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YEDİTEPE UNIVERSITY

GRADUATE INSTITUTE OF SOCIAL SCIENCES

**THE EFFECTS OF INTERACTION DESIGN IN MOBILE PUBLISHING:
RESERARCH ON NEWSPAPER WEB PAGES COMPABILITY TO MOBILE
DEVICES**

by

Deniz AKÇAY

Supervisor

Associate Prof.Dr.Cem SÜTÇÜ

**Submitted to the Graduate Institute of Social Sciences
In partial fulfillment of the requirements for
Ph. D. of
Media Studies**

İSTANBUL, 2013



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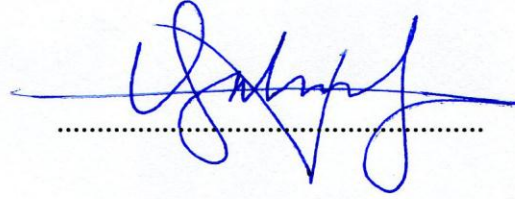
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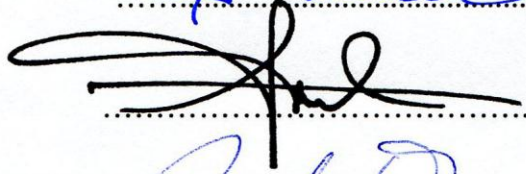
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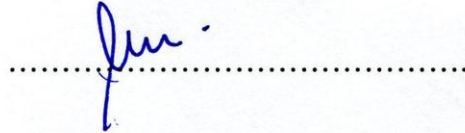
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LIST OF ABBREVIATIONS

3G	Third generation
GUI	Graphical user interface
HCI	Human-computer interaction
HSPA	High speed packet access
HTML5	Markup language
ICT	Information communication technology
iOS	Mobile operating system developed and distributed by Apple Inc.
ISO	International Organization for Standardization
IT	Information technology
OS	Operating system
PC	Personal computer
SMS	Short message services
TSI	Turkey Statistical Institute
US	United States
VCD	Visual Communication Design
WCAG	Web content accessibility guidelines

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ABSTRACT

In 21. century information technology is developing day by day. Especially information communication technology are used for sharing feelings and informations by people. Therefore information communication technologies (ICT) are so important for humanity. The major qualification of information communication technologies, especially of mobile ones, is making life easier that all information can be rapidly obtained through different sources. Thanks to the 3G technology, online newspapers have reached readers by mobile devices. In addition, divergent screen sizes, operating capacities, Internet connection speeds, information display styles and interface designs of mobile devices influence the way news is perceived by readers.

This dissertation has examined the compatibility of the web pages of newspapers with mobile devices in terms of interaction design. To this end, new communication environments, transformation of communication and interaction design in mobile publishing have been analyzed. In the research section of the study, the experiments made about this issue have been reviewed. Also, mobile communication experts from Hürriyet, Milliyet and Sabah have been interviewed. A survey designed about this issue was published on the Internet. Last of all, in order to observe users' individual experiences with mobile devices, the method of experimental design was implemented with a group of participants. Consequently, the standardization that should be applied to mobile interface design has been specified.

Key words: Mobile communication, 3G, Online newspaper, interface design, ICT, Mobil devices

ÖZET

21. yüzyılda teknoloji günden güne gelişmektedir Özellikle bilgi iletişim teknolojileriyle insanlar duygularını ve bilgilerini paylaşmaktadır. Bu nedenle ICT insanlar için çok önemlidir. Bilgi iletişim teknolojilerinin özellikle de mobil cihazların (akıllı telefonlar, tabletler gibi) en temel özelliği, tüm bilgilerin hızlı bir şekilde ve farklı kaynaklardan öğrenilebilmesidir. 3G teknolojisi sayesinde online gazeteler artık mobil cihazlar'dan okuyuculara ulaşmıştır. Bununla birlikte mobil cihazların birbirinden farklı ekran büyüklükleri, cihazların farklı işlem kapasiteleri, internet bağlantı hızları, bilgi gösterim biçimleri, arayüz tasarımları haberin okuyucu tarafından algılanma biçimini etkilemektedir.

Tez çalışmasında gazetelerin web sayfalarının mobil cihazlara uyumu etkileşim tasarımı çerçevesinde incelenmiştir. Buna göre New Communication Environment and Transformation of communication, Interaction Design in Mobile Publishing detaylı olarak araştırılmıştır. Çalışmanın araştırma bölümünde ise, bu konuda yapılan araştırmalar gözden geçirilmiştir. Ayrıca Hürriyet, Milliyet ve Sabah gazetelerin mobil iletişim uzmanlarıyla görüşmeler yapılmıştır. Bu konuyla ilgili hazırlanan anket internet üzerinden yayınlanmıştır. Son olarak kullanıcılarının mobil cihazlarla birebir deneyimlerini gözlemek amacıyla bir grup katılımcıya experimental design uygulanmıştır. Sonuç olarak, Mobil Arayüz tasarımında uygulanması gereken standardizasyonlar belirlenmiştir.

Anahtar Kelimeler: Mobil İletişim, 3G, Çevrimiçi Gazeteler, Arayüz Tasarımı, Bilgi İletişim Teknolojileri, Mobil Cihazlar

1. INTRODUCTION

Looking at evolution of societies from the past to present, development has largely shaped thinking and writing. Culture is simply individuals' way of life in society because it includes everything. The major contribution of communication, which shapes ideas of individuals and transmits them through writing, is development of parallel societies. This situation became possible with the invention of the printing press. McLuhan said that changing media tools are actually a phenomenon that changes societies and communities. Similarly Steinberg argued that the history of printing is an integral part of the general history of civilization (Steinberg, 1961, as cited in Eisenstein, 2005-5)

Consequently, the media and means to change society have led to development. Media tools that ensure the process of communication in society have three basic functions. First, it creates a community or a system of values that may affect the parties to report everything that is done for surveillance of the environment. Second, it develops a response to the environment to ensure relationship between community builders and to transmit the social heritage (Lasswell, 1948, as cited by, Mattelard, 2003:33). Development of media tools is taking shape along with technological progress. Rapid exchange of media technology has begun in 20th and the 21st centuries. Now computer has ceased to be a stable technological asset in itself but started to create a new cultural environment defined as the cyberculture in the current media landscape, and virtual culture (cyberculture) has created a new cultural environment. This new cultural environment, accompanied by the Internet, has been the greatest factor in achieving the instant audience.

Cooperation of the new media and ICT emerged with neoliberal policies, which determine the main characteristics of production and distribution today. Along with them, amidst globalization, information and communication technologies started to make their presence felt in societies. In this new communication environment, the concept of new economy, which depends on the availability of information, has arisen. Information processing, information processing technologies, consumption and production of symbols are the bases of this new economy defined as post-industrial. In this wholly new environment, it is necessary to create the individual's need for possessing mobile devices like mobile phones so that he/she can have access to information and can engage in activities like attending

social networks such as Facebook and Twitter. Possessing these technological devices is not a luxury of the modern life but a need now. The digital economy or the new economy also created a different economic field, depending on the need for immobile and mobile technologies, besides creating a new economic model like e-trade.

Newspapers, one form of the mass media, are a reliable source of news and information. Online newspapers' greatest difference from traditional ones is that the latter is a classical two-way communication medium. Replacing traditional newspapers entirely, online newspapers will determine the future. Accordingly, newspapers renew themselves quickly within the world of technology and re-position themselves as online newspapers. The page make-up plan of the conventional press included elements like *news texts, spots, captions, title arrangement, upper titles and subtitles, column articles, visual material arrangement, photographs, drawings, graphs and illustrations, caricatures and cartoons and white spaces*. In contemporary Internet journalism, these elements have been changed to videos and music, moving photographs, moving texts, latest news, comments and shares. In Internet journalism especially comments and shares have quite a large impact on changing or increasing the influence of news on the audience. Commonality between the old media and the new media is re-using forms and contents. Hypertext is an important feature of online news. News sharing, making comments on news and sending news through the Internet have been possible with hyper-textuality. Moreover, daily news and fresh news are very important for online news. Specific content elements for an online newspaper are News Stream, archives, and headlines. Online newspapers also develop web pages compatible with mobile devices. The mobile devices that operate in compliance with the Internet provide information for achieving the target audience as quickly as possible. As said by Marshall McLuhan, "medium is the message;" the information which is requested to be transferred to an online environment by mobile devices is as much as it is permitted by the screen size, operating capacity, Internet speed, the available browser, the application features, and the web page interface design of our mobile devices. For example, as a result of the introduction of applications like Facebook and Twitter to smart phones, news sharing occurs very rapidly. Thus, now newspapers have also started to develop their web pages versions that are compatible with mobile devices like smart phones and tabloids, in accordance with rapid developments in the mobile world. In the third section of the study, the issues of Web Page Compatibility of Mobile Devices, Developing Mobile Web

Content to User's Expectations, 3G Broadcasting Through Mobile Devices, Interface Design Applications on Mobile Devices and Their Content Compatibility of Mobile Devices, HTML5 technology for mobile devices, Comparison of Mobil Interface, Web Interface and GUI (Graphical User Interface) were examined.

Accordingly, within the framework of the research, reader's perspective needs to be explored in terms of human-machine interaction, just as done in the previous research about the development of the classic design of newspapers. The purpose of this research is to investigate compliance of newspapers' web pages with the new communications environment, particularly with mobile devices. This research will analyze human interaction with mobile devices and examine it in terms of design as shown in the figure1 below.

Three different methods, namely interviews, survey and experimental design, were used in the study. A number of executives in charge of mobile device applications in the dailies Hürriyet, Milliyet and Sabah were interviewed about the issues like readers' expectations from design, the targeted audience's expectations from mobile news contents, the limits to operating capacities of mobile devices, screen sizes of mobile devices, touch screen features of mobile devices, visual styles of online newspapers on mobile devices, readers' ability to share news by mobile device applications, information display types, web page design, display of news sources on mobile newspaper applications, readers' perceptions, comparison of the conventional and the new media and trends in the social media.

Also a survey was conducted with 393 Turkish Citizens over the Internet during August – September 2012. The population of the survey is Turkish citizens, and the sample is composed of Internet users. The main topics of the survey included daily news reading periods of the participants, their ability to read news by mobile devices, their ability to share news by mobile devices, the visuals used by online newspapers on mobile devices, navigation applied by online newspapers for mobile devices, touch screen features of mobile devices and operating capacities of mobile devices.

Another method used in the study is experimental design, which is usually preferred for studies about human-machine interaction. In the study, conducted with 7 students who

were randomly chosen from among those at Yeditepe University School of Communication Department of Visual Communication Design, the students were asked to read news on Android and iOS based tabloids and telephones by Hürriyet web, ihürriyet, Hürriyet android applications as well as by the News360 application so that it was possible to compare the same newspaper in different environments. The study, which was conducted with three people, two observers and one researcher, took around 3,5/4 hours and was recorded on video in order not to overlook anything. The main topics of the experimental design are reading news up to the end, resizing news, reading comments on news, ability to comment on news, sharing news in the social media, reading news from other sources, ability to contact with the author of news, sharing news by e-mail, access to news related visuals, archiving news and printing out news.

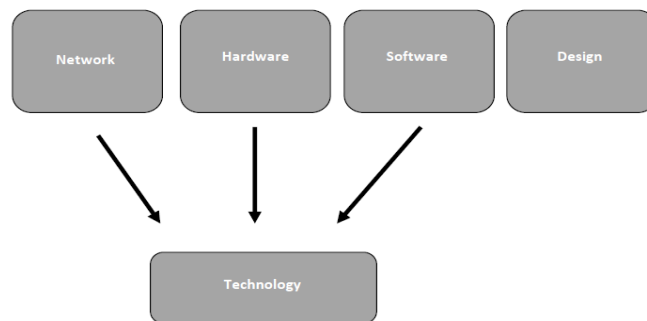


Figure 1. Technology and design

2. NEW COMMUNICATION ENVIROMENT AND TRANSFORMATION OF COMMUNICATION

From the past to present, mass communication tools provide users with an opportunity to hold an opinion about their social environment as a medium of exchange, and the information thereby gained directly change their perceptions. According to Eisenstein, investment in early pres and the book trade in various regions: labor conditions and social agitation among journeymen typographers: scholar printer dynasties and publication policies; censorship, privileges and the regulation of trade, special aspect of pamphleteering,propaganda and journalism;Professional authors patrons and publics;sociology of reading and the sociology of literature (Eisenstein, 2005:4-5).

