KADIR HAS UNIVERSITY
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THE NETWORK ECONOMICS: CASE STUDIES

GRADUATE THESIS

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“I, Nazlı Tuğçe DEMİROLUK, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.”

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NAZLI TUĞÇE DEMİROLUK

ABSTRACT

THE NETWORK ECONOMICS: CASE STUDIES
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This thesis basically explores the definition of networks, different types of networks such as social, economic, information, technological, and the positive and negative externalities which occur as the result of the interaction of the networks with the environment. By emphasizing the positive relationship of technology, social networks and network economics, this paper gives current example from e-commerce sector in the world and tries to be critical to the network economics which may lead to interests for further discussions by those doing research in the same area. This paper also contains the case analyses as the examples of e commerce that is the top point of the economic networks today. The cases Ebay and Alibaba.com show the potential of the network economy and Harley Davidson case focuses on the social effects of the networks.

Keywords: Network,E-Commerce,Internet,Technology

ÖZET

THE NETWORK ECONOMICS: CASE STUDIES

Nazlı Tuğçe Demiroluk

Ekonomi, Yüksek Lisans

Danışman: Doç. Dr. Meltem Ucal

Mayıs, 2013

Bu tez, ağ ekonomisinin tanımı,ağ ekonomisi çeşitlerini (sosyal,ekonomik,enformasyonel,teknolojikve pozitif ve negative dışsallıklar) açıklamaktadır. Ve bu konuları açıklarken bunların yanında konunun daha net bir şekilde ortaya çıkması için ağ ekonomisinden faydalanan bazı internet kuruluşlu firmaların bu sektörde ki ilerlemelerine değinilmiştir.

Anahtar Kelimeler: Ağ,E-Ticaret,İnternet,Teknoloji

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1. INTRODUCTION

With the increasing interest on networks conducted by many interacted parties that signal emergent behavior at global level, meaning that the increase in the network usage from social area investigations to biological theories, different network models were introduced in order to describe any kind of system according to their clustering coefficient and degree distribution. From spreading of computer viruses to epidemic illnesses or even to interaction of cancer cells with proteins are being investigated and supported by the network theories and network analysis. The increase in the mass usage of social media (such as Facebook) and economic networking in labor contracts, finding out references for new job descriptions (such as LinkedIn) to private online shopping sites (Markafoni, 1V1Y.com) for satisfying the daily needs, totally changed the understanding of societal ties and one-to-one relationship. In this thesis, a literature review on the evolution of network systems from ARPANET to the contemporary set-up will be briefly given. Then, in the second part types of the networks, the network analysis and their effects will be discussed. The final part, will present a critical view of the network economics by studying its effect on the e-commerce sector in Turkey the case study explaining the development of the e-commerce sectorof E-bay. I am going to explain economic and technological developments of Turkey that’s why we can see the impacts of these developments to the network economy and e-commerce.

2. LITERATURE REVİEW

2.1 What is "Network"?

Internet began forty four years ago at the University of California with first message ever sent between two computers by Kleinrock who was leading a team of engineers in establishing the first network connection between two computers, ushering in a new method of global communications that has forever changed the course of business, politics, entertainment, education and social interaction.[1] From a very simple view, one could say that a network is a collection of computers and any type of hardware which are interdependent and interconnected by channels of communication to allow sharing of resources and information. By taking a much broader view, my scope may include various types of networks such as social networks, economic networks, technological networks and informational networks. Network structure is important in determining the outcome of the many important social and economic relationship. For example, networks play a fundamental role in determining how information is exchanged. Such information may be as simple as an invitation to a party or as consequential as information about job opportunities.[2] The very first network was known as The ARPANET - which later became the Internet - was faunded by the Advanced Research Projects Agency (ARPA), created in 1958 to support scientific research in the United States.[3]

ARPA had been supporting a number of computer scientists around the country in the 1960s, each of whom had unique information and capabilities on their individual computers. ARPA officials reasoned that by connecting the existing

[1]Sutton,Chris. 2004.
[2] Jackson, Matthew and Alison Watts. 2002. p:265-295.

[3]Gerf, Vinton G. 2007.(http://homes.cs.washington.edu).

computers together via a data network, the community of scientists would be able to gain access to each others' computers and be able to communicate more effectively.[4]

2.2 Types of Networks

2.2.1 Social Networks

It was Emilé Durkheim who introduced the relationship of the individual with the social group to the literature in the late 1800s. Giving a non-individualistic explanation of social reality, Durkheim's argument was the rise of social phenomena as a result of the interaction of individuals which creates a new reality that can no longer be accounted as the property of the individual actors. Mainly, he argued that the whole is greater than the some of its parts and also the whole conceptualizes its own reality, not its parts'. Following Durkheim, Ferdinand Tönnies emphasized that social groups can exist as personal and direct social ties that either link individuals who share values and believes. In the literature, it is also emphasized that the nature of the network and the size of the composed network may be affected on the interaction and the reality created.

Today, social network is defined as a social structure made up of a set of actors (from individuals to organizations, from micro level to macro level) and the ties connecting those actors. *"Social networks permeate our social and economic lives. They play a central role in the transmission of information about job opportunities and are critical to the trade of many goods and services. They are the basis for the provision of mutual insurance in developing countries. Social networks are also important in determining how diseases spread, which products we buy, which languages we speak, how we vote, as well as whether we become criminals,*

[4]Sutton, Chris. 2004.

how much education we obtain, and our likelihood of succeeding professionally." [5] Social network analysis questions the structure of relationships between social entities which may often be individuals, but may also be groups, organizations, nation states, web sites, scholarly publications,etc.

Since the 1970s, the empirical study of networks has played a central role in social science, and many of the mathematical and statisticaltools used for studying networks have been first developed in sociology. This study which is called, social network analysis, amongst many other applications, social network analysis has been used to understand the diffusion of innovations, news and rumors. Similarly, it has been used to examine the spread of both diseasesand health-related behavior. It has also been applied to the study of markets, where it has been used to examine the role of trust in exchange and of social mechanisms in setting prices. Similarly, it has been used to study recruitment into political movementsand social organizations. It has also been used to conceptualize scientific disagreements as well as academic prestige. More recently, network analysis (and closely associated with the so called cousin traffic analysis) has gained a significant use in military intelligence, for uncovering insurgent networks of both hierarchical and leaderless nature.[6]

[5] Jackhson, Matthew. 2003.

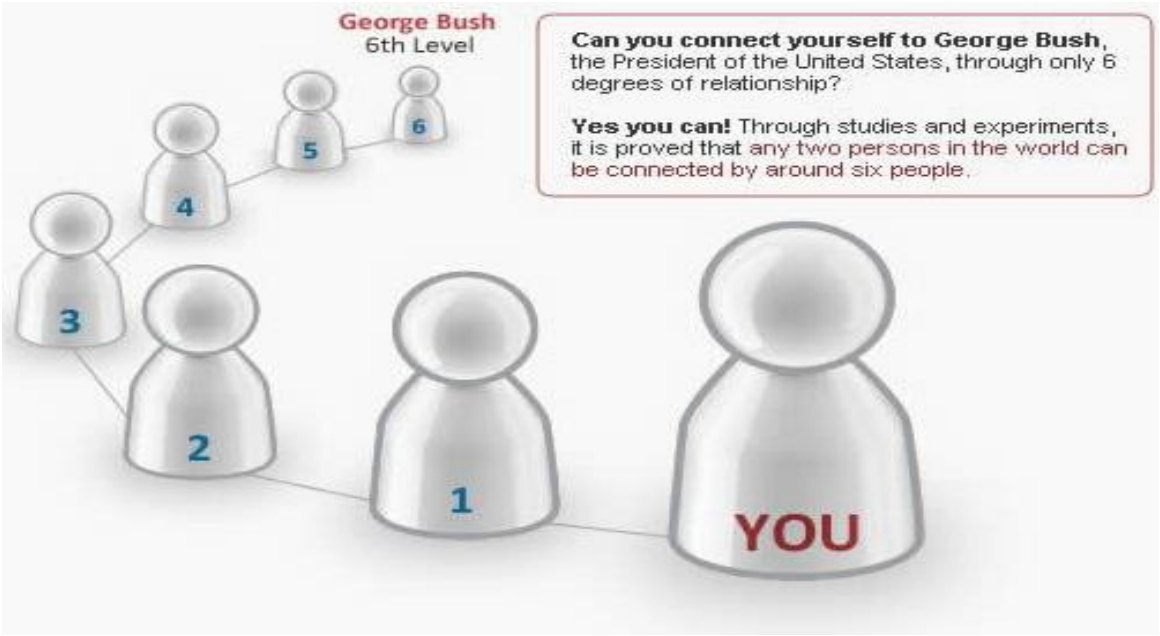
[6]*Surprise Hit on Pinterest*, 2012 (http://shahlabs.blogspot.com)

This social network effect is mainly developed by two theories;

- *Small World Experiment:*

It was developed by Stanley Milgram in USA, in 1967 to find to examine the average path length or the number of intermediaries in between of two individuals in a social network. The main idea behind the experiment is to calculate the probability that randomly selected two individuals in different locations in the USA whom would know each other by assuming that this social network is a computer network and the probability is the average distance between the two nodes of the computer network. It briefly argues that the total social network composed by humans is a small-world-type network characterized by short path-lengths.

Figure 1: SixDegrees of Separation



Source:http://3.bp.blogspot.com/-PDOxg16xXPw/T261LQY6k-I/AAAAAAAAEoM/4gaI79T3w0s/s1600/six-degrees-of-separation-duncan-watts79852.jpg (1 December 2012)

- *Six Degrees of Separation:*

With the increase in the globalization, the shrinking world idea is conducted by the sociologists believing that modernization and developing technology increases the linkage between the individuals and makes world more flat and smaller. Originally set out by Frighyes Karintyh, six degrees of separation mainly emphasizes that everyone is size or fewer steps away by way of introduction from any other person that can be chosen randomly in the world. As in the Figure 1, this chain of friendship can make any two people in a maximum of six steps.

Table1: Top 10 MostSearchedWebsites

Rank	Most Searched Terms 2012	Most Searched Terms 2011
1	facebook	facebook
2	youtube	youtube
3	craigslist	facebook login
4	facebook login	craigslist
5	facebook.com	facebook.com
6	yahoo	yahoo
7	ebay	ebay
8	www.facebook.com	www.facebook.com
9	mapquest	mapquest
10	amazon	yahoo.com

Source:http://i.marketingprofs.com/assets/images/daily-data-point/top-10-most-searched-terms-of-2012-experian.jpg (1 December 2012)

As we understood from the table 1; today, with the developments of the communication technologies people are interacting and socializing from the internet. The internet usage has changed the world in other words. The social networks like facebook, YouTube and yahoo are the most searched websites today. This gives us the information that internet has changed the definition of socialization. Before, people were going out or cinema to socialize but people are chatting and communicating through internet today.(If we look at that why there is lots of faceebook in table 1 , the reason of this is some people ask google like www.facebook.com or some of them facebook.com). On the other hand, we also see that Ebay and amazon are also most searched websites. So, we can say that internet is also started to be used for business interactions effectively. We can think similarly that internet has been also changing the understanding of business interactions, too.

