarged links in their operations and created networks, chose strategies, formed organisational structures within the net.

With all these changes in the sectors, competition between the companies are getting sharper in both national and international arenas, and all the companies try to have unique capabilities and competencies. Some of the theoretical and practical transformations caused new trends related to organizations. Companies have been forced to have flexible production systems and optimise the supply chain activities, and also they needed to invest for the new technology, machinery and different kinds of equipments. Managerial roles in the organizations are also revised, personal at the strategic positions need to direct all the departments effectively, integrate the operations of separate companies, concentrate resources on core competencies rather than on diversification and create rapid solutions to the problems. Consequently, outsourcing and strategic sourcing agreements are getting more widespread. "Likewise, the need of integration in the decision-making process increases as companies move towards strategic sourcing,

because of the close, intimate and long-term nature of the collaboration in the extended network" (Hvolby, Momme and Trienekens, 2000:225). Logistics encompasses an array of essential activities –from transport, warehousing, cargo consolidation, and border clearance to in-country distribution and payment systems– involving a variety of public and private agents. A competitive network of global logistics is the backbone of international trade (WB, 2010). The Logistics Performance Index (LPI) and its indicators are a joint venture of the World Bank, logistics providers, and academic partners. The LPI is a comprehensive index created to help countries identify the challenges and opportunities they face in trade logistics performance (see Table 1).

Country	Rank	Score	% of highest performer
Germany	1	4.11	100.0
Singapore	2	4.09	99.2
Sweden	3	4.08	98.8
Netherlands	4	4.07	98.5
Luxembourg	5	3.98	95.7
Switzerland	6	3.97	95.5
Japan	7	3.97	95.2
United Kingdom	8	3.95	94.9
Belgium	9	3.94	94.5
Norway	10	3.93	94.2
Turkey	39	3.22	71.4

Source. WB. 2010

Today, the organisational strategies especially depend on the company's image of strength, reliability and differences from the others. With the structural changes, customers all over the world adjusted to demand customised productions and their arrivals in a short time. Outsourcing, producing just-in-time (JIT), the reducing cycle, new storage and distribution techniques are all characterise internationalisation, globalisation and the new networking organisations such as the net of transport and logistics firms (Liikanen, 2000). Besides the technological innovations, the mode of producing, gathering, selecting, using, selling, accessing and controlling of every kind of information have changed in some ways. At the same time the deregulation of transport market and the privatisation of transport chains became the suitable sources for market strategies. Anyhow, companies began to direct their routes on the balance of standardisation, adaptation, homogenisation and glocalisation (combines of local, multinational and global approaches). "The economic world has shifted from being a cluster of national economies to a global and more interdependent marketplace, based on line import, export and distribution of products, services and information around the world. This century witnesses the emergence of new global business models based on electronic commerce; this is the era of full and entire globalisation and networking of economic activities" (Lemoine and Dagnaes, 2003:3). Also, global strategies of the companies to restructure their business caused new patterns of production, distribution and cooperation. For the time and source manage-

ment, international businesses are all working under an agreement with their suppliers, buyers and related companies now. "The new organisational network patterns include alliances between large firms, forming a horizontal corporation network characterised by decentralisation, autonomy, participation and coordination of its business components" (Castells, 2000:178). Especially in the field of logistic services, globalisation strategies provide control on the firms and give directions to transform the regional and world-wide market.

According to today's new business approach, the transport and logistic firms are concentrated through mergers, strategic alliances, joint ventures, acquisitions and partnerships. There are three main types of firms in the transport sector: (i) Total suppliers/mega carriers, (ii) niche firms and (iii) subsuppliers. While total suppliers have many different customers and handle with various goods, niche firms have special markets, certain types of goods and limited customer segment, and the sub-suppliers are working with special customers about special goods (Lemoine and Dagnaes, 2003). To enlarge the ability of the network, the most powerful globalisation strategy is based on a distribution network which is constituted of infrastructure systems/logistic centres that are necessary for fright consolidation and transfer of the consolidated goods. In the market, all the infrastructure systems perform freight transport by land, air and sea. Within the network, the interconnection of the firms -this kind of interconnection demands giving power to the companies that provide information and communication technologies- creates a huge activity and market platform in the world, and to get this power, the firms try to be in the chain and develop new information and communication technology solutions to manage all logistic services and information flows.