Since the late 18th century, Western society has experienced five distinct eras or revolutions: the Industrial Revolution (beginning roughly in 1771), steam power (beginning in 1829), electricity (in 1875), oil (in 1908), and ICT (in progress)

(available on: http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2010-11.pdf)

Throughout the historical process, these time periods were characterized by the invention of the press in the 15th century, the invention of the telegraph in the 19th century and finally the invention of television depending on developments in photography and radio technology. Particularly development of the mass communication in the 19th century brought research about the impacts of media messages on society.

In the period ranging from the development of newspapers in parallel to the invention of the printing press, accepted as the milestone of mass media, to the achievement of a central position in communication by computer today, the cycle of communication has continuously created novel communication environments. This transformation is a process; consequently, transformation of communication always creates new communication mediums. *New Media Concept* is introduced today as almost all people now use the Internet and as the Web has emerged as an interactive environment. As all individuals gradually find an opportunity of access to the Internet, this concept has developed and become recognized, and the notion of the new media has acquired validity beside the conventional media. Settlement and recognition of this notion played a positive role for developing opportunities of access to the Internet by computers.

Actually, the new media environment has many components such as mobile phone, television and computer. Thus, people can connect to the Internet whenever they want, so they can talk to each other, or they can read daily news and they share thoughts about something, an article or a news item. This new interactive media environment is called social media. This situation brings with itself interactivity in media environments.

The study of new communication arrangements, including that of the new media, their use, and their audiences, should be focusing on emerging developments in new communication technologies. It requires to ask who and what should be analyzed in order to reach the target audience and to determine their needs as seen below in the Table 1. , developed by Sheizaf Rafaeli (Rafaeli,1988:112-113)

Table 1. Trends in the Study on New Communication Technologies

From the Study of.....	To the Study of....
What :complete interventions	Modifiable properties (variables)
Who: experienced and extensive users, expert consumers, innovators	Casual, average users, normal audiences
Wherefore: technologies' various and sundry (çeşitli) qualities: complexity, consistency (uyum), conciseness, cost, and so on	Qualities directly related to communication

If we examine the table of the trends in new communication technologies developed by Rafaelli, we realize the following: While it was only communication what was searched in the past, today the factors like measures that should be taken to maintain healthier communication, ways in which mobile technologies should be developed and should be formed have acquired importance.

Consumer is the answer to the questions of who uses communication technologies and who should be examined. In brief, merchants who used communication for trading purposes were the target audience in the past. Today communication technologies are used by everybody, and the target audience is the entire society beside those people.

The answer to the question about who uses communication technologies subject was previously consumers and merchants, shortly those who employed communication for a particular purpose as the targeted mass. However, today communication technologies are located for everybody and the targeted mass is all individuals who compose society besides those groups of people.

Uluç (2003) says that:

“Mass communication tools have attached people who live in a rural area to the world and allowed their communal and political participation.” (p. 94).

For example, the *Mümkünlü Village* television advertisement of TTNET emphasize that the Internet should be used even in villages. It shows a video about a farmer sitting on a plateau and connected to the Internet via his mobile phone and learning a product’s price. Consequently, he can have an opinion about which product is the most profitable (Figure 1).



Figure 2. The mümkünlü village television advertisement of TTNET emphasize that the internet should be used even in villages

2.1. Modernism, Postmodernism and Virtuality in the Age of Computers

Culture can be defined as a result that emerges throughout historical process along with change in people’s life styles, activities and dynamics of society they live in.

According to Raymond Williams, culture is a total process that creates meanings socially and historically (qtd. Batuş et al., 2006:122). Accordingly, culture is everything individuals

contribute to society they live in. It is shaped by interactive processes that individuals and their societies go through. According to a definition, culture is all the values which ensure society's emotional, cognitive and evaluative unity, and this meaning of culture includes all the artistic values of society such as values of customs, thought and arts, and it briefly means "information" (Oktay, 1996:89). Culture, which means looking and cultivating in Latin, is the processes throughout which people reach and process information as well as they transmit it and ensure its circulation. According to Williams, culture is society, and society is culture (qtd. Batuş et al., 2006:122).

When we look at cultural meanings in society, we can find them in behavioral styles that emerge within and in parallel to mediums of communication. Along with neoliberal policies, the phenomenon of mass production has been replaced by the phenomenon of production for individual. This important economical change also paved the way for changes in culture and technology. Life styles, production styles and working styles have changed now; flow of and access to information has come to prominence; a process throughout which cultural values are shaped via technological devices has started. Historian Lisa Gitelman offers a model of the media that works on two levels: First, a medium is a technology that provides communication; second, a medium is a set of associated "protocols" or social and cultural practices that have enlarged around that technology (as cited by Jenkins, 2006, p. 14). Durkheim sees social values, culture and communication as the forces which form a model and which ensures social balance (qtd. Erdoğan&Alemdar,2005:40). Accordingly, the media positions itself as an authority which reflects society and thus culture.

Media tools have emerged through technological development as a result of needs for access to information and for communication. Technological determinism is a highly powerful idea about the nature of social change, and it is widely recognized today. According to this idea, developing technology creates the conditions for social change and progress (Batuş et al., 2006:123). All these technological developments such as television, radio, telegraphy and automobile are the aspects of the culture of the modern world that emerged as a result of the industrial revolution. As expressed by McLuhan, change of media tools is actually a phenomenon which also transforms communities and societies. Therefore, change and development of media tools result in transformation and progress in

society. In addition, the following should not be ignored: Technology itself is designed, produced, marketed and used by human beings.

The kinds of change listed above are those associated with the media:

- a) A shift from modernity to postmodernity
- b) Intensifying process of globalization
- c) A replacement, in the West, of an industrial age of manufacturing
- d) A decentring of established and centralized geo-political orders (Lister and et all, 2007:10)

The items b, c and d will be dealt within the economy section of the study

Modernism and Postmodernism

McLuhan evaluates the media as a continuation of technology and explains four media cultures to understand it: a *primitive culture of oral communication*, a *literate culture using the phonetic alphabet and handwritten script which co-existed with the oral one*, the *age of mass-produced, mechanical printing and electric culture: radio, television and computers*. In societies without written records, oral and audio communication was at the center. Explaining that the print culture depends on the oral culture, McLuhan expresses that alphabet and writing is continuation of the act of seeing. McLuhan takes attention in *Galaxy* to that the print culture has threatened the existence of the oral culture. In addition, the electronic culture, developing from the invention of telegraphy to television and computer, short circuited the mechanical print, and we regain the conditions of an oral culture in the acoustic space; McLuhan defines the electronic culture as “global village.” Connectivity, convergence, the network society, wired culture and interaction are some terms used to describe this new media (Lister et al., 2003:75-77).

Virtuality

Besides creating virtual society, ICT (Information Communication Technologies) have also opened the way for virtual self rule. It can be said that virtual self rule influences the ways people communicate each other and share knowledge. *Oxford English Dictionary*

lists three possible definitions for virtuality. The first defines virtuality as “the possession of force or power” or “something endowed with virtue or power.” The second possible definition is “essential nature of being, apart from external form or embodiment.” The third definition, which also corresponds to the common usage of the word, is “a virtual (as opposed to an actual) thing, capacity, etc; a potentiality.” Based on this latter definition, Turoff (1997) has defined virtuality as “the potential for a virtual system to become part of the real world” (p. 42) (as cited in Chiasson and Panteli, 2008:5).

If the virtual system has been accepted as computer representation in today’s world, we encounter augmented reality and virtual reality. Virtual reality is a medium which is simulated by computer. Facility of virtual reality expands from education, art and commerce to medicine.

Rheingold’s (1994) definition of “virtual communities” states that one “can be formed by any number of individuals by way of the Internet at their own choice or in response to some stimulus” (Mcquail, 2005:149)

In the technique of augmented reality, a human being lives through the digital experience in the real world. For example, some firms in the automotive industry have provided drivers with the opportunity to repair their automobiles’ motors by themselves. The simulation that is reflected to the driver by a pair of glasses explains him/her what operations should be done and in what ways they should be done. In addition, it has become an indispensable application particularly for cinema in the entertainment industry (for example Avatar). A. R. is used in a number of fields, too, such as education, trade and medicine.

2.1.1. Progress of newsmaking and news publishing

Historical resources show that human beings have need information since the ancient times. For example, it is understood that people wanted to explain something to each other by drawing pictures and figures on walls of inns. According to this, it is certain that people tried to establish a system of communication depending on informing each other. News generally gives information about issues and events which break up in daily life and which

interest society and people that compose it. Of the deans of Washington University, M. Lyle Spencer has defined news from a scholarly perspective as follows:

“News is an event or an idea which interests a high number of people in society and which these people can understand” (qtd. Bülül, 2000:95).

Development of newspaper, which is the main effective medium in news circulation, occurred after certain historical processes. The church controlled the entire society in Europe in the Middle Ages. Accordingly, it was found appropriate to copy some books approved by the Church via hand-writing. While news letters, regarded as the pioneer of newsmaking and journalism, had been hand-written previously, it became possible to copy them after the invention of the printing press in 1440. Although news letters had an informing function, they were not named newspapers since they were not published periodically. The first newspaper, which conforms to today’s periodical newspaper standards, was *Avisa, Relation oder Zeitung* published in 1609 in Strasbourg on a weekly basis (İnuğur, 1993:57). The first daily newspaper is *The Daily Courant* published in Britain in 1702 (http://cygm.meb.gov.tr/modulerprogramlar/kursprogramlari/gazetecilik/moduller/basinin_dogusu.pdf, 01 February 2012).

There are four kinds of news according to their features, contents, structure and topics. News according to features is the kinds of news which can emerge any time depending on their issue. News is defined as soft and hard according to content. While hard news is a past event, soft news includes the kinds of news ranging from an estimated event to magazine issues. News according to structures can be categorized as news interview, publicity news and advertisement news according to structure. News are grouped as follows according to their topics: Exclusive news (the news searched for and obtained by a particular newspaper), scoop news (exclusive news in a particular publication organ are scoop news against others), risk-bearing news (news without sound data and evidence), scissor news (cutting and renewal of the news or articles previously published in other newspapers) and negative news (It depends on reporter’s perspective. It is necessary to evaluate events from not a pessimistic but a positive and optimistic perspective) (Bülül, 2000:106-108)

In addition to these, value of news is determined according to five criteria: timeliness, proximity, result, importance and attractiveness. Timeliness is the answer to the question about the time of news. Proximity shows the point where the reporter stands in the event. The question of where indicates the principle of proximity. The closer the reporter is to the occurring event, the more persuasive and accurate news is. And result means that news result should be properly explained; if the result is presented to the audience accurately, the audience will perceive the news more easily. Importance is about the questions of how and why; it is the criterion which determines importance of news. Attractiveness means that any news which does not attract attention will not be read by the audience. Therefore, it is important that news attracts attention (Tokgöz, 1981:62-68.)

It is possible to have access to developments and news all over the world through accurate news sources. News sources include official sources, private sources, news agencies as well as national and international news outlets (Bülbül, 2000:120). At the international level, news is usually gathered from three major news agencies. These news agencies, used as a source by all countries, originate from the US, French and Britain. They are Associated Press (AP) the US, Agence France Presse (AFP) and Reuters, respectively. And major national news agencies in Turkey can be listed as İhlas News Agency (İHA), Doğan News Agency (DHA), Anatolia News Agency (AA), and Ankara News Agency (ANKA). There are three main reasons why news agencies are needed: Increase in news costs, rapid development of events as well as changes in the world of technology (http://cygm.meb.gov.tr/modulerprogramlar/kursprogramlari/gazetecilik/moduller/basinin_dogusu.pdf, 01 February 2012).

