

## Review

# Role of e-commerce in supply chain management to minimize costs

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One of the special characteristics of recent decades is focusing supply chains on competitive advantage by most agencies. On the other hand, recent advances in informational technologies (IT) are the other factors of changing business circumstance seriously. In order to find a better competitive advantage and survive in the market with daily increasing changes, all organizations are in need of a dynamic network based upon cooperation in supply chain management. The aim of this research is to present a detailed consideration about research literature and e-commerce process as well to describe supply chain and all its necessities and requirements in today's competitive world. Furthermore, it points out the nature and advantages of competition, and its necessity for economic growth in an economy. It also explains how possible it is to find competitive advantage by the use of electronic supply chain as a basic and fundamental factor in fixed and maintenance of next step and make better situation than other competitors in market and industry. Our major focus in this paper is the required attention to customer and customer tendency in a way that customers become the center of focus and attention of programmers and decision makers. Finally there are different proposals for betterment of functions in the field of competitive advantage through electronic supply chain as well.

**Key words:** Supply chain management, competitive advantage, information technology, electronic supply chain, e-commerce.

## INTRODUCTION

In recent years, business processes and business management has gone through a phenomenal change as a result of revolutions in two areas - enterprise resource planning and supply chain management. While the concepts in these two areas have been around for a while, in theory and in practice, recent technological and business process changes have made these concepts more feasible to implement (Giannakis and Louis, 2011). The tools and technologies in these two areas however were still developed for a rather traditional approach towards business processes. Most of the early versions of these tools support rather monolithic organizations interacting with each other in a linear fashion (Iyer et al.,

2009).

These tools and concepts served well for organizations that fit that structure and thus the implementations of the enterprise resource planning (ERP) systems and supply chain management (SCM) process changes for such organizations was quite successful. The major change that highlighted the inflexibility of these ERP systems and SCM resources was rise of a whole new business medium - the Internet (Rabinovich, 2007). The invention of the World Wide Web (WWW) around the Internet infrastructure triggered this business medium by making it was easy for people to interact with each other and exchange information. In fact, that is how it was primarily used for the first few years. As the medium matured, it was soon conceived that all the eyeballs attracted to the information could be persuaded to buy related product or the information itself. E-commerce was born (Wu and

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Chuang, 2009).

The very nature of the web brought a change in the way business was conducted on this new medium. The "Click-and-Jump" character of web surfing caused several changes in customer and vendor behavior. Chief among them are (Bearzotti et al., 2012):

1. It was easy to go from one storefront to the other.
2. The storefront itself did not give any particular idea about the size, nature and business maturity of the vendor, thus creating a level-playing field for vendors.
3. The "stickiness" of the storefront became much more important than before.
4. A new avenue of making your business' storefront a part of a sticky website opened up.
5. Targeted marketing became easier.
6. Comparative shopping became easier.
7. Forging new business relationships became a technically trivial problem of adding appropriate hyperlinks to your partner's site and vice versa.
8. The role of intermediary in traditional sense started diminishing. A new wave of intermediaries started appearing - ones that were not so tightly coupled to a product, product category, company or even an industry, as was the case with their earlier counterparts.

These changes gave rise to a multitude of business relationships, and therefore, business models. These business models were dynamic in nature because of the loose coupling between storefront infrastructures of various vendors through hyperlinks. They also demand a fast turnaround time to respond to the rapidly changing business relationships. Models such as auctioning, reverse auctioning, and B2B market exchanges exemplify this. The technical simplicity of forging or breaking a business alliance translated into a new set of business level complexities in which issues such as role of intermediaries, revenue sharing and customer loyalty became tricky. For example, increasingly, the traditional channel partners of manufacturing companies are turning their on-line business into a referral site that takes the visitor to the manufacturer's site. The manufacturer then splits the revenue for such business in an agreed-upon manner (Iyer et al., 2009).

This dynamism in the business environment invariably translates into significant implications for SCM policies of a company as well as the ERP systems used to facilitate the operation of the business. A dynamic business model also means that the upstream and downstream nodes in your supply chain are changing more rapidly than the traditional static relationship. Thus, the SCM policies designed to optimize traditional business relationship are not suitable in the e-commerce world because they cannot respond fast enough. Also, the ERP systems that assume a rather static environment for various resources available to a company can fail to help the e-commerce environment. An example of this would be positioning of

mySAP.com vis-à-vis SAP. In this paper, we look at these inter-relationships between e-commerce business models with supply chain management and ERP system implementations (Chen and Su, 2011). Specifically, we analyze how choice of an e-commerce business model can affect SCM issues and how can that knowledge be used to make informed choice between competing e-commerce models. We also take into account, the role of business sensitivities that result from being in a particular industry sector, geographic region etc.

We use the following three main dimensions to scope the problem space and boundaries for the analysis:

1. e-commerce business models,
2. Supply chain issues faced by a business and the
3. Business environment sensitivities.

In the following discussion, we look at each of these dimensions. We define these dimensions independently first and then look at the co-relations among them to identify the problem and the solution space.

In our today competitive world, there is no room for previous managerial methods with little integration of processes. Therefore, companies need to find a regular integration in all their processes. Supply chain management is an integrated process for suitable management of materials and goods, information and monetary process with completely satisfying these conditions.