Table2: Top 10 Visited Websites & Used Mobile Application

Website	Unique PC Visitors US	vs PY change
Facebook	152.226	-4%
Blogger	58.518	-3%
Twitter	37.033	13%
Wordpress	30.945	10%
Linkedin	28.113	0%
Pinterest	27.223	1047%
Google+	26.201	80%
Tumblr	25.634	55%
Myspace	19.680	-13%
Wikia	12.954	20%

Application Mobile	Unique Mobile Visitors US	vs PY change
Facebook	78.388	88%
Tiwtter	22.620	134%
foursquare	10.388	118%
Google+	9.718	86%
Pinterest	4.946	170%

Mobile	Unique Mobile Web Visitors	vs PY change
Facebook	74.274	85%
Tiwtter	42.366	140%
Blogger	19.979	100%
Pinterest	14.316	4225%
Wordpress	11.995	96%
Linkedin	9.671	114%
Tumblr	8.512	162%
Wikia	5.325	n/a
Reddit	4.275	153%
Myspace	3.501	57%

Source:http://i.i.com.com/cnwk.1d/i/tim/2012/10/24/Picture_1_610x570.png (2 December 2012)

This table gives us the usage of mobile applications. We can see on the table that people are using mobile applications mostly for the social purposes. We cannot see the websites for business relations through mobile applications in top ten. However, we think that with the developments of the smart phone usage, the business relations from the mobile applications will increase.

2.2.2 Economic networks

Economic network or referred network of independent individuals whose main aim is conduct a strong community/union/link to gain power and perform as a significant player in the current market's existing conditions. Activities of economic network consist also of recruiting new members to join, reviewing, surveying, or providing a fresh perspective on existing community growth and strength which can be recruiting with references, as is the case with LinkedIn. .

According to Marx (2012),with increasing of the social networking trend, economic networking also gains strength and in order to keep face with the globalization and the effects of social networking, today's corporate try to unify the system by invigorating all types of resources in the supply chain. Internet technology has been evolved to points where individuals are connected one with another in a way never existed by completely eliminating the span of distance and cultural difference into one,a single unified world: the digital world.[7] The question whether a business needs to be existed within this virtual universe is no longer an option, practically as the word 'globalization' is actually realized in this World Wide Web, a business failed to linked in is ceases to exist.

Harnessing the power of internet collective resources, every business entity—whether it's a producer, distributor, marketer, even consumer—are all unified through massive web of interconnected networks which in return makes each and every network, with their own system, more open and increases their capability for linking themselves with one another and gradually form a new language called internet language which links every network with another limitlessly. This increase

[7] Marx, Christian, 2012. (http://www.ieg-ego.eu)

in the power of the social network in our daily lives especially with the use of social media also creates a strong tie with the economic network.

In addition to the social networks' effects on the labor market, which will be discussed in the coming parts, business to business relationships are highly affected by the social networks and created their own economic network since the definition of the network in the Merriam-Webster Dictionary in 2007 is 'the cultivation of productive relationships for employment or business'. There are many studies discussing the networked business markets and some of the features that those business to business markets exhibit. Weisbuch, Kirman and Herreiner examine the fish market between 1988 and 1991, considering the relationship of buyers and sellers for more than 8 months[8]. There are important aspects in the fish market to consider such as the easy perishability of fishes, the variability in the supply of the fishes and finally the differences in the demand elasticity for the fish due to the differences in the serving standards of the buyer. In the examined market, there are 45 sellers and more than 1400 buyers in which the buyers are the restaurants and retailers. It is found out that the buyers have a tendency to visit sellers who have met their demands in the past. The trust, fine-grained information transfer and joint problem solving ability lead to a long term and closer business relationship and end creates repeat relationships in the market[9].

[8] Weisbuch, G., A. Kirman, and D. Herreiner. 2000

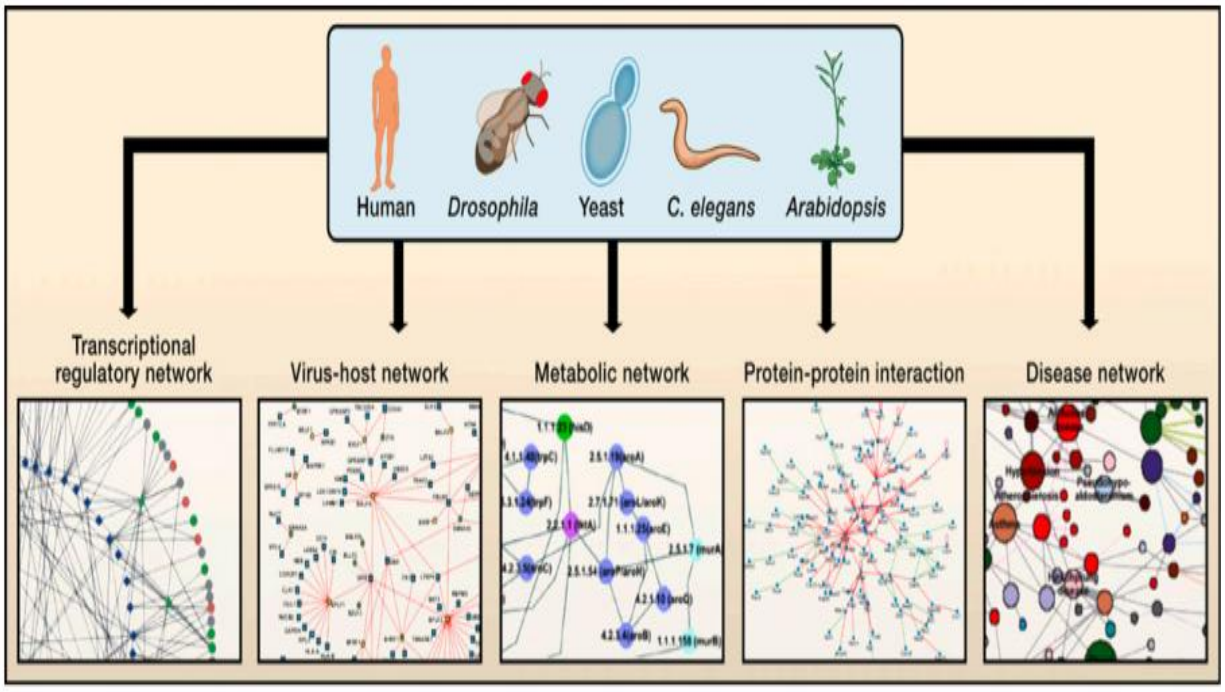
[9] Uzzi, B. 1996 : 674-698.

2.2.3. Other Types of Networks

We can think some other types of networks below.In fact, our main aim in the explanation of other types of networks to understand the network concept in a better way. The network concept is a very broad concept and the usage area of networking can help us for the usage areas or types of network economics. I think that if we observe the all types of networks that can give us to develop the network economics. In addition, I think that, it is very interesting to see that there is a network facility almost all areas of life and since the trade issues are the parts of the life we can state there is a different relation between the life and trade which is through the network economics.

2.2.3.1 The Role of Biological Networks

Figure 2: Biological Network



Source:www.blogspot.com

Complex biological systems can be mapped as networks and biological network is any network that applies to these complex biological systems. Today, even mapping out the life pyramid as network systems differentiates scientists by taking one step further.

In Figure 2, different biological networks are schematically designed and explained. Biological networks can briefly be divided into 5 categories, such as;

- Transcriptional Regulatory Network:

Genetic Transcriptional regulatory network (GRN) is a collection of DNA segments in a cell which interact with each other indirectly (through their RNA and protein expression products) and with other substances in the cell, thereby governing the rates at which genes in the network are transcribed into RNA. Briefly, it is the basic control of networks that underlie the development and responses of organisms and interact reaction between DNA and RNA.[10]

- Virus-host network:

Virus-host network is especially used in the interpretation of the cancer genomes by perturbation of the tumor.[11]

- Metabolic network:

A metabolic network is the complete set of metabolic and physical processes that determine the physiological and biochemical properties of a cell by investigating the relationship between the enzymes and the substrates. As such, these networks

[10] Johannes F. Knabe, Wegner, Katja, and Maria J. Schilstra. 2007. (http://panmental.de/ICSBtut)

[11] (http://cegs.dfci.harvard.edu)

comprise the chemical reactions of metabolism as well as the regulatory interactions that guide these reactions.[12]

- Protein network:

Protein network basically studies the 1307 protein and 2441 interaction created by those proteins and their effect on the metabolic network.

- Disease network:

In today's world, disease network is especially emphasized for the study of the contagious epidemics and cancer. Examining disease networks, created a new network field which is called medicine network investigating the schematic design of disease and the effects of the medicine used. With the single contagion effect, where social and economic networks are classified as complex contagions, it may not be possible for the innovation to spread after only one incident of contact with an infected neighbor. By bearing in mind that the genes which are involved in the same disease show a higher propensity to interact with each other, the importance of disease and medicine network is augmenting.

Why study biological networks?

The interconnectedness in the life cycle and the dependency of the biological systems bring as to a certain point emphasizing that the networks pervade all aspects of human health.[13]

[12]Sharma Amitabh.2012. (http://barabasilab.neu.edu)

[13]Sharma, Amitabh. 2012. (http://barabasilab.neu.edu)

2.2.3.2 The Role of Technological & Informational Networks

Technological networks are the man made networks designed for distribution of some commodity or resources. Technological networks automatically compose their own transportation networks for information since they conduct the shortest way for the flow of information and services.[14] In a basic case, with the example of the coordination of the airports, we can definitely say that the organization and the scheduling of the direct and the indirect flights per airport is maintained by the technological network, which in return creates a transportation network immediately. Technology and the information, as networks, are the main parts composing the social and economic networks with use of available technology, which is internet. It is this existing technology network that creates the complex contagion effect of social and economic networks meaning that the multiple sources of exposure to an innovation are required before an individual adopts the changeof behavior. [15] The main factors which make technological networks a complex phenomenon-the view of technology as knowledge, the multiplicity of interactions between agents intervening in the network and the resulting structural heterogeneity and, finally, the presence of "conflicts of interest" in technology network management-and analyze these from a systemic perspective, through the diverse economic factors which affect technological network efficiency and stability.[16] The conflict of the interests and the interdependency of the information networks bring the question of the cyber security and the urge for the development of the security networks too.

[14]*Technological Networks:* 2009. (http://catedra-orange.upm.es)

[15]Centola, Damon and Macy, Michael. 2007 : 702-734.

[16] De Arroyabe, J.C.F. 2001.

If we consider the network economy we see that the trade relations through a network. To expand our business relations on this network we need two basic things. The first one is the information which has a direct effect on the trade relations. On the world we live today we can have trade relations from all around the world and we do not have a chance to get information for the business we are going to interact by going there and see it directly. So, we use the information network to get information we need to have business relations, the information network helps us to have true and critical information to make our business in a more secure way. The second one is the technology of course. For example, we want to have business with China, the first thing we need is the information about the business conditions as we stated above and the second thing is the technological base that we can make the relations true through this network. The technology is very important not only to make the business but also to get the information fast and secure. So, it is to say that we need technology and information networks to make business through the network economics.

2.2.3.3 The Role of Life Support Networks

This network mainly consists of the delivery of the necessary infrastructural services such as energy, telecommunications etc. In order to maintain a properly functioning society and economy, the failure of those life support networks should be minimized. Life support networks are made up of a multitude of civil infrastructure, which ensures the correct functioning of industrial activities and provide essential services to citizens for the health and the safety of the general population. Life

support networks composed of civil infrastructure can be grouped according to the following categories[17];

- *Electricity*
- *Natural gas and liquid fuels*
- *Potable water and waste water*
- *Telecommunications*
- *Transportation*

A good understanding of the dynamics of these networks is therefore essential in order to avoid being malfunctions transforming into major crises such as in the cases of earthquakes, terrorist attacks etc.

2.2.3.4 The Role of Transportation & Distribution Networks

The transportation and the distribution networks are mainly used in the supply chain design in order to increase the efficiency and responsiveness at the same time. These strategic decision-makings in facility role, facility design, resource allocation, capacity allocation are all parts of the supply chain networks mainly consisting of transportation and distribution networks. It is about determining the territories of the facilities, what product should be made where, how product should flow through the supply chain. Enhancing the strength of the supply chain definitely helps to have efficient and responsive operational decisions. Design of transportation and distribution networks is increasingly important because this helps the firm by maintaining the successful execution of its strategy. [18]

[17] Lau D.L. and others. 1995 : 438–451.