In reading a newspaper, design of the paper is as important as the news itself. Think about your daily life for a while; we know at which page the news we want to read is located. The main factor which ensures this for the audience is the design of the paper. Paper design of newspapers can be grouped into two periods: The first covered the period of typography technology from the invention of the press in 1450 to 1950; the second covers the period of offset print, which has been used for publishing and copying newspapers since 1950. In addition to these two periods, there is a third period when the Internet has emerged. In this period, when traditional newspapers started to adapt themselves to the Internet technology, newspapers have become online. Thus, a very important step has been

taken as the latest news immediately reaches the audience. Page design of online newspapers depends on technological facilities (Hoover&Berkman, 2011:7-9)

Due to technological limitations, there were problems particularly in using photography as visual material during the typography period. People were not able to act freely in placing a photograph on paper and adjusting its dimensions. Related to this, pages had a vertical shape in the typography period. Along with new technological developments brought about by offset printing, limits on using photography on the back page were removed. Especially in the 1980s, transition to desktop publishing and introduction of computers into the press made using visual materials easier.

Along with offset printing, modern approaches started in page designs of newspapers. Modern page design approaches can be categorized into three groups: modular, boulevard type and ethnographic. In the *modular structure*, a small number of photographs, which are, however, large in size, are used; news is covered in length and detail. Serious newspapers in Europe and in the USA are prepared within the modular page design today. *Newspapers within the boulevard type page design* present sensational magazine news in an entertaining style so as to make them easily-read. According to this, this type of newspapers use large bold titles, short texts, a high number of large-sized photographs large, figurative and colored lines as well as frames and a colored background. The *ethnographic page design* approach has been developed after the emergence of television. In order to compete with television, newspapers started to design their page structures as the same as television screen was done. Therefore, they kept away from presenting news within writing as much as possible; they used information graphs, drawings and figures instead. News were kept as short and simple; they used a lot of photographs and visual materials like television (Şeker, 2004:8-27).

Şeker lists the elements included in the makeup of a traditional newspaper as *news texts, spots, captions, title arrangement, upper titles and subtitles, column articles, visual material arrangement, photographs, drawings, graphs and illustrations, caricatures and cartoons and white spaces* (Şeker 2004:45-92). In contemporary Internet journalism, these elements have been changed to videos and music, moving photographs, moving texts, latest news, comments and shares. In Internet journalism especially comments and shares have a quite large impact on changing or increasing influence of news on the audience.

We have explained that the greatest advantage of Internet journalism is that it both produces news and communicates comments immediately. It also allows use of videos and photographs. The audience is able to see the news covered in different channels as mobile on social media sites such as Facebook and Twitter. Especially today, when mobile technologies have developed and changed rapidly, the audience should be able to see the news covered in different outlets as online. Thus, the audience will have access to all the other news sources about a particular news item, be able to read the news from those sources and ultimately will be able to form his/her own viewpoint.

For example, *HaberTürk* covered various comments from the world press in the news titled “The destruction of the humanity is on the world press,” on April 28, 2011. *Wall Street Journal* emphasized that the monument was a symbol of “possible peace,” by the news titled “Armenian-Turkish monument became the symbol of freedom of thought in the election,” and *La Liberation* from France by “Turkish-Armenian friendship are shattered.” In the BBC’s Internet site the audience was reminded that on his visit to Kars in January Prime Minister Erdoğan had defined the monument as “freak” and qualified it as “sacrilege against a tomb dated to the 11th century”. Also foreign sources like *AFP* and *Associated Press* explained that Erdoğan defined the monument as “freak,” and artist Bedri Baykam, who had criticized the destruction plan, was stabbed (<http://www.haberturk.com/kultur-sanat/haber/625285-insanlikin-yikimi-dunya-basininda>, 01 February 2011).

As already seen, *HaberTürk* both covered well-know press corporations’ comments about this event and transmitted its own viewpoint to the audience. In addition, news titles and space and frequency allocated to news coverage are quite important for forming and changing the audience’s perceptions and ideas. Here opinion of the audience is shaped through the comments on *HaberTürk*’s page. If the audience had access to the links to the sites that covered this news item instead, he/she would be able to reach the news in its original format and to freely form his/her own opinion.

Another example is the news titled “What did the foreign press about the crazy project” published in *Sabah* on April 27, 2011. *Sabah* used the phrase “Crazy project of Prime Minister Kanal İstanbul influenced the foreign press immediately.” *HaberTürk* covered examples from *Wall Street Journal*, *Financial Times* as well as the BBC and the Russian press about the event.

The news published in *Wall Street Journal* within the title “Turkey establishes its own Panama Channel” emphasized that the channel would 25 kilometers deep and 45-50 kilometers long, mentioning that opening such a channel would take two years in time. The news put out that the Prime Minister launched the plan as the “dream of Turkish and Ottoman leaders,” and stated that the increasing population and risk of ship accidents was the departure point of this project. The news, which highlighted that 50.000 ships travel across the Straits every year, wrote that 8000 of those are tank ships carrying oil. The news, which reminded that Turkish authorities had made a proposal for transforming oil through pipe lines instead of tank ships, mentioned that that proposal was opposed by oil companies. *Wall Street Journal* also emphasized that Turkey’s control over the Straits was restrained by the 1936 Montroeux Agreement.

In the short comment of *Financial Times*, it was mentioned that Recep Tayyip Erdoğan made a great promise before the election. The newspaper announced that a sea route similar to the historical one between Asia and Europe will be established and the project will have been completed by 2023. The news mentioned that the channel would be greater than the Panama and Suez and the project will undoubtedly accelerate Erdoğan’s election campaign.

The BBC used the phrase “Crazy project, second strait for Istanbul.” The British broadcasting company BBC gave information about the project. It mentioned that in the meeting in the Istanbul Congress Hall Prime Minister Recep Tayyip Erdoğan announced his plan that had been already on his agenda for a while. The BBC said this plan was defined as “Crazy Project” by press. Quoting Erdoğan that Istanbul was composed of two peninsular and one inland, the BBC said the following: “As quoted by Prime Minister Erdoğan, the greatest ship in the world will be able to pass across the Channel; thanks to the bridges to be founded over the channel, land and railway transportation will not be interfered at all.” It also quoted Erdoğan’s claim, “the Straits traffic will decrease and the risk in the Straits will be minimized.” The BBC also covered Prime Minister Erdoğan’s statement that averagely 149 ships pass through the Bosphorus every day.

The news was also covered by the Russian press. *Haber Türk* stated that the Channel Project created question marks in the Russian press about whether it would violate the Montroeux Agreement or not. The Russian news agency *Ria Novosti* mentioned that Prime

Minister Erdoğan announced the project before the election on June 12 and highlighted that the Turkish press estimated the cost of the project as 20 billion dollars. Then the following was said in the news: “Erdoğan’s declaration paved the way for debates in the Turkish press and it created question marks about whether it would lead to the violation of the 1936 international agreement that arranged transition across the Streets.”

As seen in the news about the Channel İstanbul project and in the examples from the world press, *Sabah* quoted foreign press agencies’ comments on issue. The audience cannot see the original form of the news as they were covered in the foreign press. Like *HaberTürk*, *Sabah* communicated its own viewpoint to the audience. However, both newspapers should have given the links to the related sites about this event. (<http://www.sabah.com.tr/Dunya/2011/04/27/yabanci-basin-cilgin-proje-ye-ne-dedi>, 01 February 2012)

2.1.2. Cyber-culture and virtual identifications

Media technology started to change rapidly in the late 20th and the early 21st century. In this time period, computer has started to form a new culture. In new visual environments produced by computer users come together and start to create a cyberculture. In cyberculture environments individuals can share their ideas and establish groups with those who have similar world views, thereby creating visual communities. New communication technologies have not produced the cyberculture alone; economic, political, historical, cultural and scientific contributions of societies from the past to present have also shaped it, and it became possible to share all these developments with the entire world by ICT.

Considering the number of computers included within the network since the 1970s, this situation becomes more clear: In 1973 there were 25 computers in the network; through the 1970s; it could only support 256 computers; in the early 1980s, after substantial enhancement, it was still limited to about 25 networks with only a few hundred primary computers and a few thousand users (Sullivan-Trainor (1994); Business Week (1994a); Hafner and Markoff (1991); El Pais/World Mediaa (1995); and Mcleod (1996)(as cited in Castells, 1996:351).

The 1980s were the time period in which computer started to take root in people's daily lives. In the 1990s as the Internet and mobile phones were taking place in business and daily life, computer based communication became irrevocable. Now we engage in a lot of activities from establishing friendships in virtual environments to receiving education, trade and health services as independent from time and place. In these virtual environments, we communicate through simulations and images which have a claim to truth, as said by Baudrillard. Ryan says that

“The classic example of virtuality, derived from Aristotle's distinction between potential and actual existence (*in potentia* vs. *in actu*), is the presence of the oak in the acorn. In scholastic philosophy “actual” and “virtual” exist in a dialectical relation rather than in one of radical opposition: the virtual is not that which is deprived of existence but that which possesses the potential, or force, of developing into actual existence.” (Ryan 2001: 27)

Virtual identities have emerged in the cyberspace environment. For example, when we register for a site, we adopt a nickname. While some use their normal identities without any changes, some others adopt other identities than their own. Some research showed that use of different identities in the Internet environment for a long time period leads to depression (Lister and et al, 2003,166-167).

2.2. Digitality and Transformation of Communication in Communication Theories

2.2.1. Technological determinism

Technological determinism seeks to explain social and historical phenomena in terms of one principal or determining factor. It is a doctrine of historical or causal primacy. Technological determinism puts forward that technological developments also change the social life. Current cultural changes are underlied by novelties in communication technologies, as it is seen. Actually, changes and needs in the social life have necessitated technological developments. For example, as a result of people's need for reading and learning, first texts were written and copied by hand. Then this situation evolved into a necessity, so people attempted to develop solutions. Another example is as

follows: During the First World War, the US established factories in order to meet the army's basic needs for clothing, medicine, food and alike; as the war ended, the public demand for this developing industry increased, resulting in the rise of mass production. And to establish and maintain communication became one of the most significant needs of people's lives. We see this all the way through from the invention of telephone to wireless communication.

Consequently, people demanded technology according to their needs, and technological novelties created inevitable changes in the social life. We see mobile communication has brought a great social change along recently. For example, in the Gölcük Earthquake of 1999, the victims' inability to communicate with each other and with their relatives and the insufficiency of aids became almost a second disaster. However, in the Van Earthquake of 2011, the civil society and all other corporations launched aid campaigns from the very start, and lack of communication did not become as big a problem as it was in the earthquake in 1999. The Internet and mobile communication enhances the feeling of unity and solidarity, so it ensures a higher level of social participation.

Consequently, technological novelties and changes influence people's social lives to a great extent. Therefore, in mobile communication, indispensable in many fields including commerce, education, culture, arts and medicine, the purpose is not merely communicating. It is also important how people use mobile technologies cognitively and how they are influenced by them.

2.2.2. Uses and Gratification Theory

Prime time and day time programs reach to target audiences through technological media tools such as television, newspaper, Internet, and radio. These programs are classified according to their audience groups. They can address children, young people or the entire society early studies on mass communication expressed the idea that the media negatively influences all segments of society through its messages. In conclusion, it generally negates the media.

A view that was rooted in the early periods of mass communication is called *Theory of Mass Society*. Accordingly, people are claimed to be vulnerable in the face of the powerful media. This theory describes the relationship between a user and media content.

Today, mass society is expressed as a limited theory. Accordingly, it is argued that influence of the media depends on an individual's social life (West&Turner, 2004:393).

Against this view, which negates the media completely, some researchers claim that viewers receive only the messages which they already seek. According to the theory of uses and satisfactions, an individual achieves satisfaction by using the media, but by transmitting the messages already demanded by people, the media allows media content to be used in an effective way.

In contemporary multi-media environment, this theory should be reconsidered by paying attention to message transmission by immobile and mobile tools, to influence of the size, data transmission speed and information downloading capacity of these tools on message contents, and to rearrangement of media messages by such departments as editorial office. Information communicated by immobile and mobile tools depends on the tool itself, as expressed by Marshal McLuhan.