2. INTEGRATION OF INFORMATION SYSTEMS

From past to present, everyday information processing and decision making get necessary for all sectors to manage producing-marketing-delivering cycle effectively in their businesses. During all the processes supporting the product realisation cycle and on all levels of the system, decisions are made, based on previously prepared information in every part of business. At present, the national-international-multinational companies, in general, realized the impor- tance of the information flow, so that they began to spend effort and reserve finance on research, storage, retrieval, transformation, transportation, representation, interpretation, control and usage of information. "In order to achieve transparency in information processing we need to deal separately with the concerns of function integra-

tion, integration by information management and integration by control. It is also necessary to distinguish between the different types of information" (Kals, Lutters, Streppel and Brinke, 2000:2-3). In the companies' organizational structures, the functional product specification, production and processing planning depend on the transformation of information from one department to another quickly, perfectly, continuously and apparently. In the design of services and nets, information technologies that can support the integration between the order-life cycle, the product life cycle and the resource life cycle are needed also.

By the reason of the advances in information systems, the supply chains of the firms has changed, reorganized and become complicated. At the same time the new technologies now, force companies to reach shops -and customers- quickly, to outsource all of their logistics and transportation systems. Besides this, with today's situations of customer specific production and accurate delivery system, planning and programming are getting more difficult, strict -not let any fault to happen- and stressful -it's hard for personnel to follow the process and consider the best solutions in a short time. The desire of the companies is a new adapted systems -for both related to material and mental capacity- that should (i) solve all the occurred problems, (ii) be suitable for the probable changes and problems, (iii) handle the changes successfully, (iv) operate effectively of the information systems and (v) store the information exchange in the network. Related to the inter-company relationships, information technologies are designed to support different forms of collaborations such as vertical and horizontal integration, diversification and outsourcing (Hvolby, Momme and Trienekens, 2000:227-228).

In the organisational structure, relationships -new and/or existing already- between suppliers and customers becomes more tightly coupled in vertical integration, besides this, within the horizontal integration, the companies on the same business become more tightly coupled. Relationships with other companies that were previously not possible due to high coordination costs or high transaction risks may become feasible with diversification. So, outsourcing gets more important for all the companies to decrease the risks. In the new strategy trend, activities previously performed within the company due to high transaction costs and risks may be advantageously transferred to external suppliers. Information technology opportunities such as EDI (Electronic Data Interchange –a particular set of standards for computer to computer exchange of information), the Internet, supply chain planning systems and product-process registration reduce the monitoring and controlling

costs of outsourcing companies (Hvolby, Momme and Trienekens, 2000).

Kals et al. (2000:5) point the structure of design, engineering and planning (DEP) processes that are increasingly subjected to the requirement of an evolutionary modelling of the product life cycle: "The need for concurrency in the execution of DEP-tasks tremendously increases the need for transparency in the flow and representation of information. Transparency may result from (i) using well structured information regarding the basic entities: products, orders and resources; (ii) applying generic control architectures enabling decoupling of functions (e.g. objective functions from aspect functions), incremental decision making and evaluation, etc.; (iii) incorporating logic but flexible navigation tools". Via new generation of process planning systems, having more integration and control potential, the product information structures have changed rapidly and began to serve as the basis for the information and time management of the total product-life cycle. However, to be effective, these very expansive and complicated systems must contain the knowledge that necessary to maintain consistency of the information in the working processes of the firms. By the way, quasi maintaining maximum flexibility, co-operating decision making rapidly and considering process planning for every situation they prevent the hierarchy inherently belongs to the working principles. In this strictly controlled and organized hierarchical system, the product information structure carries the characteristic of specified products, sources and objects; stores the past information and contains the reasons behind the different decision-making processes (Lemoine and Dagnaes, 2003:4-5). From a managerial point, product information structure is extremely necessary for the coordination of processes, communication and evolutions.