[18] Chopra, Sunil and Peter Meindl., 2001.

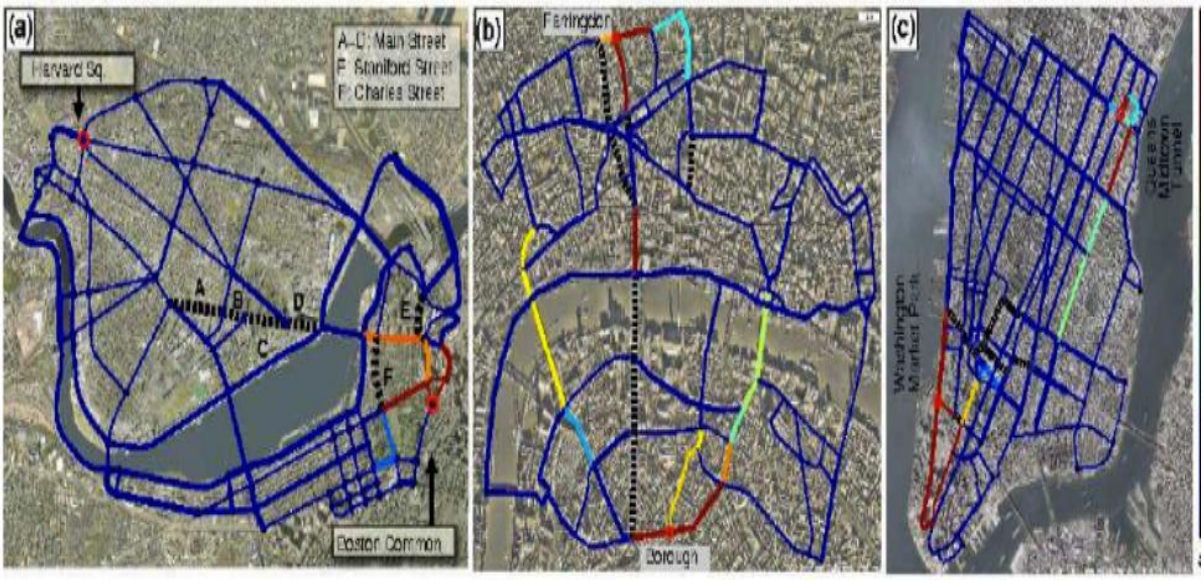
At the highest level, performance of a distribution network should be evaluated along two dimensions:

1. Customer needs that are met

2. Cost of meeting customer needs

The customer needs that are met influence the company's revenues, which along with cost decide the profitability of the delivery network.[19]

Figure 3: Describingthetraffic network



Source: www.blogspot.com

Transportation networks are not the core element for the supply chain but also very deterministic and highlighted in any flow of vehicles and city-planning. This network, as it is shown in Figure 3[20], can be used to model traffic from highways to metro stations, airways, railways. Optimality of traffic networks may usually fail due to the anarchic behavior of agents and the uncoordinated individuals in human

[19] Chopra, Sunil. 2001.

[20] Gastner et al. 2008. (http://arxiv.org)

society pursuing their personally optimal strategies do not always achieve the social optimum, the most beneficial state to the society as a whole. By analyzing the travel times in road networks of several major cities, simply blocking certain streets can partially improve the traffic conditions.[21]

2.3 Dynamics of Network Effects

There are different types of networks with varying degrees of network effects which all individuals try to capture the biggest slice of the pie. Network effects are central to evaluating networks, but one should bear in mind that the intensity of the network effects varies from network to network and to the actors in the existing networks. A network effect exists when the value of a good or service increases as more people use that good or service.[22] Network effect can also be called as network externality or demand-side economies of scale which emphasizes that when network effect is present the value of the good or the services depends on the total number of the people using that service or good. The classic example for that case is telephone. If you are the only person using the telephone, than it is worthless because of its inability to communicate with other people. As more people starts purchasing telephone, the value of the product in the market rises sharply since now it is able to connect to a larger network of users. For today's technology, examples of all kinds of social media, business networks can be given. Iphone models are preferable since its ability of transferring documents and pictures to other Iphone models with an instant touch. If you have been the only person using Iphone, this property would had been totally worthless and inefficient.

[21] Gastner et al. 2008. (http://arxiv.org)

[22] Mauboussin, 2004

Network effects basically consist of two main components which can be classified as autarky value and synchronization value. Autarky value is the value generated by the product even if there are no other users, and the synchronization value is the additional value derived from being able to interact with other users of the product, and it is this latter value that is the essence of network effects.[23]

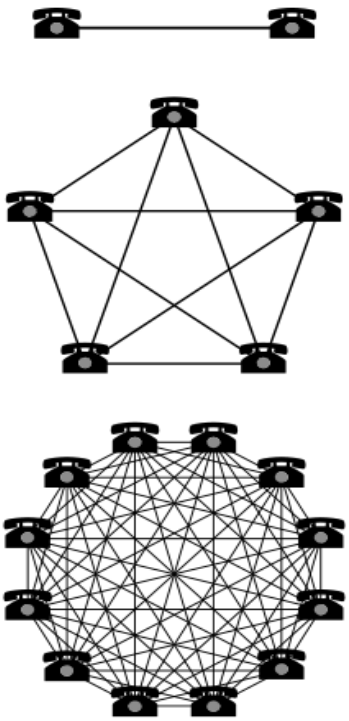
The literature has identified four types of network effects.

1. Direct network effects: This effect can be considered as the simplest network effect which have been defined as those generated through a direct physical effect of the number of purchasers on the value of a product (e.g. fax machines) meaning that the increase in usage lead to direct increase in value such as the classical example of telephone given. This is the kind of effect modeled by Katz and Shapiro 1985 and Farrell and Saloner 1985.[24] Metcalfe's Law can be the simplest way of explaining the direct network effect and the importance of classical telephone example as direct network effect. And we can also look at the figure below to understand the Metcalfe's Law.

[23] Liebowitz, S.J., and Stephen E. Margolis. 1998. (http://www.utdallas.edu)

[24]Sundararajan, Arun, 2006. (http://oz.stern.nyu.edu)

Figure 4: Metcalfe'sLaw



Source:http://upload.wikimedia.org/wikipedia/commons/thumb/1/1d/Metcalfe-Network-Effect.svg/220px-Metcalfe-Network-Effect.svg.png

Metcalfe's law briefly states that the value of a communications technology network is proportional to the square of the number of connected users of the system (n2). As in Figure 4, two telephones are able to make only one connection where as twelve of them can successfully make – as the triangular number $n(n-1)=66$ connections. (n=12 here .Because there are 12 communication tools)

2. Indirect network effects: This effect can be explained where increased in usage of the product spawns the production of increasingly valuable complementary goods, and this results in an increase in the value of the original product[25]. These are "market mediated effects" such as cases where complementary goods (e.g. toner cartridges) are more readily available or lower in price as the number of users of a good (printers) increases.[26]
3. Indirect network effects are,by nature, pecuniary meaning that they cannot be internalized. In case of any internalization, there appears a deadweight loss although if they left uninternalized they do not cause any peculiar externalities. This distinction of internalization and uninternalization was not brought into the early studies of network analysis. With the creation of the payoff functions in the network theory, the effects of the networks were categorized as direct and indirect effectsTwo-sided network effects: Network effects can also be two-sided where an increase in usage by one set of users increases the value of a complementary product to another distinct set of users, and vice versa. Hardware/software platforms, reader/writer software pairs, marketplaces and matching services display this kind of network effects. It is easy to see the indirect network effect as a part of two-sided network effect where indirect network effect is the one-directional increase in the usage of one specific good.

[25]Sundararajan, Arun, 2006. (http://oz.stern.nyu.edu)

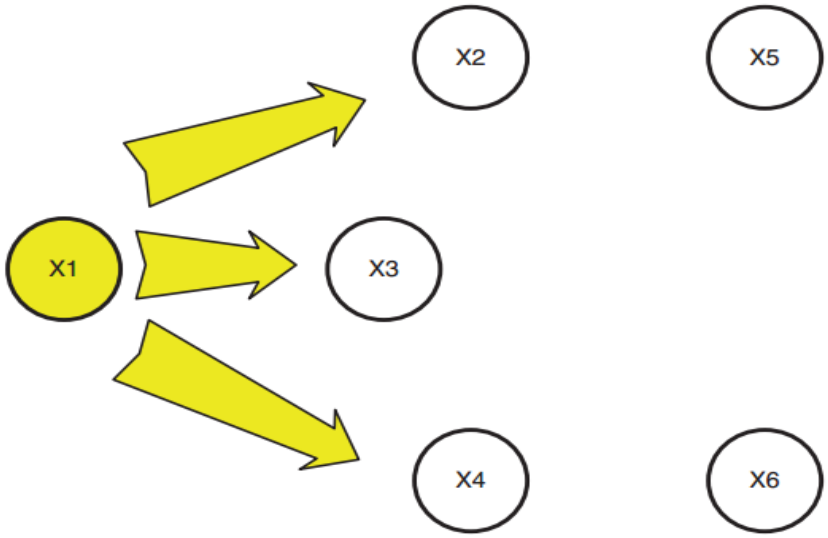
[26]Liebowitz, S.J.,andStephen E. Margolis., 1998. (http://www.utdallas.edu)

4. Local network effects: The matters of network effects are often influenced by the structural form of the network which in this case each consumer is influenced directly by the decision given by a sub-group of consumers or individuals. The instant messaging applications such as Whatsapp and the formation of new groups in Whatsapp can be a good example of this local network effect. Any change done in the group or any instant message sent is automatically affects the members of the group which are linked to each other Whatsapp network.

2.3.2. Network Effects with Local Interactions

Network effects that arise due to the local interactions can be called as a chain reaction which is also named as domino effect that occurs when a small change causes a similar change nearby due to the strong linkages between individuals, businesses, locations etc. This similar change in a linear sequence is best known as a mechanical effect where the falling rows of domino's are structured. The Butterfly Effect and The Chain Reaction can be good examples of the network effects with local interaction. Also it should be underlined that in a business environment, local interactions due to business to business relationships may create domino effects due to the shared economic network or social network like it happened in the 2007-2008 global financial crisis. The 'too big to fail' theory emphasizing the large financial institutions and their high level of interconnectedness in the economic system can be an example for the network effects with local interactions. The theory argues that since the failure of those institutions would be disastrous for the economy, government must maintain necessary support for the sake of the whole system although it causes moral hazard in these institutions.

Figure 5: Domino effect where an accident in X_1 can trigger secondary accidents in X_2, X_3, X_4 andso on.