2.2.3. Transformation of Public Sphere: Social Networks

Transmission of information by publications like book and newspapers and by electronic mass communication tools resulted in a change in the public sphere. For Habermas, public sphere embodies the idea of forum, constituted by a community of individuals, coming together as equals, capable of producing and reproducing a public opinion through critical discussion, argument and reasoned debate (Slevin, 2000:76). The Internet allows users to share their thoughts and to edit news in the social environment of web pages such as Facebook and Twitter, without being bound by time and place. It has been explained previously that the new media is better than the old one in terms of interactivity. Also, this feature of the new media creates a new public sphere where different opinions and visions are shared. Thompson explained that the newly forming public sphere is a public sphere

without a space, corresponding to the rise of indirect public spheres, so to speak (Thompson, 2008:191-192).

While, the invention of the Internet is the greatest technological development in this time period, transition from the web 1.0 technology to the web 2.0 technology can be defined as a revolution. Thanks to the web 2.0 technology, users can share their opinions through social environment web pages, and they can make a significant contribution to information transfer by their editing practices. Traditional journalism turns into a different format; especially journalism was defined as blog. The influence of social media environments like Twitter and Facebook, which are used in almost every society today, on this situation cannot be ignored.

Mobile tools also started to have these applications in their interface designs as they became a necessity for users' access to social media sites such as Facebook and Twitter. For example, the news covered by the technology magazine of USA Today on September 27, 2011, entitled "facebook app for ipad debuting at it iphone," explained that today users can update their statuses and other details by the applications of navigation and pop-up windows (http://content.usatoday.com/communities/technologylive/post/2011/09/report-facebook-app-for-ipad-debuting-at-iphone-event/1?csp=34tech&utm_source=dlvr.it&utm_medium=twitter&dlvr.it=279559).

Twitter

It is a social media environment used by individuals and various institutions from almost all segments of society. It allows individuals, corporations/institutions, famous people from the artistic world, authors and others alike to share developments about themselves, the latest news from newspapers, and trending topics of the day or of the week, using 140 characters. We see that almost all media channels, national or international, give related links as accompanied by a short explanatory sentence when they transmit the news through Twitter.

In Sabah's news on March 16, 2012, entitled "Here is the Twitter statistics in Turkey," Metin Kahraman, the founding partner of monitera, a social media research company which made a presentation in the Webrazzi Digital Conference, informed that according to

the data from February 2012, the number of Twitter users all around the world exceeded 465 millions whereas it was only 7.2 millions in Turkey. In addition, the same news also said that 59% of tweets in Turkey were transmitted by mobile devices, while 41% of them were transmitted by Internet browsers (<http://www.sabah.com.tr/Teknoloji/Haber/2012/03/16/iste-turkiyenin-twitter-istatistikleri>, 23 November 2012).

It is available on the home page what topics are currently on the agenda of Twitter. Therefore, it is possible to have an idea about what topics society talks about and focuses on.

Fisher ve Reuber (2011) argue that tweets have three features in terms of influencing people's cognitive behaviours. First, interactions performed by tweets (for example emails, letters, Facebook posts) can be archived in the written format. It means that when a user establishes communication, he/she can decide on the preparation period alone and reorganize the message he/she is about to send. In addition, he/she can read his/her or others' tweets again. Fischer ve Reuber think that archived communication influence people's cognitive behaviors since they reflect the communication people themselves create and obtain from others. A second feature of Twitter interactions is that there is one to many, which means that a tweet sent by anyone can develop with shares in the social media. This Twitter based interaction creates change in individuals' cognitive behaviors also by its archiving feature. The third feature of Twitter based social interaction is as follows: We want to highlight and feature the topics we search about. If we click the symbol defined as hashtag (#), the tweets which include the word we look for come across us respectively. If a tweet is retweeted, it is thought to have value and power of influence. Fischer and Reuber say that the hashtag and retweet features of Twitter are important for influencing users' cognitive behaviors (Fischer&Reuber,2011:15-16).

Facebook

It is among the most popular social network sites. Users can share their ideas, photos as well as news and videos they enjoy. Facebook is one of the most successful of the web 2.0 applications. According to the news by BBC Turkey on October 2012, Mark Zuckerberg, the founder, himself announced that the number of Facebook users exceeded 1 billion per

month. The news also mentioned that the number of those who connect to Facebook by a mobile device reached to 600 millions, according to the data announced by the company (http://www.bbc.co.uk/turkce/haberler/2012/10/121004_facebook_onemillion.shtml, 03.01.2013). According to the news reported by Webrazzi on September 6, 2012, the number of mobile Facebook users in Turkey was 14 millions (<http://www.webrazzi.com/2012/09/06/turkiyedeki-mobil-facebook-kullanici-larin-sayisi-14-milyon/>, 03.01.2013).

The greatest difference of Twitter from Facebook is that it allows us to follow anybody without adding them as our friends. Also, we normally do not advertise on newspapers in order to look for an old friend except for emergency situations; we can find our friends and relatives we have not seen for years by Facebook.

Smart phones and tabloids have Twitter and Facebook applications. Also, another application available particularly on smart phones is foursquare. Users can share the places they visit, such as cinemas and cafes, with their friends by checking in them.

As said by McLuhan, transformation of media tools also change communities and societies. Therefore, change and development of media tools result in change and development of a society. Indeed, the public sphere also changes.

2.2.4. New Communication Environment and New Economy

People have demanded to govern the nature, adapt the nature to their own life and finally to produce the nature themselves throughout history. Production and increasing productivity are the main constituents of economic development. Since the pioneering study by Robert Solow in 1956 – 1957, scientific studies about productivity in developed countries show that the gross national product except agriculture doubled in the USA, 87% of which was related to technical development (Castell, 2008:101). This situation shows that influence of current technology on the economy is decisive.

Cooperation of the new media and ICT emerged with neoliberal policies, which determine the main characteristics of production and distribution today. Along with them amidst globalization, information and communication technologies started to make their presence felt in societies. In this new communication environment, the concept of new economy as depending on availability of information has arisen. Information processing, information processing technologies, consumption and production of symbols are the bases of this new

economy defined as post-industrial economy. Lister and et al. says the following about the new economy:

“While the new economy is called post industrialism (Touraine 1969; Bell 1976), it is also named as late capitalism (Jameson 1991) or as ‘post-fordism’(Coriat 1990) (as cited in, Lister and et all., 2003: 193)

Bell et al. trace the beginning of the post industrial era to the industrial economy in the USA between 1909 and 1949 (Castells, 2008, p.103).

We have explained that this so-called new economy made its presence felt as a result of neoliberal policies. Accordingly, globalization, access to new markets and new forms of organization are the main features of the new economy. Lister et al. argue that the new economy’s characteristic specifications are *Globalization, Networked forms of organization, Flexibility and fluidity, the aggressive development of new markets, and Deregulation. Globalization*; Local and national companies do business in cooperation with international ones rather than doing it on their own. *Networked forms of organisation*: Production was managed from a different location depending on commerce-factory cooperation. *Flexibility and Fluidity*: It is the new name of capital flow. *Aggressive development of new markets*: The countries which previously isolated themselves now admit the international capital inside their territories. *Deregulation*: It means redefinition and rearticulation of rules about international companies’ penetration to the economic structure of different nations (Lister et al., 2003: 193).

The new economy shaped through neoliberal reforms and technology is also defined with different names such as “knowledge-based economy”, “borderless economy”, “weightless economy”, networked economy”, digital economy”, “the information-based economy”, “the networked economy”, to name a few (Woodall, 2000; as cited in Sharma, 2005:3).

In this process when information is consumed and governed, the new media has also become a phenomenon which shapes this new economy. Technologies like the printing press, book, telephony, cinema and television, which are regarded as instruments of the old media, are related to cultural technologies. In order to reach the target audience, the old

media used the previous technological forms and contents. The new media used the forms and contents of the old media, as well. This situation is named as *Remediations* by Bolter and Grusin (Grusin ,2000, as cited in Lister and et all,2003:182)

In this new economic environment depending on information transfer, communication is maintained through the Internet. According to the World Economic Forum Report(2011) ; “The next decade will see the global Internet transformed from an arena dominated by advanced countries, their businesses, and citizens to one where emerging economies will become predominant. As more citizens in these economies go online and connectivity levels approach those of advanced markets, the global shares of Internet activity and transactions will increasingly shift toward the former. In addition, with the improvement in the speed and quality of broadband and with Web 2.0 technologies and applications, economic and social dynamics across the world will change dramatically, with massive implications in terms of productivity gains and new opportunities for individuals” (http://www3.weforum.org/docs/WEF_GITR_Report_2011.pdf, 02.04.2012).

Cultural values, policies, economic changes and commercial relations of the society to which an individual belongs are also the components of the conventional and new media. In these novel communication environments, people continuously interact with media contents. In the 1990s, the Internet changed into a form of entertainment for individuals. The period in which the mass and the individuals that composed it were perceived as a unified whole ended; a new period in which they are segmented and in which the individual is the unit of production has started.

According to Thompson, circulation of symbolic values of society is ensured by circulation of communication instruments (Thompson,2008:75-78). Thus, in this wholly new environment it is necessary to establish the individual’s need for possessing mobile devices like mobile phones so that he/she can have access to information and engage in activities like attending social networks such as Facebook and Twitter. Possessing these technological devices is not a luxury of the modern life but a need now. The digital economy or the new economy also created a different economic field depending on the need for immobile and mobile technologies, besides creating a new economic model like e-trade. Sharma said that the combination of changes in production, business processes and

communication technologies is the triggering force for the formation of the new digital economy. He explained the essential components of the digital economy as follows:

“The essential elements of the digital economy are:

- Digitalization and intensive use of information and communication Technologies(ICT);
- Codification of knowledge;
- transformation of information into commodities; and
- New ways of organizing work and production” (Sharma, 2005:3).

The individual who possesses new technological products now has a say in their production. In this new environment which offers interactivity to individuals, the individual can share his/her views about a product or a service. Furthermore, Jenkins said that relationships between consumers and producers now dissolve since consumers prefer to enter the privileged life with an invitation for participation (Jenkins, 2006: 20).

In this new environment of communication, individuals have started to shape their lives through the symbols and images they consume. In this new environment surrounded by visuals images, individuals are encouraged to consume these symbols.

Debord's says that:

Spectacle is not limited to mass media images, but is more centrally to do with modern capitalist economies that produce a form of spectacle which isolates and alienates those who are forced to consume it. It is only when ‘the spectacle is capital accumulated to the point where it becomes image’ (Debord, 1994:24, as cited in Laughey, 2007:153).

In the new communication environments, where the subjectivity of the individual is prioritized, advertisements are a factor in the production and consumption of the visual environment in companies. For advertisers, online advertisements mean a new economy with individual-oriented consumption and the viewing/reading mass divided into segments.

2.2.5. Concept of native and digital immigrant

While those born before 1981 are defined as digital migrant (X generation), those born after 1981 are defined as digital native (Y generation). Bununla birlikte daha once

internetsiz bir dünyanın varlığını bilmeyen tamamen ICT ile birlikte büyüyen Z kuşağı varlık göstermektedir. Prensky says that:

“Those of us who were not born into digital world but have, at some later point our lives, become fascinated by and adopted many or most aspects of the new technology are, and always will be compared to them, *Digital Immigrants*. Today’s students are all “native speakers” of the digital language of computers, video games and internet, they are *Digital Natives*.” (Prensky, 2001:2)

In Hürriyet Human Resources’ article “X, Y and Z generations differ a lot,” published on 11 October 2009, Z generation (2000 – 2012) was defined as the Internet generation, complete off-springs of the technological era. In the article it was explained that they always have their mobile devices with them, and find excuse for their failure in their home assignments not in blackout but in the Internet cut (<http://www.kenthaber.com/Haber/insan-kaynaklari/Dosya/gundem/bb,-x,-y-ve-z-kusaklari-birbirinden-cok-farkli/c117cd34-44a7-43d9-89a2-d268f186b77e>,original news: Hürriyet İK 11 October 2009, 16 November 2011).

It is seen in the table taken from the 2011 3rd Quarter (July, August, and September) Report by Corporation of Information Technologies and Communication that in the 3rd quarter of 2011 the ratio of mobile penetration exceeded 100 %.