From among all major processes of supply chain, we have information management with high level of importance and as a key factor in creation, the required integration among its members. On the other hand, any created advances in e-commerce may instruct companies and industries to pay more attention to this subject and try to find a solution for reducing their production cycle. Then it is possible to benefit from the modern progress in different fields of science, management and technology (including internet, world developed network and IT) (Milani, 2005).

With more effects on world economy, e-commerce had a lot of changes as well. Right now e-commerce cannot be presented as an option but as an inevitable principle for further competitive advantages for more organizations and companies (Akbari, 2002).

E-commerce is a phenomenon of information time which has developed throughout the world like a globalization wave. From a managerial viewpoint, e-commerce is not free from organizational and managerial theories, and there is no special and unique description for it. What is concluded is the appearance of virtual organizations and considerable reduction of costs, increasing the efficiency, considerable increase of profits, general betterment of functions and upgrading of customer services. Some of the current reasons for changing supply chain are as a result of changes out of

technology in market, changing of business methods, inspections of current partners and finally, demands for more created value by final end user.

Some of the competitive necessities in different industries are the integration of supply chain activities in compliance with relevant technologies. For this purpose, it is necessary for the organizations to harmonize themselves with such a situation through applying of supply chain technologies and e-commerce. Otherwise not only would they not find any way to new markets but also may lose their existing market share (Milani, 2005).

All applied replacements in relevant tools of supply chain management may cause further fundamental changes and finally ease application of these concepts with a better meaning for electronic supply chain management.

E-commerce is a new method for performing commercial activities. Daily-increase access to internet from one side and low level of costs for commercial activities through internet on the other could make it the most acceptable method for commercial transactions. With a glance to short-term history of e-commerce, we may notice that this phenomenon has a wide growth due to the simultaneous and great welcome of companies and customers.

Since most of the active managers in governmental and private organizations have enough experiences and specialties, therefore, by appearance of e-commerce and entrance into world markets, it may enable all managers to find basic challenges in the field of supply chain and provide maximum efficiency and reflection as the major goals of e-commerce. In addition, to have an efficient supply chain, it is possible to expect an organization to find an effective competitive advantage in contact with today's competitive world. Hereinafter, we will present a brief history about e-commerce along with considering the supply chain management and analyze the role of e-commerce in supply chain management. Then we will provide a model about the position and role of electronic supply chain management in maintenance of competitive advantage for organizations.

## **THEORETICAL BASICS OF E-COMMERCE**

### **What is e-commerce?**

Any growth and development of IT could fundamentally change the economy. Any search for finding effective methods for commercial affairs has resulted to another revolution in business. It is named electronic commerce (e-commerce). E-commerce and electronic business are common terms which differs from each other. These terms are in fact equal to commercial transactions, submission of services to customers and commercial duties through digital methods. Firstly, it is necessary to explain different terms in this field including IT, e-commerce and electronic business (Obrein, 2001).

IT points out to the technological aspect of an information system. Technology includes hardware, software, data base, networks and other tools which could be considered as an indirect system. Sometimes we use IT for any exchange of information and/or apply it for explaining different information systems, users and management.

At least, e-commerce has been in existence for the last 20 years; however, recently it has been on a daily-increase usage and has recorded a considerable growth to the economy. It is mostly relying upon internet and worldwide web for easy access to internet (Heeks, 2001).

Generally there are different descriptions provided by various specialists about e-commerce. The followings are different definitions in this regard:

1. It means the advanced method of business for further needs and necessities of organizations, businessmen and customers. In this new method, we not only have reduction in costs, but also an increase in quality of products and a quicker goods delivery time.
2. It means any benefit from computer networks for searching and revising of information for supporting all performed jobs in the organization and further decision making.
3. It is a new method of handling and managing commercial transactions through the use of computer and/or any distance communication networks.
4. E-commerce means buying/selling of goods, services and information by the use of computer and computer networks including the internet.

E-commerce is a tradition which is applicable by the use of IT and focusing on electronic data transfer and through value added networks (VAN). It is electronic data transfer by the use of information systems among different organizations. In fact, electronic transfer of data involves the usage of hardware, software and different standards for further electronic exchange of data (Obrein, 2001).

Worldwide internet sites have changed into major and an active factor of e-commerce because they are widely applied and involve the use of new media. Norm Archer at Mack Master University of Canada believes that e-commerce is a new method of handling business and it involves all aspects of business activities including commercial fields like marketing, engineering and production and also support fields like finance, information systems, human resources, accounting, purchase, transportation, receipt of goods and management (Turban et al., 1999). Choi et al. (1997) explains e-commerce with following three elements:

**Processes:** It means complex activity that occurs in e-commerce. These activities are selling, buying, payment and so on.

**Institutions:** It means all persons involved in the field of e-commerce including government, intermediates, consumers, suppliers and companies.

**Table 1.** Development process of e-commerce from 1994 to 2000 shows that, efforts for presentation pay attention to globalization (Ahmadi, 2002).

<b>Focusing on interior</b>	<b>Focusing on surrounding</b>	<b>Focusing on the world</b>
Increasing the number of limited consumer	Focusing on company's domestic process	Cooperation of companies
Focusing on company's domestic process	Increasing the limited number of consumers	Unlimited consumers
Benefiting from EDI, client/server	Benefiting from client/server, limited network	XML Internet standardization
Increasing the internal output	Direct relation of customer with personnel	Electronic supply system
Costs reduction	Customers management	Complex making with other companies
	Customers services	Market share and its growth
Complex making through a multi-purpose site	Centralized complex making	Specialization

Networks: It means any tool/tools for the purpose of buying/selling.