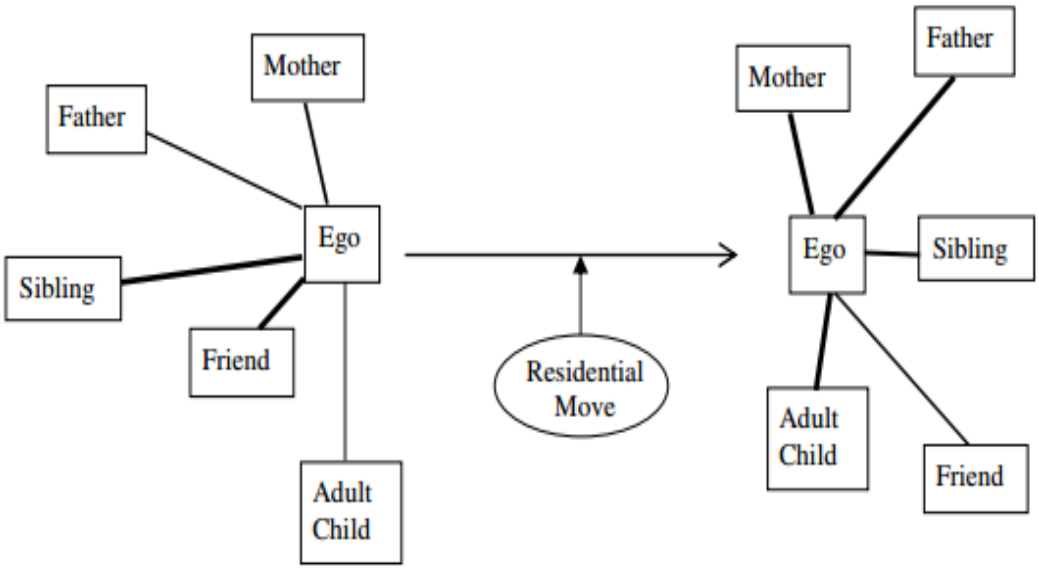
Source:www.blogspot.com

2.3.3. Network Effects with Residential Choices

It is significant to emphasize that a country's growth process can be understood with the developments in its construction sector. Every developing country enters to the reconstruction and new-construction processes in order to maintain sustainable infrastructure to the industry and service sector, and also builds man-made advantageous locations for those industries. We can give Dilovası as an example for the chemical industry and Maslak/Umraniye plazas for banking, consultancy, marketing and FMCG sectors. In addition to those, man-made location specific advantageous, neighborhood and housing understanding changes with the development process. As in the case of Turkey, with the stability of the economy and the decreasing interest rates, residential estates and mortgages increased. It is essential to underline that residential choices, either for companies or individuals, depends not only to the favorable conditions of the infrastructure, environment and quality of the housing but also to the network effects.

The idea of 'neighborhood' is the key concept behind the residential choice and the network effects. Unfortunately giving a definition for this concept is harder than it seems. What can we say about the neighborhood concept and the reasons of the residential moves? In Figure 6 below, only one side of the social networking's effect on the residential move is shown.

Figure 6: Effect of family networking in residential move



Source:www.blogspot.com

Network effects are possible in residential choices due to the different types of externalities such as the peer effects which are the fact that children are affected by their peers and then the parents who care about children's education will also consider the friendship of their children[27].

[27]Acemoglu, Daron and Asu Ozdaglar, 2009. (http://economics.mit.edu)

By defining a neighborhood as a 'complex commodity' that is produced by the same actors – households, businesses, property owners and local governments – that consume them. Neighborhood is a bundle of spatially based attributes, including structural, infrastructural, demographic, class status, tax/public service package, environmental, proximity, political, social-interactive, and sentimental characteristics[28], we can conclude that the definition of neighborhood effect is directly related with network effect which is also linked to the idea of the well-being and behavior of the individuals and the families. It is essential here to note that the process from being an individual to forming a family also changes definition of neighborhood and the expectancies from the social network. The interaction with the environment and the expectancies from the social network that the individual is in, certainly change as the according to the stage of the individual's life cycle, since it is a public area for social contract and also a private investment. In the article of Sharmeen and Timmermans, by using Bayesian belief network, it is proven that residential moves may trigger changes in the composition and maintenance of social networks and vice versa. Behind this relationship between network and neighborhood, there may be the psychological and social reasons such as the representation of being a member of social status and the need of living with the people from the same social needs and networks.

[28] Galster, G.C.,.2001.

2.3.4. Network Effects in the Labor Market

One of the major cases that can be given for the social network effects on economic networks is employment and recruitment.

The effective use of tangible and the intangible assets of a business is the key to the success in value creation for its supply chain. Intangible assets like know-how, strategic information, collaborative design, good human resources are the main internal value networks created in the company. Due to the significance of the human resources in a company's success, newly opened positions are generally declared inside the company and the candidates having a reference from an employee of that company are prioritized. This is the effective of social network on the economic network since the recruitment process is fostered by the social network of an outsider (candidate) with an insider (employee working in that specific company).

There had been a number of studies of how social contacts matter in obtaining information about job openings. One of the earliest studies, by Myers & Shultz, was based on the interviews with textile workers and according to the survey done with those workers;

- 62% heard and applied for their first job through a social contact
- Only 23% applied directly and finally
- 15% found their job with another intermediate company[29].

This study was expanded to other sectors and found out that especially according to the gender and the race, social contacts in finding jobs are prevalently used in finding jobs[30].

[29] Myers C.A. and G.P.Shultz. 1951.

[30] Corcoran, M. , L. Datcher, and G. Duncan. 1980.

Example that can be given for the Small World Theory and Six Degrees of Separation is LinkedIn which is also a good case for analyzing the social network effects Once you become a member of the LinkedIn, this professional network site informs you about how many steps you are away from a person you wish to communicate with. The site encourages you to pass messages to people in your network via the people in your 1st-degree connections list, who in turn pass it to their 1st-degree connections and also informs you about newly opened recruitment positions, makes human resources easily reach to anyone's profile with the certain qualifications they are looking for. LinkedIn is the perfect case for the effect of social network in economic network with the extended use of the theories described above.

3. THE RELATIONSHIP BETWEEN SOCIAL NETWORKS AND NETWORK ECONOMICS

While describing the social networks in the previous sections, its relationship between network economics is briefly mentioned. One can easily underline the importance of social network and network economics. In the previous decades before the computer networks, social networks in a society used to be formed by individual communications, associations, clubs, basic telecommunication instruments and etc which in return created the network economics. Network economics can be described as any network in which a business entity enjoys the side benefits of the increasing number of people using the services of that business. A very basic but enormously popular activity which became habitual for housewives for decades, the concept of 'altın günü (*Altın günü:* this is a special type of meeting. People (mostly women) are coming together one a week or once a month not only for having fun but also a special type of trade. The meeting is prepared by the different member of the meeting and the guests are bringing gold (or sometimes a significant amount of money) to the householder. For example if the meeting has ten members than the householder gets nine gold at the end of the meeting. This meeting is done for the each member of the meeting. At the end of the meetings each member gets nine gold and gives nine gold, namely there is no profit but they have the total amount for time and pay the gold one by one. This can be though as a special type of trade and this is also a traditional type of cooperation in Turkey.), can be considered as a social network which also creates a network economics since attendance of only one individual cannot be beneficial regarding the requirements of the activity. As the number of housewives attending to the weekly activity increases, the total amount of gold received by the host increases which shows the benefits and ease of paying back weekly. Surely,

there exist a certain number of housewives attending to this activity which maximizes the profit received by each of them. When this approximate or certain amount of user is exceeded by total amount of the users, the profit or the benefit received from a product or a service may tend to be in decrease to the scale effect.

In a world based on technology and computer networks, it is obvious that there is an alteration in the existing social networks formed in the previous decades since the increasing usage of internet shifts social networks from offline to online.

We can also think a lot of online social networks today in addition to the classical and traditional "altın günü" concept. In the new world this concept has lost its importance but there are a lot of new things instead of this concept. Facebook, twitter, YouTube and such things are the online places that people are interacting with each other to socialize. People can share their photos, ideas, opinions and comments easily without coming together physically. This is the new type of socialization. So, the definition of socialization also changed with the developments of the communication technologies. Of course there are still some traditional meetings between people especially between old people, but it is seen that it will completely change very soon. The usage of these websites are increasing very fast as I explained above and people are happy to use this concept of socializing. We know that this can be defined as the social network either. Because there is a network through the internet and people are interacting with each other on this way. In addition, I strongly believe that if there are social interactions between people it is possible that these relations will go on with business relations. Business and money are the main parts of our lives today and in any social network the possibility of making business is increasing. In the example of "altın günü" that is very traditional and old there is business interactions ad what about the new and popular concept of

old one. It is very possible that people that are using these websites to socialize to use these channels for their business lives. It is not important to make business and to socialize with same people, the important thing is people that are using the internet for socialization and business are the same. So we should state that, the social usage of internet is increasing the usage of internet for business. On the other hand, the popular form of altın günü concept which is the online form is not going to be easy. The offline from of social network is more suitable not only for the socialization but also for the business interaction. There are some reasons for this failure of online socialization on the business interaction. Firstly we can state that people are unwilling to make business interactions from the social networking websites. They think that it is not secure to make business relations from these websites, giving the personnel information or credit card numbers are accepted unsecured through the social websites. The business interactions websites are more secure to give this information because these websites designed for the business relations. On the other hand, as I said before social networking increases the probability to increase business relations but it has some problems with the direct impact on the network economics. In addition, in the social networking websites majority of people who are socializing through the internet are not using their true personal information. They are using some different names as the account names etc. and these names are not interested in their real names. This situation helps them to behave more free on the internet. So, the socialization through internet is a good thing and it encourages people for the business interactions too but it does not have a direct impact on the network economics.

Consequently, the online form of social networking is not enough to increase the business interactions as the offline form of social networking like I have given the example of altın günü.

4. THE RELATIONSHIP BETWEEN TECHNOLOGY AND NETWORK ECONOMICS

With the increase in the usage of the internet, the relationship between the buyer and the seller is in the process of change. Today it is possible to meet and create the necessary business environment online and thus business to business, business to consumer and even consumer to consumer supply chain alter. We can give Alibaba.com as an example of business to business network and EBay as consumer to consumer network which are affected by the number of people using and competing for that specific service or product supplied by the consumer or the business. The network created by those websites as a result of the interaction between the seller and the buyer is the network economics. As emphasized before, network economics can be described as any network in which a business entity enjoys the side benefits of the increasing number of people using the services of that business. All kind of business association may be considered under the network economics due to its augmenting availability in meeting businessmen from various sectors. Considering the enormous influence of the technology and the globalization, in today's world, the service presented by these association, either by lobbying or connecting, is shifted to online portals and websites such as EBay, Alibaba.com, Amazon.com as discussed before.

We can also consider the financial instruments such as future and forward markets as network economics. The stock exchange markets in which futures and forward contracts are arranged can be clustered under the network economics since they are also the markets in which two investors are matched according to their short/long positions in the markets.

Technological developments have helped people for the almost all areas of their lives. We can see technological devices like cell phones; computers etc in all around the world and people are using and enjoying while using them. Namely, technology is making the world a better place. So, it is expected that the technology would make the business interactions better too. As I argued before, because of the technological developments, we are able to get a lot of things that we could not get before. The technological developments increased our quality of life and this is same in almost all areas of our lives.

We can see business people can make lots of their work without going to their office. Even they sometimes just use their cell phones to make some of their responsibilities. So, the interactions in the business life have become very easy and this is a good thing to increase the business interactions too. In the business life communication is very important and now it is very easy to communicate with the people now. These all are the results of the technology. I am going to focus on this subject in detailed after. I want to state in here that there is a strong relationship between the technology and network economics.