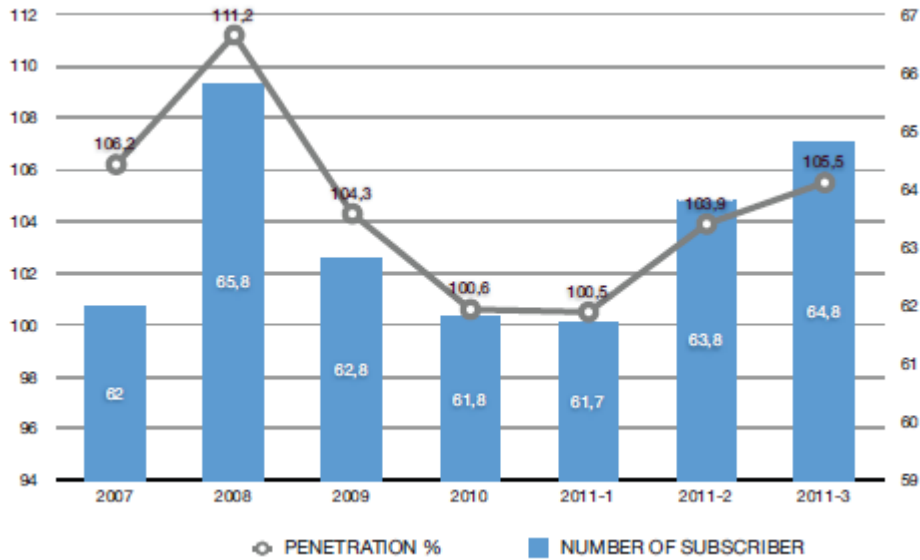


Figure 2.1. Number of mobile subscribed by population except of 0-9 age

If we pay attention to this ratio, Y and Z generations' use of mobile devices and their expectations from the suitability between mobile devices and the Internet become very important.

2.3. Interaction and Concept of New Media

New media often refers to large changes in media production, distribution and utilization. These changes are not only technological but also cultural, traditional and textual. Along with these, the 1980s located itself as a period which formed the characteristics of the new media spaces.

In order to understand the new media, old and new combinations of media content should be considered. While the combinations of the old media were passive audience and stable media contents, Lister and et all (2003) explained that the new media's combinations are: Digitality, Interactivity, Hypertextuality, dispersal and Virtuality, Dispersal of media content production and consumption of new media environments (Lister and et all., 2003:14-34)

Along with the emergence of the new media, the concept of interaction made itself felt after the 1990s. As a result of interaction which develops as a concept in parallel to new communication technologies, a definition depending on human-computer relationship has been made. This definition seems limited as it depends on computer technologies. Related to this, Rafaelli defined interactivity not only as computer-based but also as an ontological part of the new communication technologies, particularly of the evolution of epistemology. He explained the concepts of interactivity as follows: *bidirectionally, quick response, bandwidth, user control and amount of user, activity, ratio of user to medium activity, feedback* (Rafaeli, 1998:112-115).

People more than machines are located in the center of interaction, and interactivity is a consequence of communication. Within this new technology, communication tools are used for realization of interaction.

Interaction is not a static concept, and it can be expressed as a response to an event or an object, a situation faced by the individual in general. Individual responses to any situation

are defined as feedback. The first time feedback was brought into existence was by Norbert Wiener in his cybernetics works. Winer implemented a radar system into war planes during the 2nd World War. Accordingly, the war plane determines the location of its target with the feedback it gains, and points at enemy planes again. Winer later recognized that eye and hand motions occurred as a result of the lop control and arrangement, and he defined this situation as “feedback.” That is, we can say that all activities result from interactions and have feedbacks.

According to this interaction, communication can be considered in conjunction with work. The greatest purpose of communication studies is to influence and to catch the attention of the target mass.

Among the classical mass communication studies in this regard are magic bullet, the two-stage flow model, cybernetic communication model, and Shannon and Weaver’s mathematical communication model.

Thompson describes three types of interaction model. These are direct interaction, mediated interaction, and mediated quasi interaction. Accordingly, “*mediated interaction*, space, time or both to individuals who are away from the context that allows the transfer of information or symbolic content (paper, electrical wires, such as electromagnetic waves) include the use of technical media. *Mediated quasi interaction*, one-way Communication model, and is usually not react, such as a book reader”.

Table 2.2. Types of Interaction

Interactional characteristic	Face to Face Interaction	Mediated Interaction	Mediated quasi Interaction
Space time constitution	Context of co-presence; shared spatial-temporal reference system	Separation of contexts; extended availability in time and space	Separation of contexts; extended availability in time and space
Range of symbolic cues	Multiplicity of symbolic cues	Narrowing of the range of symbolic	Narrowing of the range of symbolic

		cues	cues
Action orientation	Oriented towards specific others	Oriented towards specific others	Oriented towards an indefinite range of potential recipients
Dialogical/monological	Dialogical	Dialogical	Monological

(Source: Thompson, 2008:134-135)

However, Roger et al. focused on the computer and the user, defining the type of interaction within 4 kinds. These are instructing, conversing, manipulating and exploring.

Instruction : It is defined as the series of commands the user gives to the system, for example through typing in commands, selecting options from menus in a windows environment or on a multi-touch screen, speaking aloud commands, gesturing, pressing buttons, or using a combination of function keys.

Conversing: It is the user's ability to communicate with the system.

Manipulating: Users interact with objects in virtual or physical space by manipulating them (e.g. opening, holding, closing, and placing).

Exploring: Exploring means that the user can move through virtual environment or physical space. Virtual environments include 3D worlds in addition to augmented reality and virtual reality systems. (Rogers et al., 2011: 47)

Rafaeli says the following: If interaction and communication is considered together and if communication is compared to interaction, we see that reaction, characteristic of responding, is located at the center of perception. Therefore, the uses and gratifications theory and technological determinism are among the issues that should be examined first (Rafaeli, 1998:119-121).

Is it a newly emerging thing or not? The best way to understand it is not to look at its old forms. However, its evolving nature can be understood by searching its historical

dimensions. When we compare the new and old media, this approach should be taken into consideration.

2.3.1. Dispersal, hyper-textuality and comparison of conventional media and new media

For new media, production and distribution are not as central as they were for the old media structure. In the old media, publications are produced at a single point and distributed from there. However, in new communication environments they are communicated to the user through the Internet from immobile and mobile devices. As a result of direct interaction of the user with communication technologies by clicking online products, making comments and providing links, that product is meant to be reproduced. This situation is defined as “dispersal” by Lister and et all (Lister and et all., 2003:30).

Thus, it is possible to access any online content via links attached to it. Comparing it with the print environment, Kovach and Rosnestiel argue that the data in the networked-information environment are denser, broader and deeper. Moreover, the web offers potential for richer coverage; therefore, it supplies better understanding (Kovach&Ronestiel,2010:183). By archiving the comments on the news they read on the Internet, users have the opportunity to re-read and evaluate them. Moreover, users can use different Internet browsers within operating systems compatible with their mobile or immobile devices.

Lister et al. argue that the best way to understand the difference between centralized and decentralized media distribution is to consider the differences between radio and television broadcast and computer networks (Lister and et all.,2003: 30) . Wallace and Knobel explain that the most significant difference between Internet reporting and other media reporting is that Internet journalism is immediate (Wallace and Knobel,2010:169). Lundberg describes the commonality between the old media and the new media as re-use of forms and contents, which is called *remediation*. And often it removes limitations of the former medium by utilizing new technologies. Online news are displayed as remediation of both print news and video news (Lundberg ,2004: 9-10).

Paul Mayer expresses that through its features of convergence, hybridization, transformation and displacement, the new media has a place in all forms of the old media like print, telecommunications, photography, film, television and radio (as cited in Lister et al.,2003:50).

It can be said that technological developments ensure one's access to fresh information and news and his/her ability to hear from their environment, especially thanks to the Internet. In this new environment characterized by rapid technological developments fresh news has now become a regular part of life. People usually follow breaking news stories and current activities particularly from newspapers' webpages and social networks such as blogs, Twitter and Facebook rather than the print media. However web 2.0 technology allows people to make comments about articles and news. And they can contact the editor via e-mail at any time.

Also, sharing news and comments on Twitter, Facebook and other social media environments in addition to bloggers' comments about articles and news have started to change our understanding. Jenkins assesses this situation as follows:

“None of us really knows how to live with media convergence, and these changes lead to uncertainty which causing panic among people as a result of imagination of a world without gatekeepers.” (Jenkins ,2006:170)

Readers have the opportunity to comment more if other links are provided on the Internet. In this way possibility of access to more resources related to a particular news item arises.

Online News Structure

Hypertext is an important feature of online news. News sharing, making comments on news and sending news through the Internet have been possible with hyper-textuality. Hall explains that while hypertext refers to linking documents, hypermedia refers to linking media of any type (Hall ,2011: 652).Gibson says:

“Much like traditional printed text, a significant characteristic in hypertext is control of text; but the locus of control in hypertext can be very different from that of traditional print.” (Gibson,2003:279)

Lundberg argues that arrangement of hypermedia is encompassed in the information architecture literature, and a website can be arranged hierarchically as involving depth and breadth (Lundberg,2004:42). While news are classified according to their status, issue, writing style and quality in the conventional press (Dileklen,2005:29), online news can be divided into two groups: soft news and hard News. Wallaca and Knobel explain:

“Hard news means things that have just happened and are noteworthy, including important events all over the world, new government programs, or breakthroughs in medicine. Soft news means stories without a specific time element, often focusing on trends. Soft news stories are also known as features.”(Wallaca and Knobel 2010:41)

Lundberg explained the commonality between the old media and the new media as re-use of forms and contents and defined it as *remediation* (Lundberg 2004: 9-10). When we look at online news, we realize news streams and headlines. Daily news and fresh news are very important for online news. Eriksen and Ihlström (2000) have identified genre specific content elements for an online newspaper: News Stream, archives, and headlines. *News stream* shows recent news. Time stamp is the main criteria for arranging articles. The print media is unable to realize these criteria. *Archives* is also important for online newspaper. Thanks to achieving, readers can search or browse historical content. *Headlines* is the presentation of a story. It helps the story be accepted as the most interesting.They are presented on the front – page (Crowston&Williams, 1997, as cited in Lundberg, 2004:58).

Pavlik explains superiority of the new media over the conventional media in five items:

- increased efficiency;
- greater productivity;
- enhanced creativity;
- greater accuracy, coverage, and timeliness; and
- fully searchable digital archives or news libraries (Pavlik 2011:116)

We can say for certain that thanks to mobile technology the reader now has positioned himself or herself as a citizen journalist in news transfer. Individuals are able to save any

events using their mobile devices such as cameras, and they can broadcast this event via the internet. This situation is described as blog journalism and changes classical concepts of journalism. For example, when murder of Libyan leader Gaddafi was broadcasted on TV, people were seen as taking his photographs. Thanks to transfer of information by mobile devices, today's journalism has changed.

Jenkins argues that in storytelling news makers should consider consumer participation (Jenkins 2006: 169). Then, how should news be in the new communications environment?

Kovach and Rosnestiel say that in arranging a newspaper story a journalist might be able to cover six elements:

- a. a main narrative or news story
- b. a side bar feature or analysis piece
- c. photographs
- d. headlines
- e. a graphics or background-information box
- f. a “pull quote”, a dramatic line or quote from the story set in large type to draw readers’ attention to what the story says (Kovach and Rosnestiel 2010:182).

In addition to these six elements, web environments reach citizens with comments, graphics, photos, videos, stories and news reports Accordingly, print-based news is different from web environment based news. This news covered in the web environment is defined as *electronic news*. Bockowski (2002) described that electronic news, starting with teletext and videotext systems and having been preceded by facsimile editions, mainly relies on reusing news content, rather than producing new content for the new media (as cited by Lundberg, 2004:16)

As seen below, Kovach and Rosnestiel (2010) made a list to explain how online newspaper websites should look like:

- a. Customizable graphics that can be manipulated by users
- b. Photo galleries (staff or citizen produced)

- c. Links embedded in keywords in the story taking readers to definitions or elaborations
- d. Links to the newsmakers and organizations mentioned in the story with biographical and others details.
- e. Links supporting key facts in the story, including primary documents or materials
- f. Complete interview transcripts
- g. Video and /or audio of interviews
- h. A biography of the story's author
- i. Interactive timelines for key events leading up to the current news moment
- j. Searchable databases relevant to the story, some on the news organization's Web site, some hosted on other Web sites, including government sites
- k. A list of frequently asked questions on issues related to the story
- l. Links to blogs covering the story or reacting to it
- m. An invitation to "crowd-source" material in the story or questions the story raises- when the news organization asks for information from users about elements of the story that are not yet fully reported
- n. An opportunity for citizens to tell the news organizations what else they would like to know
- o. Background on what the reader can do issues raised in the story
- p. Buttons to "share this story" with social sites like Digg and Reddit
- q. Corrections and updates to the story, with cross outs and addenda added directly to the original text (Kovach and Rosnestiel,2010:183).