### History of e-commerce

It is about 123 years from telephone invention by Alexander Graham Bell. His innovation in 1876 is the foundation of e-commerce of today. Some people believe that applying non-important digit (0) in numerical calculations is the basic power of e-commerce which originated in India. Today India is one of the modern societies in the field of software and as the origin of most innovations and discoveries in the field of e-commerce. Of course we should not forget about UK in this field.

E-commerce like its modern changes is originated in smart integration of computer and telephone. Today e-mail has changed into one of the most public business tools. Finding and searching of information through different web sites have been changed into a part of life for all of us. It is practically under the effect of smart integration of telephone and computer through internet.

The history of e-commerce like its modern form is originated into two phenomena: Internet and electronic data interchange (EDI) both return back in 1960. When the internet was widely applied in educational and researching centers, and libraries, we had the appearance of electronic fund transfer (EFT) among the banks through safety and special networks in 1970 which had changed practically the financial system. Firstly, we had electronic transfer of data through the value added network and the used communicative method as well (Fathi, 2001). Non-expected progress of internet returned back in 1972 in which e-mail was used for the first time and as a new technology of "Arpanet". This phenomenon resulted to a new copy of data transfer protocol named as TCP/IP. At the beginning of 1980, there was a considerable development of e-commerce among commercial companies. Technology transfer with reducing paper usage in commercial processes and increasing automation could interfere in all business transactions and changed into an integrated part of the

business. Electronic data transfer provides an electronic situation for transfer of commercial notes in a way that humans have minimum interference in the process. By appearance of internet it is possible to perform new form of electronic commerce. World development and application of internet started by the appearance of World Wide Web (WWW). World web changed e-commerce into a cheap and low cost way to further commercial activities (economy out of criteria) and then covered a wide scope of commercial activities (economies of scope) through integration of internet and e-commerce and development of internet as an economic tool. By the way we cannot ignore the real role of electronic data transfer in business world (Akbari, 2002).

### Process of e-commerce in the world

According to different studies it is obvious that the development process of e-commerce is going forward starting from companies towards globalization and combination of electronic companies. Table 1 shows its process in the past and present with priorities of each step (Ahmadi and Yari, 2002). According to the current data, it is obvious that USA is a pioneer in e-commerce. Then we have Western Europe and Asian developed countries, and Oceania in distance second. Under-developing countries are in distance third.

### Required infrastructure for development of e-commerce

Table 2 shows the required infrastructures for development of e-commerce. Regarding all above-mentioned items, it is possible to conclude that e-commerce needs a complete and systematic attention through which it will be possible to benefit from its positive effects on business (Greenstein, 2002).

### DIFFERENT APPLICATIONS OF E-COMMERCE

Quick growth of e-commerce and development of

**Table 2.** Required infrastructures for e-commerce (Greenstein and Miklos, 2002).

S/N	Required infrastructures for E-commerce
1	Reliable power force
2	Standard and qualitative networks with wide band and for connection of companies and consumers
3	Easy access to consumers and companies' personnel to communicative networks
4	Domestic integrated computer systems for companies with relevant programs and data reserve standards with connection to commercial partners and consumers
5	Standard computer facilities for company's personnel and consumers
6	Credit and suitable banking facilities for companies and consumers
7	Safety systems, data reserve and communications
8	Technical specialists for performance of e-commerce systems
9	Suitable and good transportation infrastructure
10	Obliged management
11	Efficient and suitable landscape
12	Evaluation and modification of domestic and foreign commercial processes
13	Primary phased sample for exact performance of e-commerce

**Table 3.** Classification of electronic transactions models.

Classification	Government (G)	Agency (A)	Consumer (C)
Government (G)	Transactions among governments G2G	Data exchange G2A	Data exchange G2C
Agency (A)	Supplies A2G	E-commerce A2A	E-commerce A2C
Consumer (C)	Tax payment C2G	Price comparison C2A	Foreign markets C2C

communicative networks through recent years provide new conditions for the business sector. Modern production methods, processing and data transfer will increase the efficiency rate, output, communication and costs reduction in companies and commercial organizations. It accelerates the commerce and increase of commercial competition (Nik Bakhsh et al., 2003). Today, most commercial activities are now applicable with better efficiency and little costs like recognition of commercial partners, making relation with buyers and sellers, introducing of new products and services, better access to markets and supplying of resources and goods by the help of e-commerce. All companies, organizations and persons are able to have electronic transactions through nine (9) methods as mentioned in Table 3 (Sanayei, 2002).

From among all mentioned methods, the major activities are via three methods as follows: These are electronic transfer from company to company, company with person and company with governmental organizations with high level of condition among other methods. Since supply chain management includes in A2A pattern of e-commerce, therefore, here we may provide a brief description of it accordingly (Choi et al., 1997).

Company to Company business (B2B): E-commerce based upon B2B includes six parts as follows:  
 Electronic infrastructure→Electronic process

Electronic markets→Electronic contents  
 Electronic communications→Electronic services

Most companies do not provide any supportive services and in contrast benefit from foreign commercial services. Figure 1 shows the six mentioned parts of e-commerce in B2B format (Choi et al., 1997).

**B2B application**

B2B transactions are applicable directly between an online buyer and a seller and/or an online intermediate. The mentioned intermediate could be a sector or electronic system and/or an organization. In traditional B2B method we have data transfer through fax, telephone and/or electronic transfer while in eB2B it is through an electronic network which is generally the internet. Furthermore, pay attention that B2B could be performed completely by supply chain and/or any parts of it accordingly.