5. CASE STUDY AND E-COMMERCE

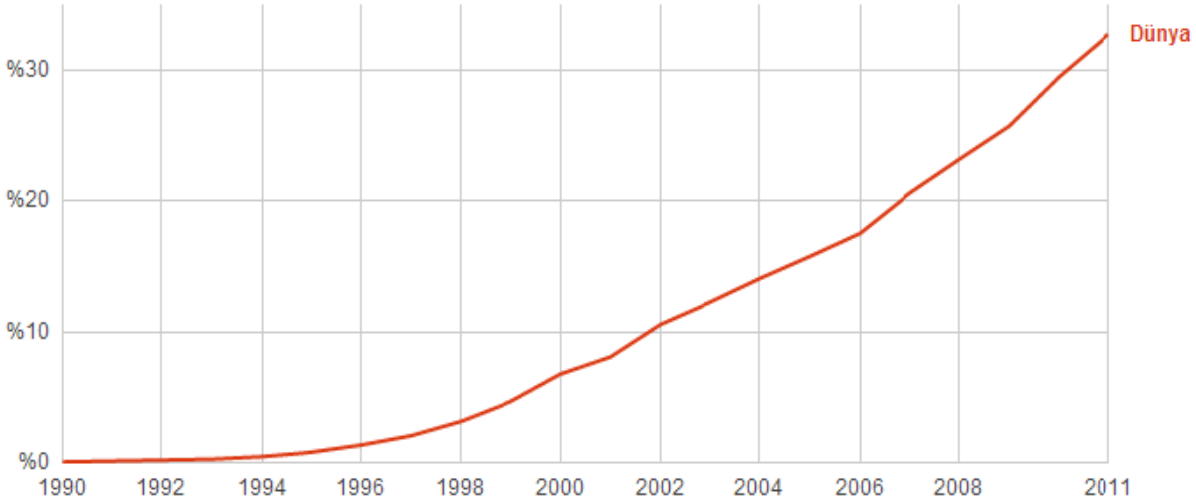
In this part I am going to explain the real life examples of network economics. I am going to start with the examples from the world and then we are going to go on from the real examples of Turkey. On the other hand, before real life cases I am going to start with the relationship between network economics and digital revaluation and network economics and globalization. The logic behind the explaining globalization and digital revaluation is that, I am considering online economic networks and digital revaluation and globalization are the key factors of online services.

5.1. Network Economy and Digital Revolution

As I said before I can give the definition of network economics like this; network economics can be described as any network in which a business entity enjoys the side benefits of the increasing number of people using the services of that business. All kind of business association may be considered under the network economics due to its augmenting availability in meeting businessmen from various sectors. On the other hand, we can also make some definitions of digital revaluation: "The Digital Revolution, also sometimes called the third industrial revolution, is the changefrom analog mechanical and electronic technology to digital technology that has taken place since about 1980 and continues to the present day. Implicitly, the term also refers to the sweeping changes brought about by digital computing and communicationtechnology during the latter half of the 20th century."[31]Today we live on the top of the digital revoluation. Communication and internet technology are at the highest level have ever been. This shows the importance of the effect of the digital age on the network economics. In fact, we can see the influence of the digital age not only the network economics but also on all over the world. Below I want to introduce the increase of the internet usage. We see on the graph the sharp increase and it is also an accelerating increase. This is very important to see the influence of the internet using and digital revaluation.

[31] http://history.sandiego.edu

Graph 1: The world population that use internet in the years



Source:*http://gbr.pepperdine.edu/wp-content/uploads/2011/11/World-Internet-Users.jpg*

We see on the graph that more than thirty percent of the world population is using internet until 2011. It is expected that more than fifty percent of world population are going to use internet. On the other hand, if we think the developing countries the ratio would be much higher. We can also think the projections of Turkey but it would be better if we think this in the next parts. Now I am going to focus on mobile phone usage of the world.

I think as another key factor is mobile phone usage in the world for the social networking. I think smart phone usage as a better factor to see the social networking factor that's why the quality of the communication is better in the smart phones. We know that the number of mobile phone on the world is going to exceed the world population by 2014 but as I said before I think that smart phone usage is a better key factor to understand the level of social network economics.

Table 3: Smart phone usage ratios by regions in years

Smartphone User Penetration Worldwide, by Region and Country, 2010-2016

% of mobile phone users

	2010	2011	2012	2013	2014	2015	2016
North America	**27.1%**	**39.1%**	**47.5%**	**55.1%**	**62.0%**	**68.0%**	**73.0%**
—US	26.9%	39.2%	47.7%	55.5%	62.5%	68.8%	74.1%
—Canada	29.0%	38.0%	46.0%	51.0%	56.5%	59.5%	62.0%
Western Europe	**15.5%**	**24.0%**	**31.8%**	**41.6%**	**52.4%**	**63.1%**	**71.2%**
—UK	20.0%	30.0%	36.8%	45.5%	55.0%	66.0%	78.0%
—France	17.0%	24.5%	33.0%	45.0%	58.0%	66.0%	72.0%
—Italy	13.0%	24.0%	31.4%	41.0%	50.9%	61.0%	66.5%
—Spain	13.0%	20.0%	28.0%	38.0%	50.0%	61.0%	71.0%
—Germany	10.0%	18.5%	27.0%	36.0%	46.0%	58.8%	67.0%
—Other	18.9%	26.3%	34.0%	43.6%	54.5%	65.3%	72.9%
Eastern Europe	**11.6%**	**16.9%**	**26.3%**	**36.3%**	**47.9%**	**56.7%**	**64.8%**
—Russia	11.0%	15.0%	25.0%	35.0%	47.0%	55.0%	63.0%
—Other	11.8%	17.9%	27.0%	36.9%	48.4%	57.5%	65.7%
Latin America	**5.4%**	**14.9%**	**23.1%**	**31.4%**	**39.2%**	**47.4%**	**53.9%**
—Brazil	6.5%	19.0%	29.0%	36.5%	46.0%	55.0%	61.0%
—Mexico	6.0%	15.0%	24.0%	33.0%	40.0%	48.0%	55.0%
—Argentina	8.0%	17.0%	23.0%	29.0%	35.0%	41.0%	45.0%
—Other	4.1%	11.8%	18.7%	27.6%	34.5%	42.4%	49.3%
Asia-Pacific	**8.3%**	**14.5%**	**22.3%**	**28.5%**	**33.2%**	**36.1%**	**38.6%**
—South Korea	18.0%	45.0%	60.0%	73.0%	81.0%	83.0%	84.0%
—Australia	24.0%	40.0%	53.0%	66.0%	76.0%	78.0%	79.0%
—Japan	6.5%	18.0%	33.0%	49.0%	70.0%	78.0%	83.0%
—China*	13.0%	19.0%	27.0%	33.0%	37.0%	40.0%	43.0%
—Indonesia	4.0%	9.0%	16.0%	24.0%	34.0%	40.0%	47.0%
—India	3.0%	8.0%	16.0%	21.0%	23.0%	25.0%	26.0%
—Other	5.6%	9.9%	15.1%	19.9%	24.2%	26.9%	29.0%
Middle East & Africa	**3.0%**	**7.3%**	**13.0%**	**19.3%**	**23.9%**	**26.6%**	**29.2%**
Worldwide	**9.7%**	**16.5%**	**24.0%**	**31.0%**	**37.0%**	**41.4%**	**45.0%**

*Note: smartphone users are individuals of any age who own at least one smartphone and use the smartphone(s) at least once per month; *excludes Hong Kong*

Source: eMarketer, April 2012

139247 www.eMarketer.com

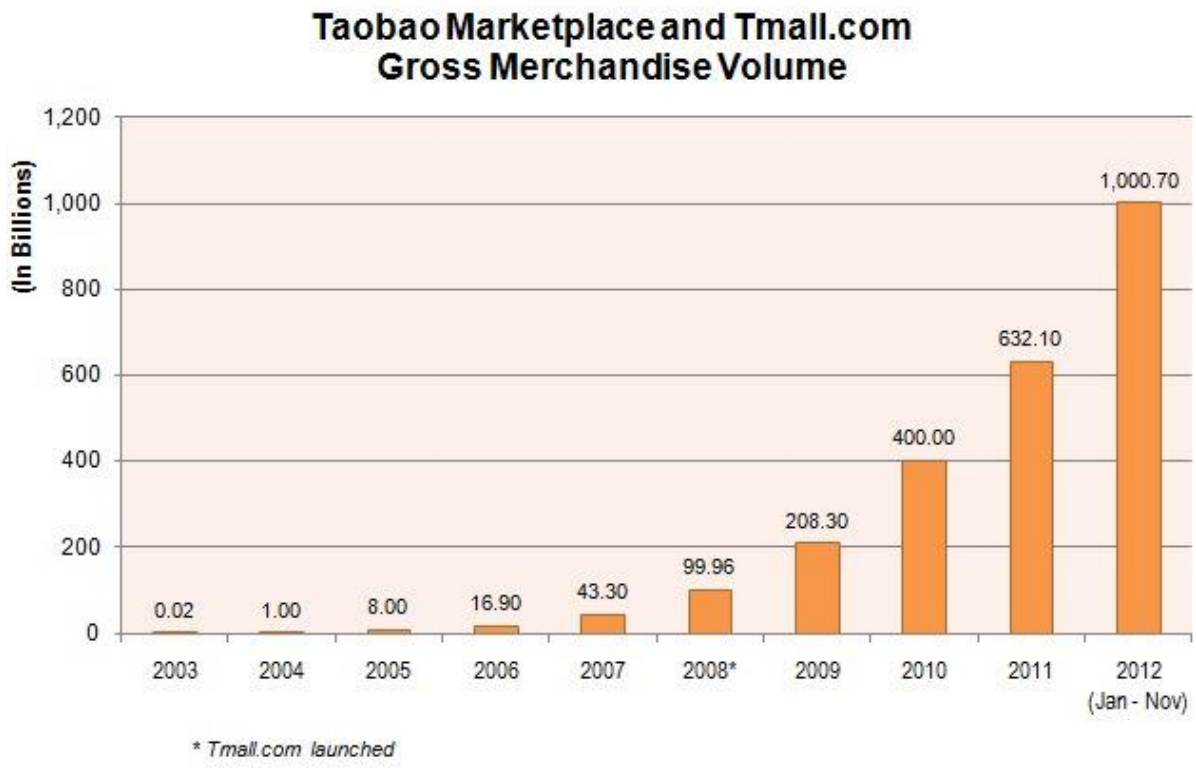
Source:www.eMarketer.com

We see in the table that almost half of the world population is going to be using smart phone on the world by 2016. On the other hand, it is very normal that this ratio is expected to be higher in the developed countries.

I think e-commerce is the top of the digital revolution. It is also an application of digitalization and it is also depended on other factors. If we think about the e-commerce we have to think economy and technology together. This takes us to think about network economics, because we are considering the economic transactions and

using a big network like internet. The graph below shows how the e-commerce increasing on the world.

Graph 2: The sales volume of Alibaba.com



Source:http://www.alizila.com/sites/default/files/Taobao%20Tmall%20GMV.jpg

"Chinese e-commerce giant Alibaba sold one trillion RMB worth of goods in 2012, the company announced today. That's $157 billion U.S. in gross merchandise volume (GMV), which easily surpasses U.S e-commerce giants Amazon and Ebay combined.In fact, Alibaba chairman Jack Ma said only two companies have ever recorded annual transaction volumes at this level: Wal-Mart and Alibaba."[32]

We see above the graph and given information that, the e commerce volume is increasing enormously on the world. We can accept Alibaba.com as a reference because it is a Chinese website and China has highest records on the world. So, these

[32] www.Tmall.com

numbers are a little bit higher levels than the world average but it is good to see these numbers to understand the sharp increase of the world e-commerce volume. Trade transactions from an only website exceeded one trillion dollars in 2012 and this number is higher than total GDP of Turkey. How can we explain this?

5.2. Network Economy and Globalization

Globalization is the process of international integration arising from the interchange of world views, products, ideas, and other aspects of culture. Put in simple terms, globalization refers to processes that promote world-wide exchanges of national and cultural resources.