In contemporary communication environment, when a news editor or writer decides on which news to cover, the new generation's expectations from news must be taken into account.

The following can be said for certain: Young people usually pursue daily events in social environments. Thus, a story's language should be clear and easy to understand. There should be a common language with the reader/listener and/or with the audience. Unnecessary extensions, inverted sentences, extremely technical or scientific words that are not recognized by society should not be used. News should be written within a clear

language with short sentences as much as possible. According to linguistics, a very easily understandable sentence is composed of 1 to 13 words; an easily understandable sentence is composed of 14 to 18 words; an understandable sentence is composed of 19 to 25 words (Dileklen, 2005:29-37).

Accordingly, Pavlik argues that it is necessary that the introducing sentence in the structure of the news act like a pioneer for transmitting the maximum news value to the reader rapidly (Pavlik, 2011:118-119).

It can be definitely said that young people follow daily events primarily through social media environments. Accordingly, the news language should be short, clear and easily understandable.

How news should be produced, and how should the structure of the news within mobile devices be organized? Before seeking answers to these questions, we should consider what we should pay attention to in news-writing for the conventional press. News in the conventional print media has five elements: Reality, Novelty, Interestingness, Importance, Understandability (Dileklen, 2005:30). For the structure of online news, Pavlik (2001) explains that three elements of conventional story writing are particularly important:

- “identifying the elements of the story that will be of greatest interest to their readers;
- structuring the story in a way that will deliver these elements as effectively as possible;
- presenting them in a way that will make maximum use of the medium they are working within and engage the maximum number of readers for the maximum length of time. In newspapers and broadcasting this usually means producing a single story with a carefully constructed beginning, middle and end. This is a linear construction. The beginning leads to the middle, which leads to the end. The story is written or recorded to be consumed in that order. If you break that relationship,

for example by starting to read, view or hear the piece halfway through, you cannot expect to understand fully what then follows.” (Pavlik,2001:120)

Editors and news reporters should consider that individuals want to have quick access to information.

Wallace and Knobel argues that, Regardless of whether a story is hard or soft, editors and reporters consider six factors when deciding what stories deserve mentioning, depending on the type of media, the location, and the audience:

- **Proximity:** Proximity is related to being nearby. For this reason, it is more important for local media. Moreover, other media, such as websites, don't take into consideration proximity, **because their audience is scattered across the country, and maybe around the world. Glocalization?**
- **Impact:** Measuring a story's direct impact is easy. First, a target audience should be selected. **The more direct the impact on the audience is, the more likely it is that a piece of news will make it onto the air or into the print.**
- **Timeliness:** It can be easily said that hard news has a limited time span, but modern technologies give audience some advantages, the first being timeliness. In addition, contemporary society wants to have immediate access to information.
- **Conflict:** News leads to conflicts among people or nations. Thus, news attracts attention of the audience.
- **Prominence:** It can be explained as such: For instance, someone walking on the street has been mugged or kidnapped. Maybe, this news story is not covered in newspapers. But, if this person is a mayor, it might be covered instead.

- **Buzz: Buzz refers to what people tend to be talking about at their environment.**(Wallace & Knobel,2010:42-46)

The new environment has also some problems. Users lose their way when moving from page to page, and usually forget where they have started reading. As Helfand states, readers move over words to pictures or pictures to texts. However, today amidst rapid technological growth, we desire a lot of things but make less effort. It would be right to analyze all these novelties in the new media environment in terms of design. Moreover, the audience reaches information easily, whether it is educational, commercial, technical so on (Helfand, 2001)

In this environment characterized by immediate access to information through technology, and especially through the Internet, it can be said that these developments are a combination of design. Design has been an already known concept in the desktop broadcasting environment, but the concept of design in the web environment has developed along with the growth of the Internet. As we know, through the Internet technology people can share their opinions with each other. On the other hand, this sharing is restricted with the Internet design. And the way the Internet is designed intimately influences freedoms that it has enabled. Lessign argues that cyberspace's architecture and capacity for hardware and software carry out life in it: "The code of cyberspace its architecture rand the software and hardware that implement that architecture regulates life in cyberspace generally" (Lessign 2001:35).

This situation is related to design as articulated on computer screen. The design of news in online environments is among the most important issues. How should online news be designed? Shopira and et all explained that the most significant feature of online news is immediate updating of news contents. They also think that navigation is quite important for finding news (Shopira et all., 2009:2334-2338). In addition, Deuze asserted that three key online factors affect journalism. These are multimediality, interactivity and hypertextuality (stories should be able to connect to other stories, archives, resources) (Deuze, as cited in vine,2012:161). In addition, it is an element which should be considered together with design for processing of information. As regards this issue, Wise and et all claim that it is necessary to understand how certain features like selecting, reading and recalling influence cognitive processes for presenting online news (Wise and et all., 2008:1). Pavlik argues

that five elements are important for designing online news: navigation, fresh news, immediate display of stories, customization features, and availability of news links (Pavlik,2001:45).

Navigation: Clickable headlines, a simple menu and graphics are essential to easy navigation; a news site should be transparent to the reader without the need for a user manual.

Fresh news: Contents of online news should be updated on a regular basis; what the reader wants should appear as fresh news on the opening screen: Whether texts can be scrolled or not, whether the best designed graphics are used or not or whether other techniques take the reader's attention to show what is new or not.

Apparent story instantly: A news story should be easy to understand, which is one of the basic functions of journalism; navigation and screen size are also important for online journalism; if they are not taken into account, it's not possible to show headlines effectively on the opening screen.

Customization features should allow the reader easy personalization of the opening screen as well as other contents of the site.

Availability of News Links: Contextualization is paramount in online news coverage; links, easily accessible background material, and effective search tools should allow the news consumer to find additional materials to help place a current story into its historical or other context (Pavliv, 2001:45).

Consequently, for compatibility of online newspapers with mobile devices, the entry date and time of news should be indicated, and news should be organized accordingly in order to catch the user's attention. Also features like news titles, cognitive aspects, users' ability to customize pages, navigation, access to other news links, the ability to contact the author and the ability to read and archive news should be considered.

2.3.2. Transformation of Mass Communication Tools, Mobility and Convergence

Today audience is the producer of the message. Even newspapers are trying to encourage them to take part in news in various ways, and each citizen is used almost as a journalist. The reader now produces active news content. This situation is possible by electronic communication.

In contemporary information society, information moves very quickly. People can reach information quickly by mobile devices and by the Internet, and information can become outdated in a short time period. Individuals' immediate access to information through their mobile devices is the main reason for this situation.

In the post-modern environment, a new media consumer as living within technology has emerged. Within this framework, companies should have information about their new customers. Jenkin says that the contemporary consumers are migrants whereas the old ones were stable and had predictable expectations. He argues that in the current post-modern environment the new consumers are always mobile; they meet different novelties each day, and their expectations and likes might change continuously (Jenkins,2006:18-19). Production of novel applications by the information communication technologies, particularly by mobile devices, explains this situation.

While news was available only on TV and newspapers in the past, now we can reach news and many related videos and photos whenever we want thanks to different media tools. Compatibility of the Internet to mobile devices has removed such limitations as information flow over borders, so individuals from different cultures interact and communicate with one another continuously. This situation also results in rapid development of intercultural communication.

The concept of media convergence means transmission of the same news content through different media channels. Media channels of a broadcasting group transmit news content to its readers and audience from a single source. Jenkins described convergence as such: "Convergence is a word that manages to describe technological, industrial, cultural, and social changes depending on who is speaking and what they think they are talking about" (Jenkins, 2006:3).Xiao and Li mentioned that in the western literature the concept of media convergence was first used by Technology of Freedom written by Professor Ithivel de Sola

Pool from Massachusetts Institute. As said by them, that Professor Pool developed a model of media convergence and showed the central place of convergence for the conventional media like newspapers and TV. Professor also believed that convergence will be a trend for different media industries and for producers in the future as electronic technologies are integrated to the great digital system on all communication platforms (Xiao and Li, 2012: 25-26). Gere argues that convergence and integration provided by digital technology is related to use of technological developments in media and communications (Gere 2008:14).

In addition, transmission of the same news from separate media channels creates divergent perceptions among readers. Some researchers have used the concept of redundancy to explain this. Wu et al define Redundant to mean that most of the textual and visual information in a news story is covered by previously delivered news stories. The definition of redundancy includes “duplicate” and “near duplicate” news stories as well as news news stories that are redundant+ in content but very different in presentation

Redundancy: It means presenting information in multiple ways so that it is memorized by the user. This information is available in the user’s memory in different forms such as pictures and videos, causing the user to live a cognitive experience as it is recalled (Sunder, 2000:482).

When the same news is transmitted through separate media channels, readers can perceive it differently and deduce divergent meanings. Erdoğan & Alemdar (2010) explain how readers make meaning of news as follows:

“Meaning is what news, a story or simply a text says. What the reader understands is fundamental in a text, instead of its original meaning. The reader reconstructs what the text wants to say through his/her own perception (reconstruction). Meaning, therefore, changes again and becomes the reader itself.” (Erdoğan & Alemdar 2010:298)

Thanks to new technological devices and especially to mobile ones, readers can connect to news sites at any time and place so as to have information about daily developments. As a result of new interactive technological environments, they can read comments about a news story and make comments on it themselves, or they change its impact on audience by sharing it in social networks. Thus, as also expressed by Erdoğan and Alemdar, meaning changes and becomes the reader itself.

In order to communicate a message from the source to the target, it should be properly coded, first. Second, proper decoding should be applied. Finally, it should be transmitted quickly and as loyal to the original (Dileklen, 2005:17).

This requires paying attention to code contents in processing its connotations and denotations. A system in which signs are articulated is called code. A sign is a phenomenon which refers to something other than itself. Therefore, codes are very important for presenting news in different channels. Codes of a news story can be listed as its title, size of the space allocated to it, its location on the page, its presentation style on TV and on the radio, comments made about it on the Internet, and its sharing it in the social media. Individuals' access to information about social problems is highly important for their knowledge about the events and issues that will influence them and their decision making.

Within this framework, functions of media instruments like newspaper, television and radio are highly important. Newspapers inform individuals about daily developments, cultural events, economy, education and sports. The Internet accompanies television and newspaper now in circulation of news. Almost all daily newspapers have a web site. Thanks to the 3G technology, mobile access to television broadcasts is also possible.

Table 2.3. Purposes for Individual Use of the Internet

* January- March 2011
** 16-74 age group
Results of the ICT Usage in Households and by individuals, 2011

2012			
Purpose	Turkey	Urban	Rural
Sending/receiving e-mails	66,8	67,7	61,8
Telephoning over the Internet/ video calls (via web cam) over the Internet	42,5	42,0	45,2
Posting messages to caht sites, social networking sites, blogs, news groups, or onlien discussion forum, use of instant messaging	41,6	41,1	44,1

Reading or downloading online news/ news papers/news magazines	72,5	72,8	71,0
Finding information about goods or services	61,3	63,2	51,9
Listening to web radios or watching web televisions	39,2	40,6	32,3
Playing or downloading games, images, films or music	49,1	49,0	49,7
Playing networked games with other persons	28,8	28,6	29,7
Uploading self created content (text, photos, music, videos, software etc.) to any website to be shared	33,7	33,6	33,7
Creating web sites or blogs	5,0	5,5	2,9
Making an appointment with a practitioner via a website	19,6	21,5	9,5
Using services related to travel or travel related accommodation	18,9	20,8	9,2
Selling of goods or services, e.g. via auctions	7,2	7,8	4,0
Internet banking	17,1	18,4	10,1

Source: TÜİK (Türkiye İstatistik Kurumu, Bilgi Toplumu: Purposes for Individual Use of the Internet <http://www.tuik.gov.tr/PreTabloArama.do>)

As shown in the table above, households mostly use the Internet in order to send/receive e-mails, while reading online news, newspapers or magazine and news has a higher ranking by 72,5%. And according to the third quarter report by the Corporation of Information Technologies, there were around 20 million Internet users and the number of those connecting by their mobile devices exceeded 11 millions in Turkey (<http://www.internetbilgisi.com/2012/12/turkiye-internet-sektoru-ve-kullanicilarin-analizi.html>,04.01.2013).