In the stress of competition in the global world, at any company, the information about abilities, occupation and condition of all the resources at any time should be under control. Because of the fast changes in the economic balances, for the recent position of the firms, all information resources are needed in the decision making, producing, marketing and delivering phases. Depending on the type of production system, the resource information structure needs the combination of available resources for the practises of production tasks and application aspects of the resource (e.g. the type of process, suitable machines and tools, skills, etc.). Also, as being the communication planning part of the company with the outside of organisation, the order information structure that contains specific information for customers, accepted orders, prices, profits, delivered products, services, etc., is designed

compatible with the type of producing. The order information structure consists of three domains: (i) The client domain (related to information about the products that are sold to a client and order-specific life cycle aspects), (ii) The materials domain (have the registration of the specification and origin of materials) and (iii) The economic domain (consist of the information about the operational perfor- mance of the company in relations with the other companies, etc.) (Kals, et al; 2000:10-11). All the information structure descriptions are tied to information management strategies of the firms and they are all important for the future of the firms and the guarantee of economic interests. So that information integration and storage constitutes the basis of the control mec- hanism. The interaction between 'the user', 'the controller' and 'the interface' has an important role in the applications and decisions of infor- mation management part. In information management, there is not a central database; basically, information is redirected from the databases of different users. To create an interactive/two way/controllable information sharing mechanism, it's necessary to coordinate the information usage between the planning and application processes in different -but responsible one another- organised departments in the companies. Furthermore this well designed system is to be directing all the processes in a more flexible and interactive way for different process parts (Kals, et al; 2000). But at the same time, the nature and the working style of the organisation also needs to be adaptable for any changes worldwide. Certain design and working principles help coordinating adequate information structures and future control mechanisms.

3. E-COMMERCE AND LOGISTICS

On a global scale, rapid chances in the information and communications technologies and generating of on-line freight marketplaces caused new directions and applications in the structure of organisations and marketing strategies and made necessary strategic channel intermediaries to manage the business. These are foreign freight forwarders, non-vessel-owning common carriers, trading management companies, customs house brokers, export packers and port operators (Regan and Song, 2001:5). The services that are organised successfully in the digital environment, lead to global aimed working chain of e-commerce (doing business over the Internet). By this transformation aspect of trade shippers (suppliers, wholesalers, retailers) and logistics service providers (LSPs) became more important parts of the network and e-commerce. Shippers send and receive goods in the supply chain; at the other side, while meeting the requirements of the ship-

pers, LSPs try to minimise logistic costs such as transportation cost, stock cost, data processing cost, etc. (Nemoto, Visser and Yoshimoto, 2001:3).

Among the ICTs, Internet (provided by from personal computer or/and local area network) is the most popular tool in the transaction of business to business and business to consumer. Convergence of services by Internet or mobile phones, play important roles in e-commerce. Recently, major new economic sectors use free and flexible delivery mechanism with the convergence between TV broadcast, Internet, fixed and mobile phones. Also, decreasing of the access cost for both business and consumers develops digital economy (Liikanen, 2000:5). Besides this, there has been an important interest to third party logistic providers (3PLs) because of the firms' some of services: Developing information systems, managing inventory, warehousing operations, freight payments, carrier selection, etc. (Regan and Song, 2001). The 3PLs industry mainly developed in US and currently has a fast transition all over the world by changes in customer needs, values and the expansion of service offerings to include e-commerce. Moreover, the 'dot.com companies' spend huge money on marketing and promotion. All the changing faces of the market may cause complexities and advances in logistic services.