**Types of transactions**

Basically there are two types of B2B transactions including minor purchases and purchase from strategic resources. Minor purchases mean any process through which any products and services are supplied for further supply and demand. Sellers do not know buyers for

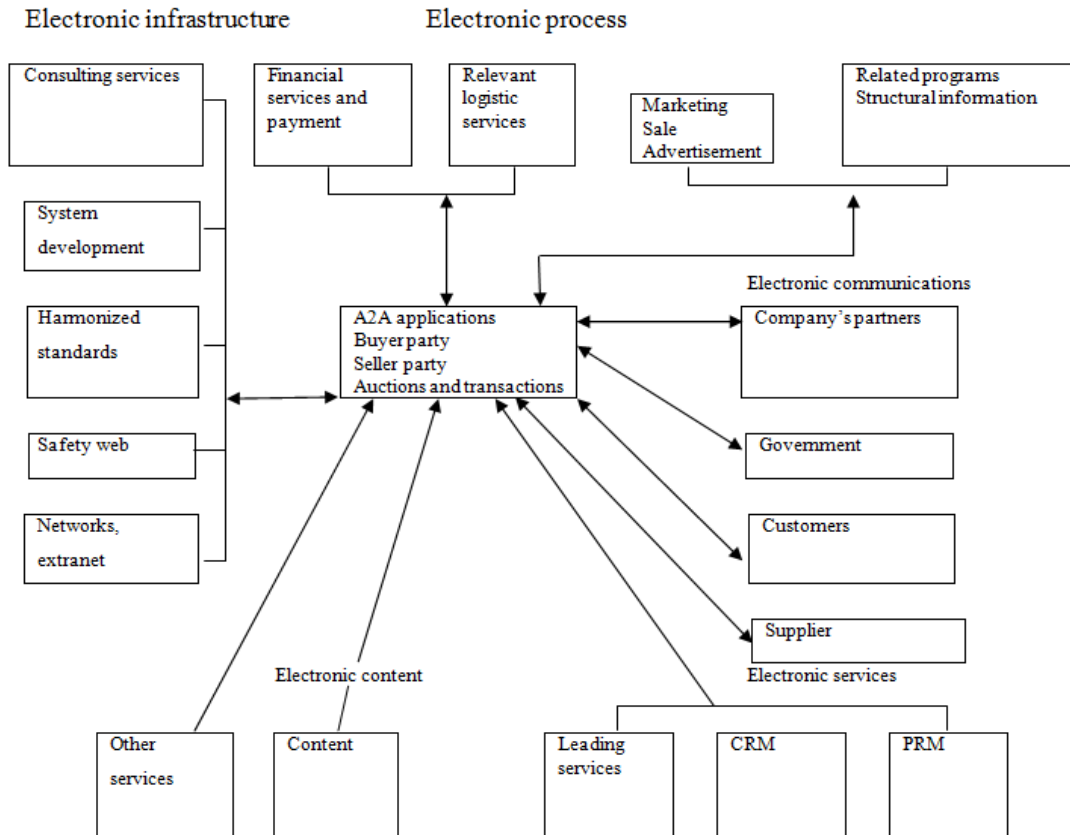


Figure 1. Six parts of e-commerce in B2B format (Choi et al., 1997).

example any transactions of shares, transaction of basic products (sugar, maize etc). Any purchase from strategic resources needs long-term contracts usually by discussion between buyers and sellers. Minor purchase could be economic while strategic ones are more effective and efficient if they are through a supply chain.

**B2B organizations:** The following are key B2B organizations with relevant importance:

1. Selling companies with marketing management viewpoint.
2. Electronic intermediates for supplying of products separately like supply chain services.
3. Organizational suppliers, packing forces, warehousing, delivery and other functions required for any transaction.
4. Network policies, internet, intranet, extranet or value added networks.
5. Data electronic transfer or XML.
6. Other services, direct services, seller/ buyer rules, safety, guaranteed document.
7. Final integration, connection to programming systems of resources ERP, data bases, intranet and special applications.

**Information parts in B2B:** The following are relevant

information parts in B2B transactions:

1. Product: technical specifications, prices and sale records.
2. Customer: sale records and estimations.
3. Suppliers: production line and production term, sale condition.
4. Production process: investments, obligations, production planning.
5. Transportation: cranes, transportation times, costs.
6. Warehousing: warehousing levels, transportation times, places.
7. Supply chain: key relations, partners' rules and regulations, time scheduling
8. Competitors: trademarks, competitive products, Market share.
8. Sale and Marketing: sale point, advertisement.
9. Processes and supply chain function: process description, measuring of function, quality, delivery time and customer satisfaction (Timmers, 2000).

#### **E-COMMERCE MODEL IN PORTER (1995) VALUE CHAIN FORMAT**

Porter presented a value chain in intranet format in this model and applied it in relation with e-commerce. As it is obvious in Figure 2, focusing on this model is strategic

Company's infrastructures: Financial systems and programming of resources Web-based organization Online relations of investment				
Human resources management: Personnel and income department on self service condition Web-based education Partnership and publication based upon internet for company's information Time and costs report on electronic form				
Technology development: Common planning of product at different places and among various partners of value system Access to knowledge by all parts of organization Access to real time for online sale and services by R&D section				
Supplies: Orders programming based upon internet, real time of orders and completion of it Other communication systems, purchase and warehousing with suppliers Request for automatic payment Direct and indirect supplies through markets, stock exchanges, auctions and Buyer/Seller transactions				
After sale services	Marketing and sale	Foreign supplies	Functions	Domestic supplies
← Value chain management in web →				

Figure 2. Internet applications in value chain (Porter, 1995).

and related to value chain. Therefore, it is possible to consider different dimensions like technology, supplies and marketing as the effective factors of e-commerce of strategies.