Advances in transportation and telecommunications infrastructure, including the rise of the Internet, are major factors in globalization, generating further interdependence of economic and cultural activities. In fact the globalization is a very general term. It includes all parts of the life of the people in the world. Of course there are lots of different definitions of globalization and globalization has different components. For example;The journalist Thomas L. Friedman popularized the term "flat world", arguing that globalized trade, outsourcing, supply-chaining, and political forces had permanently changed the world, for better and worse. He asserted that the pace of globalization was quickening and that its impact on business organization and practice would continue to grow. The globalization of course has also a lot of consequences. Ithink social and economic networking facilities are consequences of globalization. I can give a lot of consequences of globalization and Ithink the flat world makes a lot of things easier and these effects of globalization changed the world into a very different place. The most important consequence of globalization is that, it made the interactions among people much easier and because of these interactions special and economic lives of people developed. The developed

interactions among people increased the business opportunities and this is interested in network economics. Today we can think the world as a very big network and all parts of the world have business interactions in each other. This new world everything is very different and these differences are the results of globalization including network economics.

5.3 Harley Davidson/Ebay and Alibaba.com Case Studies

In this part I am going to analyze Harley Davidson, Ebay and Alibaba.com cases as the examples of social economic networks for a deeper understanding of network economics. And in the final of this part I am going to give two real case studies about this network economic subject.

5.3.1. Harley Davidson Case

I can give Harley Davidson case very suitable to be understood social and economic network. Firstly, the history of the company started like this: ‘’In 1905 Harley-Davidson wins its first race and hires its first employee. Three years later, in 1908, Harley-Davidson sold the first motorcycle to be used in police service to the Detroit Police Department.”[33] We understood from here that, this company is very old and experienced all parts of technological developments etc. So, since the company is experienced for almost aspects of technology, management skills and communication skills it is very normal to expect from the company to develop a very useful social and economic network. We can introduce this social and economic network as “Harley Owners Group”.

“Harley has always tried to pull fans to its own community – HOGS. HOG is the ‘soul’ of Harley Davidson; a bustling community of HD fans; of people who eat, drink and sleep Harley! From participating in national rallies to getting access to HOG magazine, there are many benefits of being an HOG member. The Eventssection keeps the members posted about all upcoming Harley events. And then there are Local Chapters that let you connect with your local Harley buddies. So, it’s all about bringing Harley fans together and sharing experiences. And with fans evangelizing on a community like this, it helps a lot with word-of-mouth publicity.”[34] By doing this, Harley is not only selling its new products but also creating a social network based on economical reasons. In fact it is also a very good marketing strategy. Since the primary purpose of any company is to maximize its profit Harley has a good way to make its purpose true.

[33] www.wickedleo.com
[34] www.wickedleo.com

5.3.2 Ebay Case

In this part I want to introduce a website, Ebay, as a very important economic network. "Not inside one company, anyway. More than a corporation, Ebay is a nexus of economic activity, a new and vibrant hub for global commerce. As much as anything, this commercial force is just what Whitman said: It's the Ebay economy."[35]as the Whitman said, with the increase of the globalization, technology and communication we live in a very different world now. People started to buy everything from the internet by using websites with some clicks other than going to shops. In fact, this is a very important revolution for the world. The structure of the world has been changing day by day and we are in difficulties to follow these changes. "It began as trading site for nerds, the newly jobless, and bored homebound parents to sell subprime goods: collectibles and attic trash. But it quickly grew into a teeming metropolis of 30 million, with its own laws and norms, such as a feedback system in which buyers and sellers rate each other on each transaction. When that wasn't quite enough, eBay formed its own police force to patrol the listings for fraud and kick out offenders." This social and economic revolution is not only changing the world it also sets its own rules on the world. This social based economic revolution is taking the world very different areas and no one can guess what the next step will be. Before ten years if someone came and said that these changes were going to be happen in ten years we would think this man is the most stupid person of the world. However, we live in a very different world now and do not know what will be in ten years. Now let's see how the Ebay economy is growing."Ebay's deft management is apparent in its financials. Last year, profits rocketed 176%, to $250 million. Net sales, from transaction fees on $15 billion in gross revenues, hit $1.2

[35] www.ebay.about.com

billion. In the second quarter, revenues shot up 91% from a year ago, to $509 million. It now looks as if Whitman's forecast two years ago that eBay would grow to $3 billion in net revenues by 2005 -- derided at the time as a stretch -- will be met easily, barring an unexpected slowdown. That kind of growth has pushed Ebay's stock into the stratosphere, with shares rising 47% from the start of the year, to $102.As the Ebay economy expands, managing it could get a lot tougher. The move into the mainstream, in particular, poses thorny challenges. It not only means balancing the needs of big corporate vendors with those of small fry -- no easy task -- but also remodeling Ebay to attract millions of newcomers..”[36]We see in here a company that is growing with an unimaginable increase rates. In fact, it is very clear that internet based social and economic networks like Ebay will go on to increase and they will go on to change the world I can finish the Ebay case like this: “Ask an analyst, a seller, a partner, and they all have different forecasts for Ebay's future: the world's biggest mall, the Windows of e-commerce, even the next Wal-Mart. Whitman professes not to know. "We don't actually control this," she admits. "We are not building this company by ourselves. We have a unique partner -- millions of people.”[37]

[36]www.ebay.about.com
[37] www.ebay.about.com

5.3.3. Alibaba.com Case

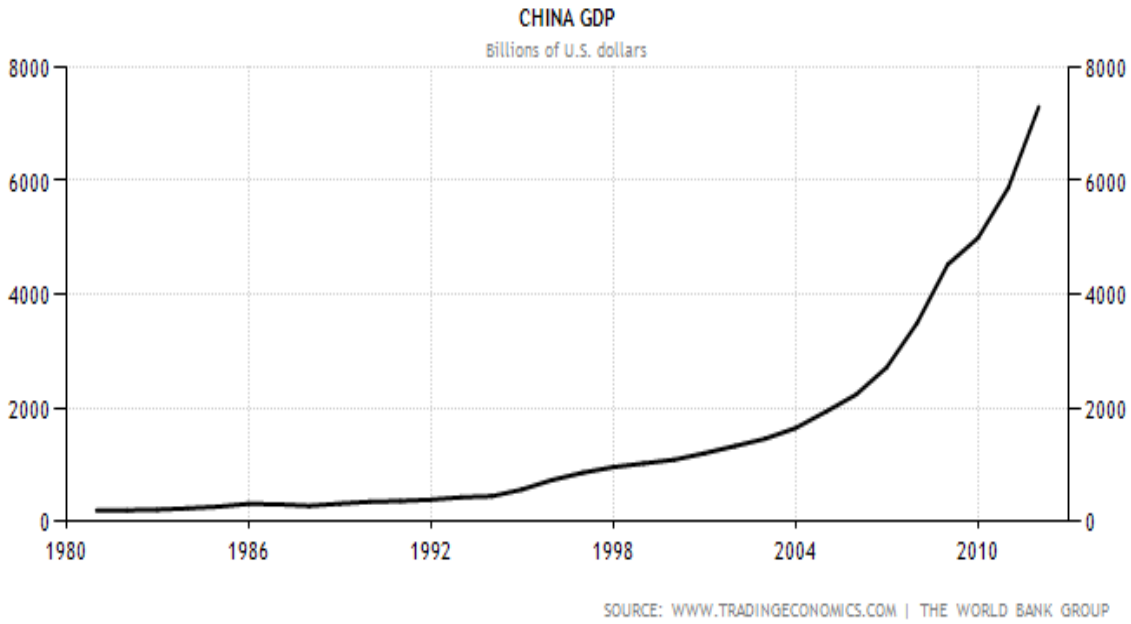
In this part I want to introduce a very special example for network economy. We know very well that Chinese economy is the most rapidly growing economy of the world and it is very normal that business interactions are also growing very fast with China. Then, there has to be a technologic and economic based network that can control and manage these economic facilities. So, we have Alibaba.com that solves this communication and technology problem of Chinese network economy. "Alibaba Group is a family of internet-based businesses which makes it easy for anyone to buy or sell online anywhere in the world. Since its inception, it has developed leading businesses in consumer e-commerce, online payment, business-to-business marketplaces and cloud computing, reaching Internet users in more than 240 countries and regions. Alibaba Group consists of 25 business units and is focused on fostering the development of an open, collaborative and prosperous e-commerce ecosystem." [38]Alibaba.com is a very fast and technologic network that can manage business facilities through a network and this is what actually is when we say what the network economy is. There is a network and there are business interactions through that network.

We also know that e-commerce is a very new concept for the world. It does not a history of twenty years that's why the conditions of the world were not enough for e commerce before twenty years. "Alibaba Group was founded in 1999 by 18 people led by Jack Ma, a former English teacher from Hangzhou, China who has aspired to help make the internet accessible, trustworthy and beneficial for everyone. The privately held Alibaba Group, including its affiliated entities, employs more than

[38] news.alibaba.com

24,000 people in some 70 cities in Greater China, India, Japan, Korea, the United Kingdom and the United States."[39]

Graph 3: Total GDP of China in years



Source:www.tradingeconomics.com

In this graph we can see the trend of Chinese economic growth. We also see very well that there is a sharp increasing trend after 1998 and we know that Alibaba.com was established 1999 and today it has a trade volume of more than one trillion dollars. We have to state the importance of growing and changing structure of e-commerce and network economy on the fast growing Chinese economy. Since Chinese economy is the most popular one in the world today we should consider on this very well. By doing this we can understand the network economy and business interactions on the network with this very special case. "Alibaba.com is a business to business e-commerce company. Alibaba's primary business is to serve as a directory of Chineese manufacturers connecting them to other companies around the world

[39]www.news.alibaba.com

looking for suppliers. According to iResearch, it was the largest online business to business company in China in 2006 based on the number of registered users and market share in China by revenue.They operate two marketplaces; the first is an international marketplace based in English tailored to global importers and exporters in China; the second is a Chinese marketplace that focuses on suppliers and buyers trading domestically in China."[40] In fact, we understand from here that, everything is based on a very simple economic reality and a very known logical truth. The logic is that, find the cheapest offer to buy and find the highest price to sell. By doing this you need a lot of offers to buy or sell so you need a network to get these offers. The economic reality is the economies of scale effect. You can get more money if you sell your product until a certain quantity. If you sell your products until that point you can earn more money. So you have to find a quantity point that maximizes your profit. Namely, you need to sell your products more. If you need to sell more products you need a network again to get customers. The logic behind network economy is that and Alibaba.com and Chinese economy are very good examples that is including the logic of network economy.

[40] www.crunchbase.com

5.3.4. Two Short Case Studies

We know that Network Economics have a very important role in all of our lifes. And it also shows the big increase in humans lifes. We can see that Network Economics is the key concept in last decades. Our society is consumption society. Before the Network Economics increase people buy goods or services by face to face. They had go to shops and buy their needs. After Network Economics is the key element in society, people start to buy goods or servıces or their needs in websites and online. This kind of shopping causes some facts like positive and negative. If we want to talk about the positive effects; the important one is people can not spent too much time for to buy the things. It causes people to save their time . Other positive effect is people can buy goods or services cheaper than they buy this things from shops. The reason of this: in the markets sellers pay rents, electricity, taxes and something like this. On the other hand, seller of the websites can not pay rents, electricity or taxes as like as the real shops. There are lots of other positive effects but if we write it down it can be more than pages. Lets give the examples of the negative effects. The most important one is that if we choose some goods and services from internet and after we can receive we can see that the good or services are different than on the web pages. If we look at the human side we can see that the Network Economics causes unemployment. And this also effects their daily lifes.

Because of Network economics people start to earn their money on a simple way. Also it is not very easy but easier than to rent a shop and sell goods or services. Now because of the Network economics; sellers can buy some websites and rent storages and than they make an agreement from transportation companies then they start to sell goods and services. In thıs case, they don’t have to pay lots of taxes and

rents. This is cheaper than to sell goods in real shops. And also the easy way to make people to know about this websites are the links on the internet. I want to give to short examples about this subject.