3PLs especially provide process-based services rather than a function-based logistic service; and the 3PLs are based on the ownership of transportation equipment or warehouse facilities and they are divided into categories as 'asset-based' and 'non-asset based' (most of 3PLs appear to be non-asset based and working as management and knowledge-based consulting companies). 3PLs can be listed as transportation/distribution, warehousing/distribution, custom services, freight finance services, information technology support, product support services, managing logistic/consulting. Most of the companies in the transportation and warehousing business are forming strategic alliances with other 3PL companies as well as companies primarily involved in warehousing, trucking, freight forwarding, etc. and significantly increased their international operations. "The size of 3PL companies varies greatly. In the US alone there are hundreds of small management companies with annual revenues of less than $10 million as well as logistics subsidiaries of large national carriers with annual revenues of several hundreds of millions of dollars" (Regan and Song, 2001:7).

Industry is not stable and the new kinds of 3PLs, which provide web-based services and act as 'infomediaries' (information intermediaries) continue to emerge with the rapid development of information technolo-

gies and e-commerce. There are five types of companies appearing: Spot market (allows shippers and carriers to post available loads or capacity on the web), auction and RFQ (provides automated RFQ and auction capability), exchange (is a kind of provider of creative e-commerce solutions for shippers, carriers and 3PLs), ASPs (Application service providers (ASPs) are primarily developing web-enabling and e-commerce enabling technology for the logistics industry and purchasing consolidation sites provide opportunities to member companies to purchase equipment and supplies over the Internet) and purchasing consolidation sites (Regan and Song, 2001:8). There are also many web sites about industry related information, besides this integration of online systems is possible. Orders will automatically be entered into these online systems for a shipper's ERP (Enterprise Resource Planning) system, proceed through a transaction management system which will automatically determine the appropriate price, select a carrier, confirm the order, arrange for pick-ups, transact the resulted fees and charges (Logistics Management & Distribution Report, 2000).

From 2000s on, fourth party logistic providers (4PLs) occurred in the logistic services. In 4PLs, differing from the dominance of outsourcing in 3PLs, business process re-engineering (BPR) that has the meaning of re-planning the organizational processes by out sources became important. 4PLs provide unique solutions to their customers by using non-asset-based 3PLs knowledge, experience and technology. 4PLs perform the coordination between their customers with information technologies; make their customers get the benefits of save on and productivity provided by supply chain management (Çancı and Erdal, 2003:48-49).

CONCLUSION

The aim of this study was to provide an insight into logistic sector through the information management systems and the changing sides of business that try to get a part in the global market. This descriptive study is presented in order to illustrate the organisational adjustments, the transformations in production, selling and distribution systems and the importance of information flow and control for the companies within the net. For this reason, the internationalisation of the companies must be undertaken in connection with large corporations spanning different countries, industries, services, production models, logistic services and internal networks.

The history of the developments and changes in the industry and the organisational style and target of the firms show that the network moves towards a global strategy and this strategy points complex global logistic services. By the way, to improve the logistic services, there should be an efficient information management in

the relation of all kinds of goods, hardware and software to the activities of assurance, procurement, storage, conveying, distribution, care, repair, construction, discharging and real estate, education and health. The interconnection between firms and services creates different kinds of business relationships. However, in the process of gathering new competencies alliances or joint ventures seem to have been preferred. Divisions, subsidiaries and the independent firms are part of the main network structure and also they have their own net with other businesses in local and regional markets. The management form of information flow and direction between the subsidiaries foster a successful transit and a control mechanism of globalisation. In the global and cooperative conditions, the creation of a network of firms with the powerful, reliable and well organised freight forwarding and LSPs open the ways of global markets and global services.

Fast changes and improvements make the traditional optimisation and management system insufficient with the requirements of future system's integrated transfer and communication strategies. There should be new optimisation tools, multi-dimensioned management systems and qualified business models to get a part in the global market. Managing and being part of the information and network are crucial to the global enterprises.

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