## E-COMMERCE IN SUPPLY CHAIN MANAGEMENT

### Complexity in supply chain management

Modern technologies in communication and information create considerable changes in the field of cooperation among companies. Other companies based upon traditional strategies found little advantages and short-term lifespan of products and lack of customers' loyalty, and little product replacement costs accompanied with other threats. Therefore, it is necessary to apply new cooperation models in the format of supply chains. Electronic supply chain is one of the most effective guidelines in this regard. Generally an electronic supply chain is a combination of temporary and related members (from geographical point of view) and by the use of IT for satisfying market needs and providing suitable competitive advantage for their members. Any creation of electronic supply chains needs a lot of reflective

cooperation and better combination of organizations and temporary unity of communicative networks. Any lack of effective management in controlling and leading of cooperation among chain partners may cause further failures in business. Therefore it is necessary to write and apply suitable cooperation strategies in compliance with real nature of supplying chain.

Recently both concepts of designing and supply chain management changed to operation paradigms. This is more serious with the development of information and communication technologies including electronic data transfer, internet and world network. Then it may cause increasing complexity of systems effectiveness on buyer – supplier relations. Complexity of supply chain management makes companies to improve on-line communication systems. For instance, internet may increase any relations through more interaction among companies and customer. Timer points out to the role of internet in providing a powerful supplying chain from commercial point of view in order to remove any challenges of virtual institutes. Other researchers intend to provide different methods for controlling of electronic data transfer. Some of them believe that now is the time for the movement of supply chain towards on-line commercial societies. For example, general electric

business network is an on-line commercial society that enables company to perform \$ 1 billion commercial transactions with suppliers throughout the world on electronic and on-line basis.

Supply chain management focuses on general and long-term benefits and advantages for all members through cooperation and sharing of information. This may reveal the importance of communications and IT application in supply chain management. It is necessary to increase information sharing among supply chain members in order to reduce lack of insurance and increase the function of suppliers with high level and betterment of its functions.

Companies have no chance to invest great amounts of money for redesigning of inter-organizational and technical processes. Also, it is necessary to invest for changing of traditional products and supplying services to customers and training of personnel for providing supply chain equipped with IT. Researchers believe that a part of the obstacles against development of supply chain management and/or integrated IT are: lack of integration and coordination between IT and considered commercial model, lack of suitable strategic program, weak infrastructure for IT, lack of application of IT in virtual institute and environment and also lack of suitable knowledge for execution of IT in supply chain management.

Supply chain means a complex major activity, domestic logistic, foreign logistic, functions, marketing and sale, services and supporting activities. Supply chain includes all these commercial activities through which it is possible to supply required products, services and information for value added customers. The major goal of supply chain is to reduce the non-security about demand, delivery time, quality and competition in a chain.

The real reason of mentioned shortages is incorrect and late information management. Any development of IT in supply chain activities may increase the potential value in supply chain. One of the fundamental tools in modern organizational management is further skills in IT management. IT is able to handle information process and influence on different aspects of supply chain like costs, quality, and delivery of goods, reflection and finally profit of organization. Therefore, it is possible to conclude that IT is an important factor in the efficiency and success of a supply chain.

### **Effect of e-commerce on supply chain management**

The effect of e-commerce on supply chain management is special and it may practically facilitate any inter-organizational communications and reduce time intervals with further cooperation. E-commerce is a chance for an organization which intends to develop its markets throughout the world. When a company specifies its products and services, it is possible to expect an increase

in demands. This is the responsibility of supply chain management system to reply all increasing demands in an effective form. Also, supply chain management should be on-line enough to reply all special necessities of customers. This is possible through programming systems and/or virtual agencies. E-commerce will extend further communications and network opportunities.

E-commerce supports complete integration of commercial partners. This type of business may increase the costs. Furthermore e-commerce makes an increase in group works and new relations between management and customer for designing of new products and better feedbacks of customers. Therefore it is possible to have effective reply to the changing markets. Regarding the current process of e-commerce, there are great numbers of companies which are intending to sale their services and products by electronic means.

There are various e-commerce types which are different from each other based upon their type of transactions. For instance, agency to agency, customer to agency and customer to customer are different models of e-commerce. In order to have an efficient supply chain management e-commerce models of agency to agency are effective. There are useful tools for data transfer of products and services between customers and suppliers such as internet, web and electronic data transfer. Most companies have little knowledge and skills about e-commerce. The real reason is the lack of understanding e-commerce and lack of adequate knowledge on investment in this type of business. Governmental support is required for execution and benefiting from e-commerce and finding internet services and web-site development. Right now there are a lot of problems facing e-commerce, some of which are internet speed, lack of governmental support, management of customer relations, safety and behavioral parts which should be considered at the time of execution on agency to agency basis.

Joiner and Bitty (2004) studied the benefits of electronic data transfer in a supply chain. Mir et al. (2003) evaluated any effects of A2A and C2A types of e-commerce on logistic services suppliers in European Union.