Fırst story is about a website that sell the babies goods. This website is my cousinS website. She starts to make this website about a year ago. In the first step she can not think that will be good. She first starts with the open an account on facebook. And she told all her friends on the facebook. And her friends liked this account and there is like 300-400 people when she first starts. And we really shocked because people start to call her and they tell they want to buy some goods. When she saw that demands of people increase she decided to open to a website. Than she opened website and she started to take demands with this website. And when we look at her customers after 4-5 months is about 2500-3000 people. It was really unbelieavable for me and her and also our family. Because when she first starts we do not really think that the result are like this. The result is also about the Network Economics. We can see the increse of social and network economics in this example. And now she quited her job. And she just take care about her websites. And also her mother, my mother and one more people help her to give her goods and services. And there are aproximately 10000 people on her brands facebook profile. And she also created 2 new brands and she also connected this brands with her old brand. And it continues to increase day by day. And she uses her home like storage. So, she does not have to pay any extra rents from about this. I think that after 5-6 months she has to agree with some people to organize her orders.

Second case story is about a transportation firm. Which has got a big income all around the world. They have lots of customers and this customers order some goods and services everyday. And they use some key networking firms to make an

order. As we want to talk about this firms the most choosen ones are: amazon.com, e-bay,alibaba.com,fiftyone global e-commerce,net-a porter and some others. Amazon.com and e-bay sold all kind of goods. Something like clothes,dvds,books,accesories etc. In this firms if the custom limits about the shipment of this sites on the limit, this transportation firm can make a basic clearence about this shipments. And this increases the revenue of this firm and also custom of Turkey. Firm gets some warehouse fees and also custom get some taxes about this kind of shipments. Fiftyone global e-commerce and net-a porter sell the goods like clothes and shoes. And the fist custom clearence can be done this kinds of shipments too. However, alibaba.com sells the goods like some car parts,or machine parts and they also wholesale this goods. And this can be a problem. Because if some wholesale goods bought from this firms for a person, Turkish custom rule says that; if some person buy goods from abroad the inside of the package has to be personal usement. But if some person bought some goods like 100 phone cases, this clearence process can not be done for some custom broker firms or this transportation firms. Because in this view custom officers and custom think that this person sell this 100 phone cases and they got revenue about this cases. So that, they do not give a permission them to get this shipments from custom.

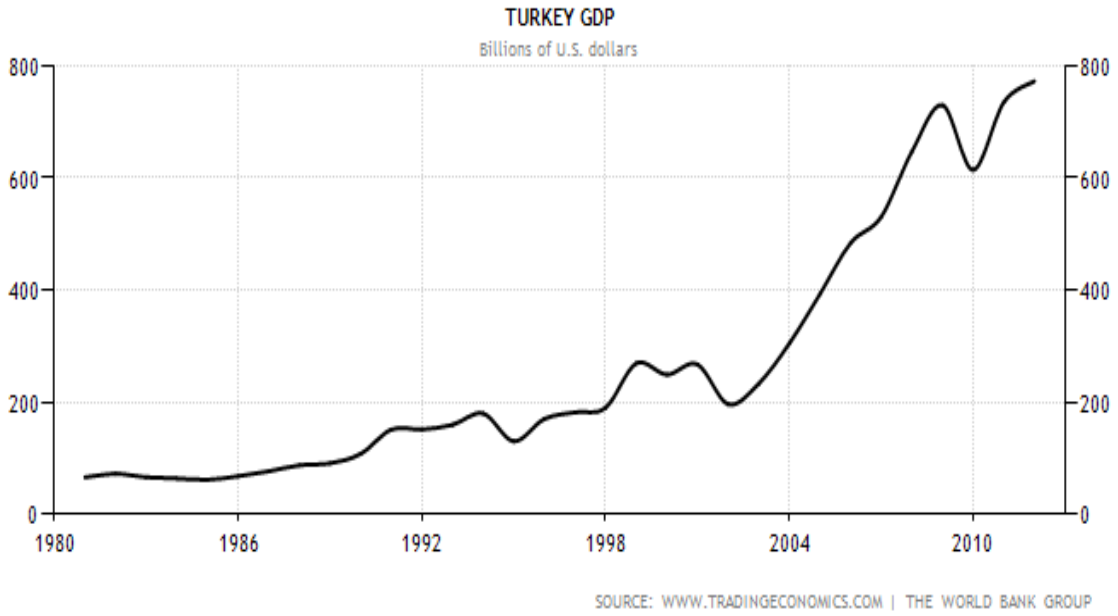
This is the fact that internet and network economics make the transportation firms (not just like this one that we talk about) earn some money and also increase their revenues. In that area they work with more and more people something like call centre person or custom broker agencies. And this increase the Turkey's revenue too. On the other hand, this has also cause that the custom get some revenues about this kind of network shopping (by custom taxes).

All of the cases that ı mentioned before increases the revenue of the firms and this also causes Turkish GDP increase. This is all about the fact of network economics. And ı think it continues to increse day by day.

5.4. The Effects of Networking and Technology in Turkey E-commerce Market

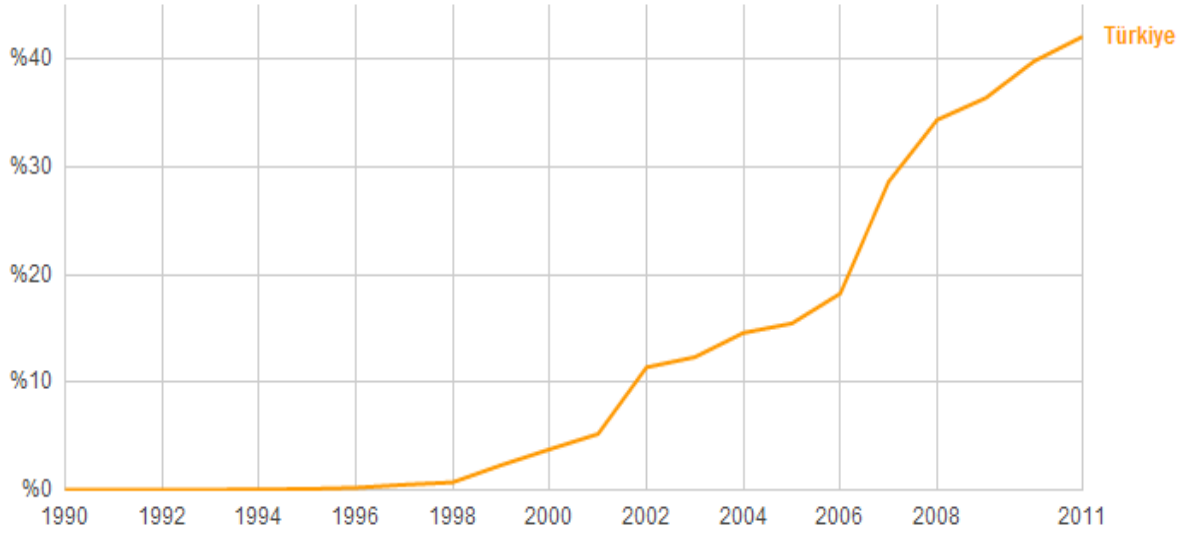
As we know very well Turkey is andevelopingcountry with a huge increase rate. Turkey started to become best growing economies for last decades. Even in the times of the crises for the world, Turkey was in a relatively better condition. By thinking from this point of view we expect from Turkey to show same success in the other areas such as development on technology, communication and socialization. Below we can see the change on the GDP (Gross Domestic Product) of Turkey in years. The graph shows that Turkey has a nice trend to increase the total GDP and this is very good for the economy of Turkey. The effects of the economic growth can also be seen in other areas, because today almost everything on the world is based on the economy.

Graph 4: GDP of Turkey



Source:www.tradingeconomics.com

Graph 5: Internet usage for total population of Turkey in years

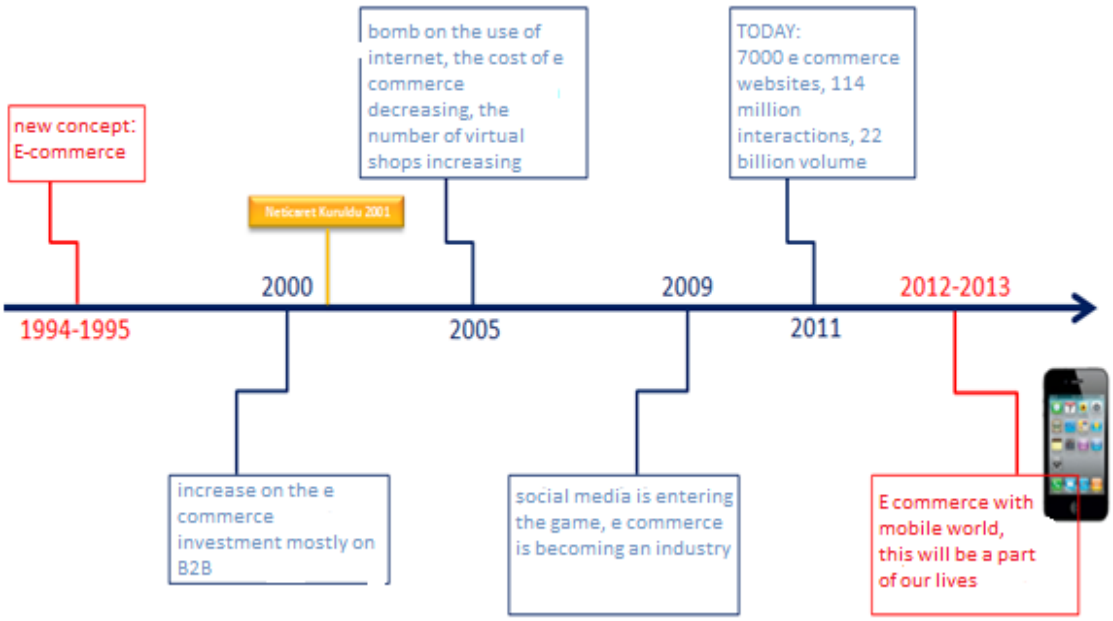


Source: www.worldbank.org

In this graph we see that more than forty percent of total population of Turkey has started to use internet until 2011. This shows that Turkey, as a developing country, has higher internet usage ratios than the world average. We can understand from here that, social and economic networking facilities are expected to be in a better condition than the world average.

With the development of the economy and the increasing internet and communication usage the conditions are starting to be OK for the e-commerce in Turkey. The figure below shows the development of the e-commerce in Turkey. We see on the figure that the e-commerce journey of Turkey started at 1994. In fact it is not an early date. However, if we think the conditions of the technology we can understand why it is not a late date. On the other hand, the important point in here is that, it started very late but increased very fast in Turkey. Today Turkey has a very good numbers on e-commerce.