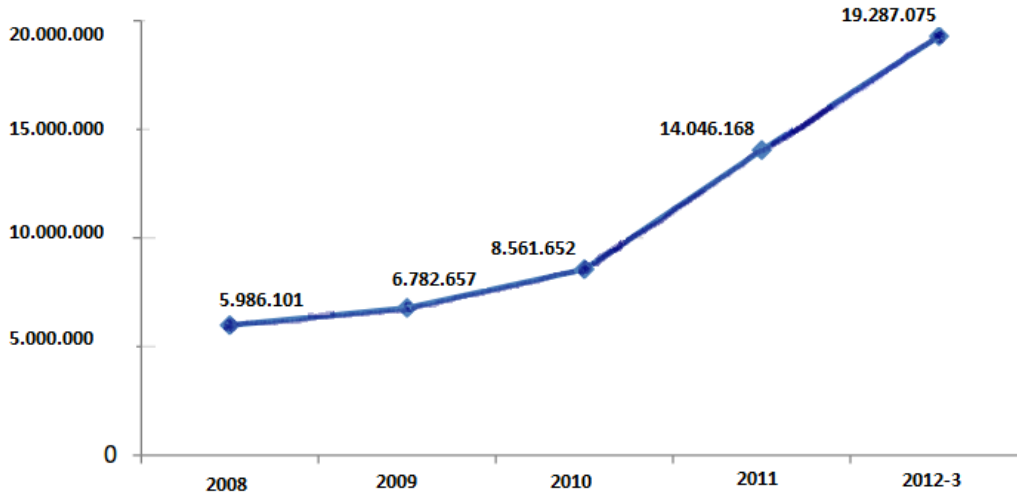


Figure 2.2. Number of broadband internet subscribers

(<http://www.internetbilgisi.com/2012/12/turkiye-internet-sektoru-ve-kullanicilarin-analizi.html>,04.01.2013)

News presented on the Internet is similar to those on daily newspapers and on TV in terms of content. However, the Internet has the ability to broadcast news instantly, just at the point of their happening, unlike newspapers or TV.

It is highly important to attract the attention of the target audience. Therefore, the language of news should be simple and clear. The factors which influence the attention span of the target audience are as follows: 1. Acquaintance or proximity of the news with its target audience; 2. Saliency of the issue; and 3. The presentation style of the issue (Girgin, 1998:33). For presentation style, the media channel through which a news story is transmitted is as important as the structure and the contents of the news. For example, presenting a news story on TV and covering it in a newspaper is very different from each other in terms of mobilizing emotions.

As also put out by Marshall McLuhan, medium is the message. For example, presenting a sad news story as accompanied by visual aids on TV might not affect the reader as much as presenting it on a newspaper with photos might do (Schneider&Raue, 2000:190).

While media instruments like television, radio and newspaper offer one-way communication, there is double-way communication on the Internet. Attractiveness of television programs are measured through ratings, and newspapers by their circulation rates; on the other hand, attractiveness of the Internet news is measured according to

number of clicks, readers' comments and rates of transmission to the social media such as Facebook and Twitter.

The effect of the medium is made strong and intense just because it gives another medium as "content" (McLuhan, 2001:18). Thus, the Internet is powerful as it presents another media channel as its content. A news story published on online newspapers direct the reader to other sites through links; the reader learns comments about this news story and shares them in the social media like Facebook and Twitter. In this way, content of a news story create different impacts, depending on whether it is transmitted through TV, a printed newspaper or an online newspaper. Its articulation through other media instruments complies with the construction of meaning as mentioned by McLuhan.

3. HUMAN COMPUTER INTERACTION AND INTERACTION DESIGN IN MOBILE PUBLISHING

3.1. Human Computer Interaction

The conditions in which people have their life experiences are related to each other. In contemporary communication environments, these conditions are mostly created by technological devices, and especially by computers. The most important factor for use of technology, and especially of computers, is the cognitive one.

Psychologists have also started to say in computer technologies that have been developed since the early 1970s as these technologies are used by human beings who employ their emotions and thoughts as a mediator in this process. In addition, one of the most important reasons why human-computer interaction has been attached importance since those years is the Three Mile Island nuclear power plant disaster that happened in the USA in the late 1970s. The locus of this disaster was the electricity command office; it happened because the employees in that office did not use the control panels properly and effectively. Research about the reasons for the disaster found out that this incompatibility between the employees and the control panels completely resulted from the ill-designed interface, as it was announced to the public opinion (Preece et al., 1994:23-24)

Rogers et al. argue that HCI was historically concerned with usability, known as usability engineering. However, it became concerned with understanding, designing, and evaluating

a wider range of user aspects. And now, the latest version of the international standards for human-centered design uses the term *user experience* instead of usability. It covers usefulness, desirability, credibility and accessibility (ISO 13407, 2010, Preece et al., 2011:18)

In our daily life we use many machines like mobile phones, remote controls, electronic household appliances. Each one of them has a unique design and usage style. In order to use these machines in the easiest way possible, we should remember how to use them. The feature which allows remembering, learning and concentrating on their use is their design (Rogers et al., 2011:67) Individual use of and interaction with these devices have produced the concept of *interaction design*.

There are separate disciplines, as seen in figure 2.4, within the framework of this concept, which has been developed as related to human-computer interaction.

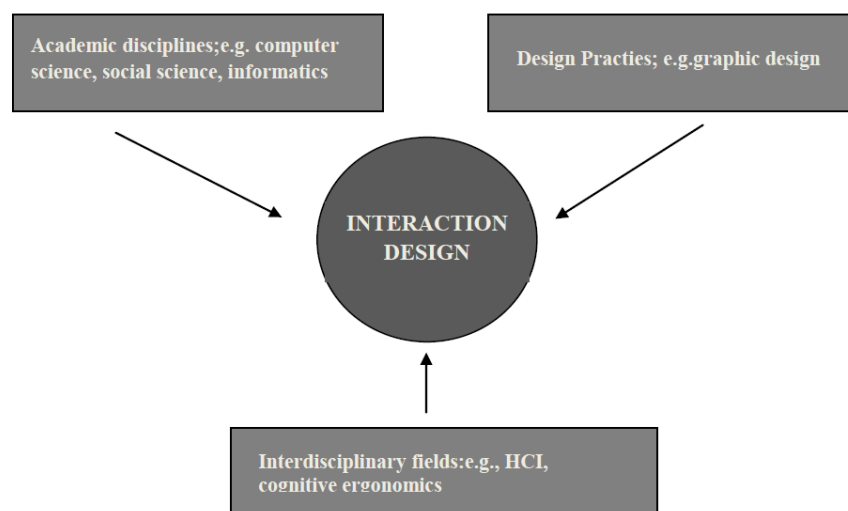


Figure 3.1. Relationship among contributing academic disciplines, design practices, and interdisciplinary fields concerned with interaction design (Rogers and et al., 2011:10)

Academic disciplines contributing to ID: Psychology, Social Science, Computing Sciences, Engineering, Ergonomics, Informatics

Design practices contributing to ID: Graphic design, Product design, Artist-design, Industrial design, Film industry

Interdisciplinary fields contributing to interaction design: HCI, Human Factors, Cognitive Engineering, Cognitive Ergonomics, Computer Supported Co-operative Work, Information Systems

The best way to develop and increase human-computer interaction is to design the system in the most proper way possible. To do this, a designer should consider individuals' purpose for using a computer. He/She should also take into account capacities and limits of individuals as well as of computers.

Before launching any design, it is very important to know the user. When the user is properly analyzed, it will be clear how the design should evolve. In contemporary information age, it is vital to know user's preferences, expectations from as well as competencies and capacities about technological products if one wants to articulate an effective and functional product. The thereby emerging product will be one which users can use easily. It will also be versatile so that users will not have difficulty remembering how to use it.

Usability

Usability refers to ensuring that interactive products are easy to learn, effective to use, and enjoyable from the user's perspective. More specifically, usability is broken down into the following goals:

- Effective to use (effectiveness)
- Efficient to use (efficiency)
- Safe to use (safety)
- Having good utility (utility)
- Easy to learn (learnability)
- Easy to remember how to use (memorability)

In order to evaluate the usability of a product, it is necessary to prepare and plan the processing steps properly from the start to the end. The evaluation method given below explains the necessary processing steps:

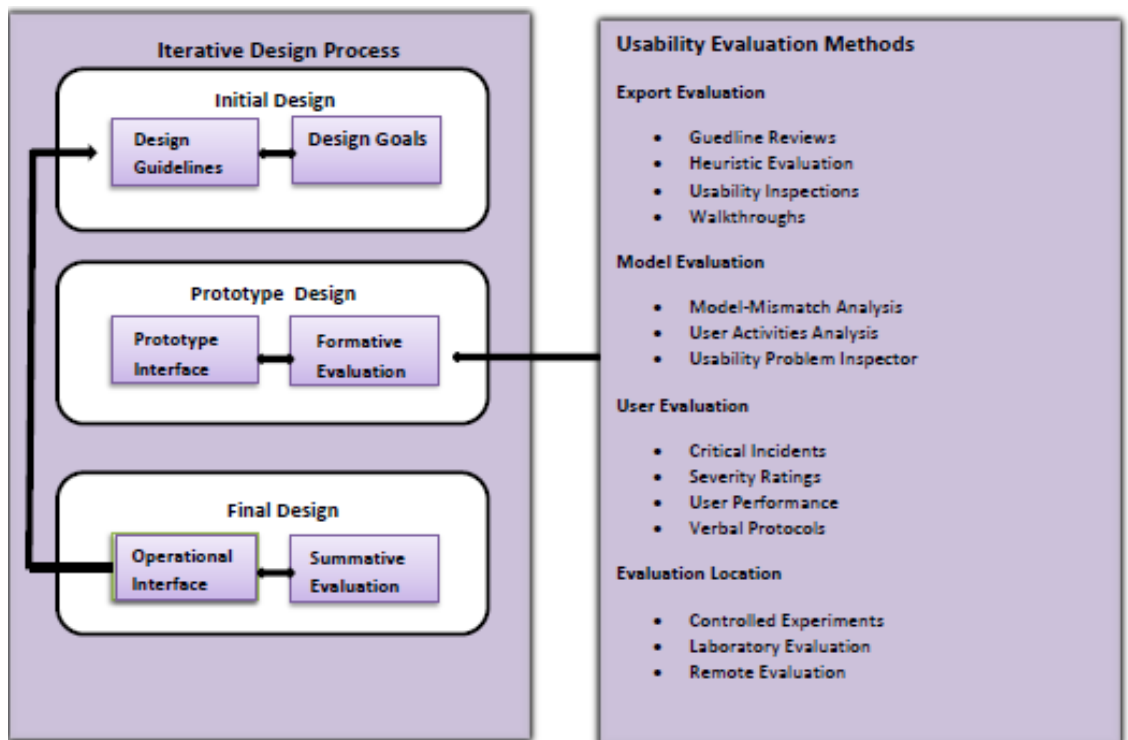


Figure 3.2 Usability evaluation methods in formative usability evaluation (Kies et al.,1998 as cited in, Yong GU et al., 2006:210).