Grain and Shaw (2004) showed that information share among business partners (producers and retailers) in supply chain will increase the integration and coordination of them and will reduce the stock volume, sale rate, better recognition of customers' needs and orders of products. Dasilva and Fishman (2007) studied the effects of applying electronic data transfer among food industries and retail markets especially inter-organizational relationships. The followings are the advantages of e-commerce in supply chain in general:

1. Receipt of orders through web.
2. Replying to the orders.
3. Electronic payments.



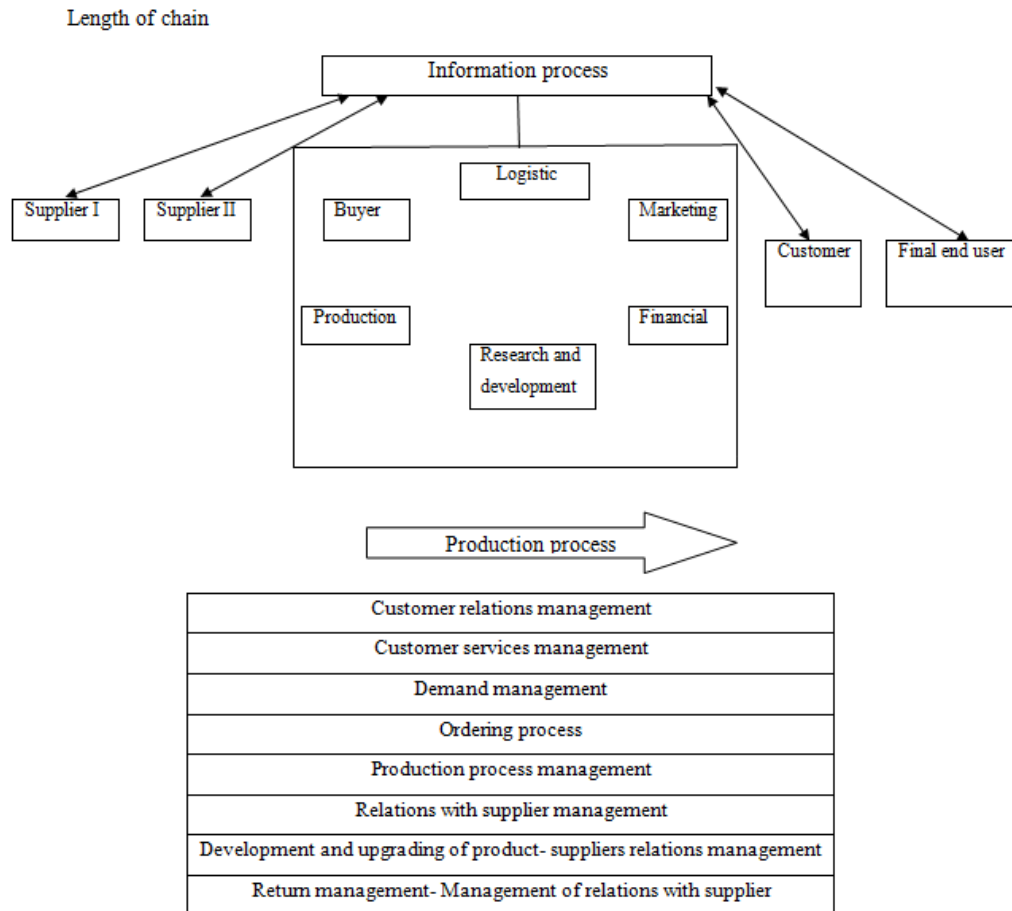


Figure 3. Integration form of supply chain management and relevant processes in chain.

4. Reduction of stock level.

Figure 3 shows the relationship between output structure of chain members and supply chain processes. Current operational fields in the supply chain are as follows:

1. Marketing and financial sale
2. Research and development
3. Purchase and logistic
4. Business processes

All the above-mentioned items are collection of different activities for value creation for customers throughout the supply chain (Razmi and Dehghan, 2004) Table 4.

E-commerce and internet are influenced in supply chain economic efficiency in five ways as follows:

1. Reducing the distribution and transactions costs.
2. Increasing the speed of product development.
3. Providing more information for buyers and sellers.
4. Increasing the options of customer and their access to suppliers.
5. Reducing the time intervals.

**ELECTRONIC SUPPLY CHAIN MANAGEMENT AND COMPETITIVE ADVANTAGE**

**Meaning of competitive advantage**

Competition is a process which any organization intends to find better functions and changed into a pioneer. One of the basic challenges of different countries at international level is obtaining competitive facilities in today's world. Competitive advantage means attraction of companies' proposals in comparison with competitors for customers. Competitive coefficient means the specifications and/or dimensions of any company for presenting better services to customers than other competitors.