Figure 7: The journey of e-commerce in Turkey

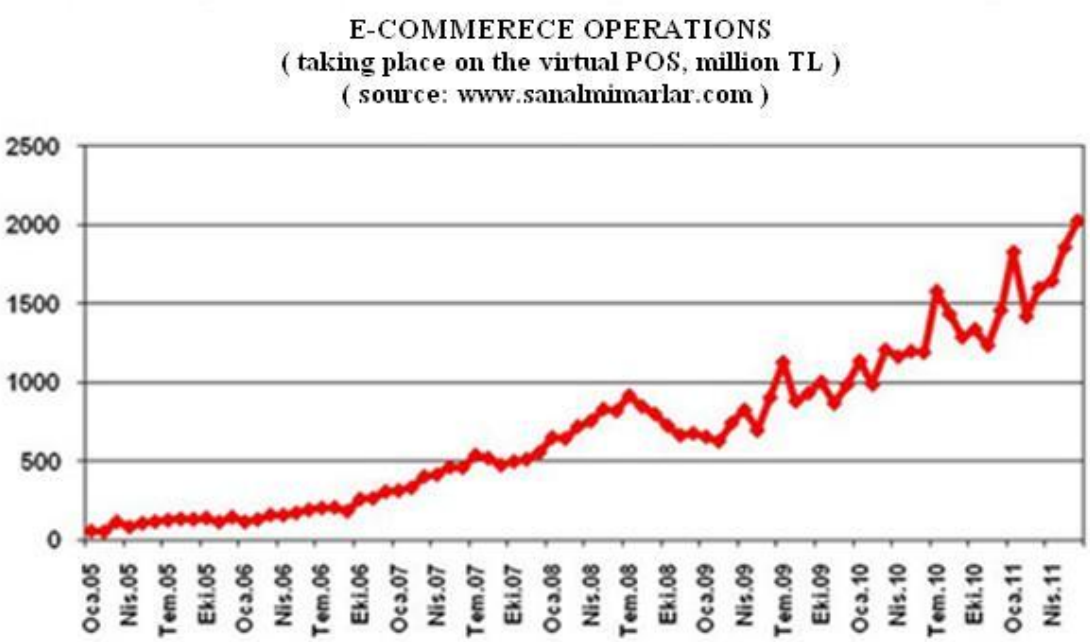


Source: www.ab.org.tr

Wee see in this figure that the history of e-commerce is in a very short period of time. E-commerce does not have a long history but it has a big impact today. We have summarized the reasons of them growing economy, developing technology and rapid globalization. These are the reasons of fast growing e-commerce and business interactions and they are also the important reasons of network economy in Turkey.

In the graph below we can see the increase on the e-commerce volume in Turkey.

Graph 6: E-commerce volume in Turkey



Source:http://www.veteknoloji.com/resimler/detay2010/e-ticaret-islemleri-1.jpg

We can understand from the graph above e-commerce volume of Turkey increasing very fast in recent years. It is almost three billion TL(Turkish Lira) per month now. This is of course a very good number for now. On the other hand, we have to think the factors that are the reasons of this success. We can think the first reason for this is the fast economic growth of Turkey. We saw on another graph above that Turkey is a country that has a fast GDP increase. We can think as the second factor that is affecting this e-commerce volume is the increase on the internet usage and development on communication technology that are the parts of digital revolution. We also saw on the graph above that the internet usage of Turkey is above the world average and increasing very fast. These two factors are the primary factor of the access of the e-commerce. We can also think globalization as another important factor affecting e-commerce.

We emphasized above e-commerce as the highest level of social network economics. If we think the definition of the network economics we understand that this is true and by considering the e-commerce numbers of Turkey with this definition we can get the conclusion that Turkey is increasing the level of the network economics and enjoying the effects of the network economics every day.

CONCLUSION

We live in a very different world today. It is very easy to do everything before ten years. Even, a new thing before one year can be an old thing today. Namely, this world has been changing every day. People should consider lots of different concepts and be aware of the changes around to be ahead of his time.

When we think the network economy, firstly we have to think a network. A network can be a group of people that are interacting in each other or a group of counties or a group of companies. If there is a network of something than there are interactions among them. These interactions can be everything but we are mostly interested in business interactions. There is also something makes creating a network easier. I thought the globalization as the most important impact that increases the probability of creating a network. The second part of the network economy is the economic interactions. Today we can explain almost everything with economic reasons. We can argue this concept in all of the interactions. It does not matter if these interactions are among people, countries or companies. We know that the world economy is growing everyday and this increases the volume of the global economic interactions. So we can argue on two concepts when we try to explain the network economy. If we think them both together then we get very different results. I can summarize these like this. The economic interactions through a network have social results. The parts of these economic interactions also are the parts of a social interaction. So we have a social and economic network or we can say an economic interaction make the parts of the interactions more social and makes the interaction also a social interaction.

Consequently we have to say that this is changing the world everyday and developing communication technologies and economic interactions are the most important results of network economy. We can also think globalization as a very general term but we cannot obey its huge influence on not only network economy but also on all parts of our lives. We can also feel the effects of globalization on network economy that's why for a big network the primary condition is the interactions and globalization has a capacity to increase and influence the interactions in all areas. So, it is to say that the network economy is going to grow up and we are going to see a lot of different networks around very soon in addition to current networks such as Alibaba.com and Ebay.com. I explained Ebay.com in details to show what the impacts of network economy are and what the advantages are of network economy to the normal economic life. The very popular new trend e-commerce is thought as the result of network economy and we can easily see its results in our normal lives. Thus, we have to be ready for the coming developments for the network economy and for the world.

We saw in Alibaba.com case that e-commerce volume is increasing with a breathtaking velocity. This increase is taking the world a very different place. Today, people started to use internet as a part of their lives. We argued about the effects that are the reasons for that but the important things are the results. People are using their iPhones, Samsungs and some other smart phones to manage their lives. We started to see they are using their smart phones to manage their business lives. For example, as an individual of society I am using my Iphone to manage everything in my life I am using Whatsapp, facebook to communicate with my friends; I am sending and receiving my e mails etc. On the other hand, I am also giving orders from the internet if I want to eat something through yemeksepeti.com. since I am not a

businesswomanyet, I am not using it to manage my business relations, if I had I know I could also do it easily from with only my mobile phone. It was an unbelievable thing before ten years but today we are using these and enjoying very much. We can easily state that this new thing is making our lives better than before and we are all happy to live this new world.

The most important problem of the business world was to reach the counterparties and communicate with each other. The network economy effect has solved these by the e-commerce. In the new world we can see the effects of these simplicities on the business world too. A new product for example Samsung galaxy S4 or iphone 6,7 etc. can be introduced and sold in all over the world in an only one day. Everybody on the world knows that there is a new product even if they cannot buy it. This is a very nice thing for the business world. Furthermore, people can buy this new product through internet without going a shop. This new situation also reduces the prices of the new product, because a lot of intermediaries are eliminated on this way. We can also see the economies of scale effect in this situation. Apple can sell its new product cheaper because they do not need intermediaries and they are selling millions of mobile phones. So, they can earn a lot of money even if they sell their products cheaper. So, if we think on this way we can say that network economy effect also changing the rules of the business world. The consumers can buy easier and cheaper and the producer can sell easier and cheaper. This is completely a win win situation. Our quality of life is also increasing and we live a better world day by day. These all are the results of mostly globalization and developing technology as we argued above. We can also think the e- commerce and network economy also a result of these things. The new world is very nice and becoming better whatever the

results are. We as the people of the world should care and enjoy living in this nice world.

REFERENCES

Acemoglu, Daron and Asu Ozdaglar, *Lectures 17 and 18: Network Effects*. MIT. November 16-18, 2009. http://economics.mit.edu/files/4831(1 February 2013)

Application of Control Theory. Management of Engineering and Technology, vol:1 Spain. 2001.

Centola, Damon and Macy, Michael.*Complex Contagions and the Weakness of Long Ties*. University of Chicago, AJS, vol: 113(3): 702-734. 2007.

Chopra, Sunil and Peter Meindl.*Supply Chain Management: Strategy, Planning, Operation.* Prentice Hall, New Jersey, 2001.

Chopra, Sunil. *Designing the Distribution Network in a Supply Chain*. Northwestern University. 2001.

Corcoran, M. , L. Datcher, and G. Duncan. *Information and Influence Networks in Labor Markets in Five Thousand American Families*. University of Michigan. vol:8, 1980.

De Arroyabe, J.C.F. Technological Networks as Complex Systems: Their Management by Galster, G.C., On the Nature of Neighborhood. Urban Studies, vol:38(12), 2111-2124.2001. Gastner et al. The Price of Anarchy in Transportation Networks: Efficiency and Optimality Control. 2008. http://arxiv.org/pdf/0712.1598.pdf(11 February 2013)

Genomic Analysis of Network Perturbations Center of Excellence in Genomic Science, Dana-Farber Cancer Institute, USA.http://cegs.dfci.harvard.edu/(21 February 2013)

Gerf, Vinton G., *Computer Networking: Global Infrastructure for the 21st Century*. 2007.http://homes.cs.washington.edu/~lazowska/cra/networks.html(2December 2012)

Jackson, Matthew and Alison Watts. *The Evolution of Social and Economic Networks*. Journal of Economic Theory, vol:106, p:265-295. 2002.

Jackson, Matthew. *Social and Economic Networks*. Princeton University Press, USA. 2003.

Johannes F. Knabe, Wegner, Katja, and Maria J. Schilstra. *Genetic Algorithms and Their Application to the Artificial Evolution of Genetic Regulatory Networks*. University of Hertfordshire. 2007. http://panmental.de/ICSBtut/(5 December 2012)

Khehra, Amarmeet. *Six Degrees of Separation: Human Web Theory*. April 6, 2010. http://amarmeet.blogspot.com/2010/04/six-degrees-of-separation-human-web.html(1 December 2012)

Lau D.L. and others. *Performance of Lifeline During the 1994 Northridge Earthquake*. CJCE vol: 22(2): 438–451. 1995.

Leitch, Danielle. *The Most Visited Website of 2012*. Social Media Today. January 6, 2012.

Liebowitz, S.J., and Stephen E. Margolis. *Network Externalities.* University of Dallas. November, 1998. http://www.utdallas.edu/~liebowit/palgrave/network.html). (21 December 2012)

Marx, Christian., *Economic Networks*. European History Online. October 18, 2012. http://www.ieg-ego.eu/en/threads/european-networks/economic-networks/christian-marx-economic-networks(16 December 2012)

Mobile Web, Apps Driving US Social Media Growth. December 17, 2012. http://www.marketingprofs.com/charts/2012/9672/mobile-web-apps-driving-us-social-media-growth(1January 2013)

Myers C.A. and G.P.Shultz. *The Dynamics of Labor Market*. Prentice Hall: New York, 1951.

Sharma, Amitabh. *An Introduction to Biological Networks*. Northeastern University. 2012. http://barabasilab.neu.edu/courses/phys5116/content/Class10_NetSci_2012/10_CLASS_2012_Biological_network.pdf(12 January 2013)

Sundararajan, Arun, *Network Effects.* New York University. 2006. http://oz.stern.nyu.edu/io/network.html(17 January 2013)

Surprise Hit on Pinterest. January 2, 2012. http://shahlabs.blogspot.com/ (12 January 2013)

Sutton,Chris. *Internet Began 35 Years Ago at UCLA with First Message Ever Sent Between Two Computers*. Internet Archiece Wayback Machine. 2004.

Catedra Orange, *Technological Networks: From the Internet to the Airport Network*. 2009. http://catedra-orange.upm.es/fileadmin/doc/Madrid_Networks09.pdf(10 February 2013)

Uzzi, B. *The Sources and Consequences of Embeddedness for the Economic Performance of Organizations: The Network Effect*. American Sociological Review, vol: 61: 674-698. 1996.

Weisbuch, G., A. Kirman, and D. Herreiner. *Market Organization*. Economica, vol: 110: 411-436. 2000.

http://www.wickedleo.com/2012/06/harley-davidsons-social-ride-full-throttle/ (21

April 2013)

http://news.alibaba.com/specials/aboutalibaba/aligroup/index.html (22 April 2013)

http://ebay.about.com/od/ebaylifestyle/a/el_history.htm(7 April 2013)

http://history.sandiego.edu/gen/recording/digital.html(13 March 2013)

http://ab.org.tr/ab13/sunum/27.pptx(5 April 2013)

www.worlldbank.org. (3 April 2013)

The GDP of Turkey, www.tradingeconomics.com(1 April 2013)

The information about Alibaba.com, http://www.crunchbase.com/company/alibaba (1 January 2013)