Generally, we can say different elements of competitive advantage include value creation, market tendency, customers' satisfaction, and potential power, movement of practical power, motivation, skills, suitable price, reliability and innovation. Competitive advantage includes different elements for securing organizational survival. It is impossible to find any competitive advantage on random basis and without any program but it is necessary for the organization to find scientific

**Table 4.** E-commerce in different fields of supply chain management (Razmi and Dehghan, 2004).

<b>Applicable fields of the organization</b>	<b>Effects of e-commerce</b>
Marketing	Development and distribution of product, new sale channels, direct economy, reduction in flow time order, increasing service level to customers, internet sale, sourcing new market parts and finding new markets
Research and development	Receipt of feedback from customer, research about customers' necessities, product planning, QFD, data research, time engineering, customer relations management, time reduction and increasing the precise planning of a new product
Purchase/supplies	Ordering, transfer of money, appointing of supplier, reducing bureaucracy, short-term of order flow, increasing cooperation of buyers-supplier, betterment of inter-organizational processes, removing the intermediates, receipt of consultants based upon buying, transfer of power from seller to buyer
Stock management	Visibility, quick transfer of information and reduction of stock, reduction of updating costs and pricing, on-time delivery, reduction of warehousing costs, ordering, accounting and customer processing
Transportation	Browsing the raw materials orders, reducing loading and unloading timer, transportation management, assignment of transportation activities
Customer servicing	Wide information to customer, browsing the order by customer, quick reply to the customers' questions
Relations among suppliers	Reduction of ordering costs and receipt of bill, Increasing the coordination and cooperative business, betterment of ordering flow, betterment of completion process and product delivery
Production	Electronic construction and production, Assignment of sale, pure production (through cooperative production programming, internet holder, mass ordering, sale transactions, quick transfer of qualitative problems in introducing of standard chain and qualitative definitions of knowledge management chain

frameworks for any planning and thoughts. Customer intents and market creation, and market tendency make it possible to benefit from special models for betterment of current situation, strategies and human resources. Permanent recognition of betterment fields and project making for finding suitable situation through standard patterns may cause further economy in time. Special pattern for paying attention to all facilities of the organization and integrate all synergy abilities of it for betterment of personnel abilities, quality increase and finding new markets. Then it is possible to secure future profits of the organization by governing of competitive smart and promotion strategies (Soltani, 2006).

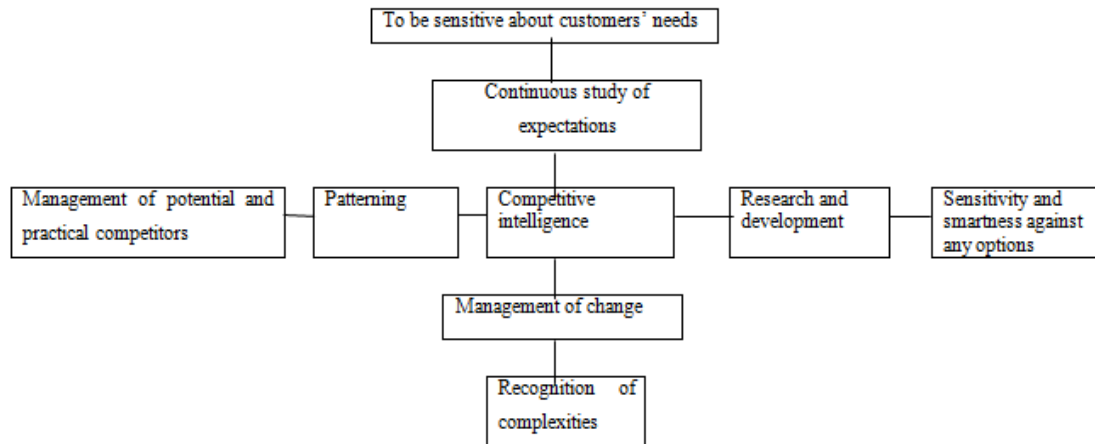
### **Relevant guidelines of competitive advantage**

There are different guidelines for competitive advantages and all organizations are obliged to apply them for finding better directions and more profits. Generally, the organization is able to find competitive advantage by the following guidelines:

Creation of competitive intelligence: competitive intelligence is one of the special methods for competitive advantage and promotion of business inside/outside the organization. For this purpose, the organization is obliged to finalize a competitive intelligence in accordance with Figure 4. Implementation of promotion strategies against competitors: One of the special mechanisms in competitive advantage is to provide suitable strategies in planning and performance. Generally, it is possible to apply five folds strategies for finding competitive advantage accordingly.

Strategic unique situation: one of the important strategies for competitive advantage, and finding domestic and foreign markets is strategic unity. It is a type of cooperation agreement between two organizations and/or great number of them which are intending to find more competitive success and make better their functions through common resources. Strategic unity is applicable in the following fields:

1. Common investment
2. Mutual services unity



**Figure 4.** Competitive intelligent parameters.

3. License issuance agreement.
4. Partnership in value chain.

Strategic unity at national and international levels will create new markets inside the barriers and outside of it. As a result, it is necessary to create firstly a strategic unity at national level for further creation of internal compatibility and powerful domestic headquarters. Then it is possible to find an international strategic unit by further efforts and removing any weak points (Soltani, 2006). Regarding the literature of all made researches, it is obvious that any priority in electronic supply chain management may grant higher market share and fighting power against any threats to the organization for finding a better competitive advantage against other competitors (Porter, 1995).

Benefits from electronic supply chain management may lead the organization towards above-mentioned fivefold strategies and by benefiting from competitive smart model. The result of these considerations and detailed explanations are obvious in the next part and under the title of conceptual model of the research.

### CONCEPTUAL DEDUCTIONS FROM PREVIOUS RESEARCHES

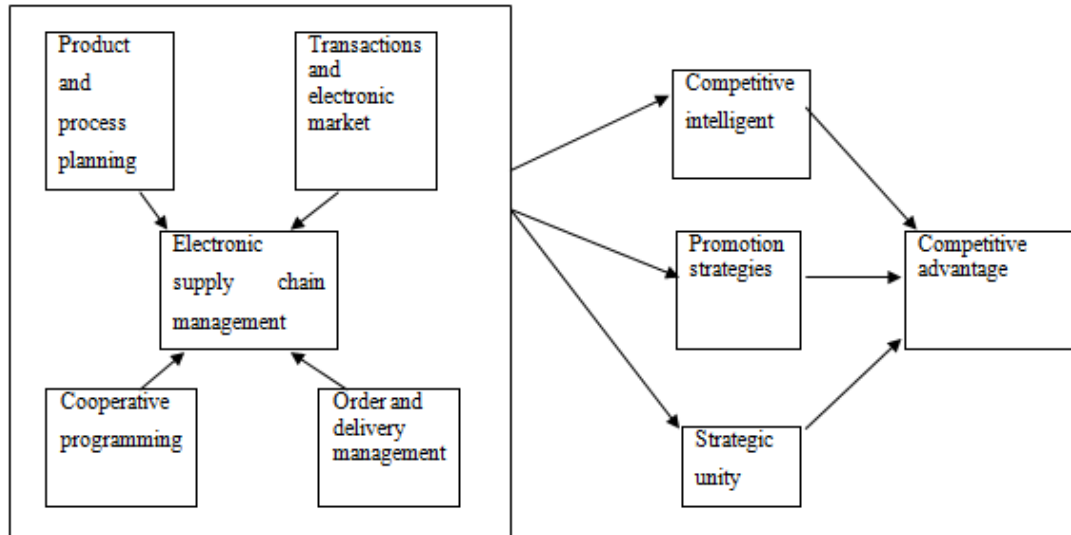
The results of research literature may lead us to further relations between electronic supply chain management and high level of competitive advantages against other competitors. Here we will explain all mentioned items. In order to have a competitive intelligence for finding competitive advantage, it is necessary to be sensitive to various needs of customers in market and provide suitable reply to it within shortest period of time. Upon current speed and efficiency in its own processes in recognition of customers needs, electronic supply chain management may assist them in designing of products and submission of suitable and on time services.

Furthermore, for obtaining a high rate of competitive advantage against competitors in market, electronic supply chain management may assist the organization because of its efficiency and applications. With on-time orders and delivery, supply chain management could benefit from promotion strategies. Then it is possible for the organization to reply any changes in active environment of business due to high level of advantages of internet, companies with supply chain management could find a high level of competitive smart in the market by the use of promotion strategies and also strategic unities (where applicable). Figure 5 shows this item in a better situation.

Electronic supply chain management is based upon a customer-intend process. Therefore on-time and complete relation between all elements are for more information about customer needs and supplying of necessities. For facilitation of information process and complete management we need a suitable field of software and integrated information systems and extranet networks. By applying of e-commerce in supply chain it is possible to benefit from computer networks specially internet for explaining of different functions like buyer, selling and transfer of products, services and information based upon mentioned model in previous sections including B2B and B2E. Therefore as it is obvious in above-mentioned model the result of work is presence of high competition advantage for the organization and for suitable reactions against environment changes against competitors.

### CONCLUSION AND PROPOSALS

What has happened in recent decades for business is changing of business nature due to high effects of IT. Internet has basically changed the international business environment. These changes may cause fundamental



**Figure 5.** The position of electronic supply chain in obtaining competitive advantage for organization (Conceptual model of the research).

changes in used methods in supply chain management. All supply chain management discussions in current electronic world are presented in electronic and internet markets.

Today we have supply chain management as one of the infrastructure basics for implementation of electronic business in the world. In current world competitions we should provide various products with regard to the request of customer. What makes an increase in further pressures is request of customer of high quality and quick services non-similar to the past. As a result, it is not possible for companies to do all jobs in person. In current competitive market, all economic and producing agencies not only consider their organization and domestic resources but also found themselves in need to management and supervision on relevant resources and basics of outside of company. The real reason is finding competitive advantage (s) with the goal of finding more market shares.

Accordingly, there are some activities including supply and demand programming, supplying of materials, production and programming of products, products maintenance, stock control, distribution, delivery and services to customer which have been transferred to supply chain level which were performed previously inside the company. The key item of a supply chain is management and coordinated control of all these activities. SCM is a phenomenon which may perform this job for customers in order to enable them to receive reliable and quick services with high quality and low costs.

One of the important discussions in finding an effective supply chain is benefiting from electronic tools for further

coordination and integration of supply chain. Furthermore, in order to find an effective supply chain management in this new business environment, it is necessary to recognize major performance of effective IT as one of the important elements of IT.

Organizations are in need to have considerable competitive advantage for further activities in an active business world and with different customers whose needs and requests are under changing. This is performed not only for further residence in market and relevant industry but also for better speed than competitors and change into a pioneer in market and industry.

One of the basic tools for this goal is the role and inevitable position of e-commerce in supply chain. By applying e-commerce tools subject of electronic supply chains, it is possible to have a complete image of e-commerce and IT in supply chains management. What is so much important in electronic supply chain is the integration of supply chain systems as mentioned in this paper.

The organizations which are interested in priority in market and today active business environment should benefit from their priority than competitors by the use of upgraded knowledge and their facilities in e-commerce and especially performing of modern supply chain systems and updating of companies and organizations and their powerful man power.

The final discussion is more attention to customer needs and paying more attention to all customers of the organization. Electronic supply chain is so much in assistance which in itself may provide more competitive advantages against competitors.

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