Effectiveness is a very general goal and refers to how good a product is at doing what it is supposed to do. *Efficiency* means that the user achieves his/her goal taking the shortest steps and can use that product through a single button (Rogers et al., 2011, p.19) According to the 2011-2012 World Economic Forum Reports any appropriate use of technology reflects two essential elements of improvement: *efficiency* and *efficacy*. With regards to efficiency, technology promotes improved information dissemination processes at all levels of an organization, and reduces the risk of making a mistake significantly. With regards to efficacy, technology allows application of company resources in a more appropriate manner, increasing the effectiveness of the tasks or processes being undertaken (http://www3.weforum.org/docs/WEF_GCR_Report_2011-12.pdf)

From the user's perspective, the best way to increase effectiveness and efficiency in mobile devices is to decrease number of clicks as much as possible. Moreover, interface should be designed according to the user's expectation.

3.1.2. Other Disciplines' Contributions to Human Computer Interaction

3.1.2.1. Advantages of HCI from Organization's Perspective

In our information society, organizations which work for immediate access to and transmission of information have now become a necessity. Technological devices, especially computers, are employed to serve customers better. For example, suppose you call a hotel for booking. The authorized person on the phone would check and give you information about the occupancy rate of the hotel for the period you asked for. Here, the related person would first interact with a computer. Another example can be given from a bank. When we visited a bank to check our accounts or to transfer money, the related person would use a computer, entering our personal details in order to do the necessary operations. As can be seen from the examples, it is necessary to maximize human computer interaction in order to achieve productivity.

To maintain their employees' interaction with technological devices, especially with computers, so as to achieve the maximum productivity in their products and services, firms and corporations should first consider how their employees use modern technologies for access to information at work and in the social life, and they should design their interfaces accordingly. It is possible by cognitive psychology that people use technological devices either intentionally or unintentionally.

3.1.2.2. Cognitive Psychology and Psychoanalytical Theory

We do certain activities regularly in our daily life; some of them such as breathing are not planned but done reflexively, while we learn others through our experiences, like driving or riding a bike. Norman (1993) defines these activities in two groups: experimental and reflective cognition (as cited in, Rogers et al., 2011:66).

Seeing, recalling, and reading, eating, hearing and speaking are about cognitive psychology. Therefore, cognitive psychology is defined as the whole of these processes:

- Attention
- Perception

- Memory
- Learning
- Reading, speaking and listening
- Problem solving, planning, and decision making

According to Ross, skills are classified into psychomotor skill, cognitive knowledge, and affective considerations. Each of them is taught separately. Experimental learning theory claims that as learning is a continuous process based on experience, learning is most effective when the learning environment combines relevant components of psychomotor, cognitive and affective knowledge. (Ross G.J.,2012: 429-430).

These happen if an individual receives information and transmits it to the necessary points in line with the signals coming from the brain. Their realization concerns cognitive psychology. Susan Fiske and Shelly Taylor say:

“Attitudes have always been accorded star status in social explanations of human behavior by lay people and professionals alike.” (Fiske&Taylor,1984, as cited in Turnet &West, 2004, p. 120)

This process, defined as human information processing, are composed of four steps as seen in figure 3.3

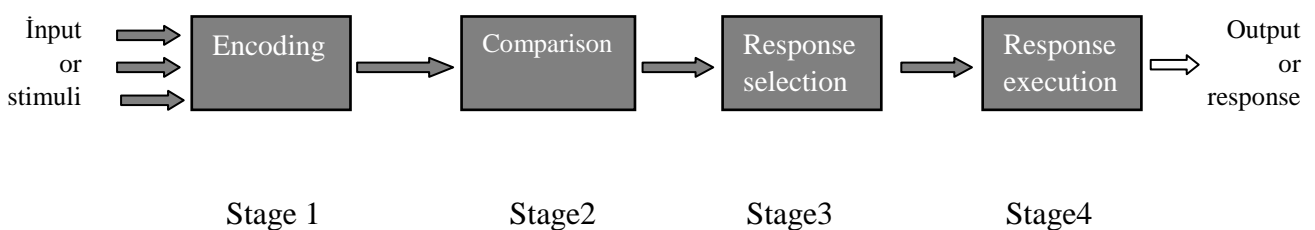


Figure 3.3 Human information processing model (Rogers et al., 2011:89)

Everyday individuals learn something from events occurring around them or from documents they read. They learn from their social environments, to put it briefly; in order to recall what they have learnt, they have to store it in their memory. Hooper and Berkman explain that perception includes information we receive from our environment and interact

with other information we have stored previously in our memory. This process allows us to relate new experiences with old ones, and it starts early in childhood as visual information is collected (Hoover and Berkman, 2012:515-516).

Everyday people interact with technological products, especially with devices such as mobile phones and computers. How do people interact with a computer system? Norman presented a model to explain this interaction. According to this model, people tend to be goal oriented, wanting to achieve a specific objective when performing a task. Actions and tasks can be cognitive or physical in nature. Action cycle consists of three stages: goal information, execution of activities to achieve the goal, and evaluation of the results of the action. This cycle flows as seen below (Norman, 1998, as cited in, Galitz, 2007:72):

A goal is formed: A cognitive activity, appropriate, or an objective is thought out and defined. The goal could be typing a keyboard to writing a something or to find the best price for a specific electronic device.

An execution plan is devised and implemented: This phase consists of three stages, the first two being cognitive in nature, the third being physical

- *General methods to achieve the desired goals are decided upon:* Typing a letter requires using a computer's word processing function. Finding the best price requires using the Internet to compare prices.
- *The action sequence is planned:* Typing a letter requires opening a word processor, retrieving a blank document, and typing the letter. For example, the best price decision is made through the Internet search to find the suitable price of the desired equipment.
- *The actions are performed:* The various available computer controls, such as the keyboard and mouse, are used to perform the planned tasks.

The results of the actions taken are evaluated: This is another cognitive phase that also consists of three stages.

- *The resulting output is perceived and understood:* The letters and symbols typed appear on the screen. Prices of the equipment are submitted on the website that is being viewed.

- *The outcome is interpreted as based upon expectations:* Is the letter formatted properly and is its content accurate and complete? Are the prices displayed for the proper equipment?
- *The results are compared to the formulated goals:* Has the letter been printed correctly? Is the price found a good one? A failure to achieve the formulated goals may require the action cycle need be performed again or be modified.

An interaction design should enable human action cycles to be performed as quickly and accurately as possible.

Individuals learn about daily life developments from media instruments that surround them. The information they obtain from media instruments have a definite presentation style, and they interact with media instruments to gain information. The distributed cognition approach describes this interaction in terms of how information is propagated through different media (Rogers et al., 2011:91).

3.1.2.3. Ergonomics or human factors

Ergonomics or Human Factor is another important issue for interface design. Relationship between a human being and a computer also depends on this factor. Performing such tasks as seeing the menus on the screen by mobile or immobile devices, selecting items from the list and perceiving videos, pictures and colors is highly important.

Because of this, experts developed international standards. ISO 9241 is a part of these standards and called “Ergonomic requirements for office work with visual display terminals”. These standards include some requirements and recommendations for providing ergonomics to users. Especially parts 10 to 17 explain how ergonomics should be (Bevan, 2006:6).

Part 10: ISO 9241-10 (1996) Dialogue Principles: This part deals with general ergonomic principles which apply to the design of dialogues between humans and information systems: suitability for the task, suitability for learning, suitability for

individualization, conformity with the user expectations, self-descriptiveness, controllability, and error tolerance.

Part 12: ISO 9241-12 (1998) Presentation of Information: This part contains specific recommendations for presenting and representing information on visual displays. It includes guidance on ways of representing complex information by using alphanumeric and graphical/symbolic codes, screen layout, and design as well as windows.

Part 13: User Guidance ISO 9241-13 (1998): This part provides recommendations for the design and evaluation of user guidance attributes of software user interfaces, including Prompts, Feedback, Status, On-line Help and Error Management.

Part 14: Menu Dialogues ISO 9241-14 (1997): This part provides recommendations for the ergonomic design of menus used in user-computer dialogues. The recommendations cover menu structure, navigation, option selection and execution, as well as menu presentation (by various techniques including windowing, panels, buttons, fields etc.).

Part 15: Command Dialogues ISO 9241-15 (1997): This part provides recommendations for the ergonomic design of command languages used in user-computer dialogues. The recommendations cover command language structure and syntax, command representations, input and output considerations, as well as feedback and help.

Part 16: Direct Manipulation Dialogues ISO 9241-16 (1999): This part provides recommendations for the ergonomic design of direct manipulation dialogues and includes manipulation of objects, and design of metaphors, objects and attributes. It covers those aspects of Graphical User Interfaces that are directly manipulated and not covered by other parts of ISO 9241.

Part 17: Form-filling Dialogues ISO 9241-17 (1998): This part provides recommendations for the ergonomic design of form filling dialogues. The recommendations cover form structure and output considerations, input considerations, and form navigation.

To sum up, the standards of mobile interface design should be user-oriented, and the criteria like navigation, customization, conformity with user expectations, controllability

and error tolerance, representing complex information using alphanumeric and graphical/symbol and codes, menu presentation, screen layout should be considered, as explained before.

3.1.3. Importance of Poor and Good Design from User's Perspective

“Design is an interesting word. Some people think design is related to external appearance. It is true, indeed; however, if you think more deeply, design is actually about how something operates and works behind outer appearance.”

-Steve Jobs

Design is a concrete product that is produced as an individual's imaginative idea passes through planned processes. Rather than the aesthetic appearance of a product, its functionality and ability to meet the user's needs are more important. Maximum productivity is obtained from a product whose functionality is given preference and which is shaped within a proper design.

Design should be easy and suitable to use and should make the user live an entertaining experience (Rogers et al., 2011:2). A weekly designed product wearies and annoys the user and might cause him/her to abandon it. Users do not prefer products whose use is difficult; they prefer the kind of products whose use is easily recallable. This should be given preference when designing interfaces of devices. Let us think about our mobile phones we use every day. While menus of some are more easily understandable, others are more complex. Technology is for everybody; it should be able to address people from all ages, including disabled ones. Therefore, interface design is very important for mobile and immobile technologies.

Barnett (1993 and 2005) has listed features of poor design which discourage users. This list includes:

- Unclear captions and badly worded questions
- Improper type and graphic emphasis
- Misleading headings
- Information requests perceived to be irrelevant or unnecessary
- Information requests that require one to backtrack and rethink a previous answer, or look ahead to determine possible context. Inefficiency results and mistakes increase.
- Cluttered, cramped layout

- Poor quality of presentation, legibility, appearance, and arrangement (Barnett, 1993, as cited in Galitz, 2007:128)

Moreover, according to her experiences with Microsoft, Howlett (1995) explained that the most common problems in visual interface design are:

- Visual inconsistency in screen detail presentation and with the operating system.
- Lack of restraint in the use of design features and elements.
- Overuse of three-dimensional presentations.
- Overuse of too many bright colors.
- Poorly designed icons.
- Bad typography.
- overbearing, too cute, or too literal, thereby restricting metaphors

See argued that these factors make screens disorganized, distracting, chaotic and confusing. Users get distracted because of extensive incorporation of graphics. She listed the following reasons for distraction (Howlett, 1995, as cited in, Galitz, 2007:129)

- Numerous visual and auditory interruptions.
- Extensive visual clutter.
- Poor information readability.
- Incomprehensible screen components.
- Confusing and inefficient navigation.
- Inefficient operations and extensive waste of user time.
- Excessive or inefficient page scrolling.
- Information overload.
- Design inconsistency.
- Outdated information.

3.2. Comparison of Immobile and Mobile Communications Technologies

Comparing immobile and mobile communication technologies, we first see that individuals have more freedom with mobile ones. Thanks to mobile technologies, users can communicate without abiding themselves by any place. Turkey chose GSM as its mobile phone technology in 1990. With GSM networks supporting GPRS and WAP technologies and with the WAP system adjusted to mobile phones and beepers, wireless communication was realized

(http://btk.gov.tr/kutuphane_ve_veribankasi/raporlar/arastirma_raporlari/dosyalar/3G_Raporu_Aralik_2002.PDF, 1-19, 15 November 2011).

According to the 2011 3rd Quarter Report by the Corporation of Information Technologies and Communication, number of immobile subscribers decreased. As can be seen from the table below, in Turkey which had 15,47 million immobile telephone subscribers as of the end of September 2011, penetration rate fell into almost 21%.

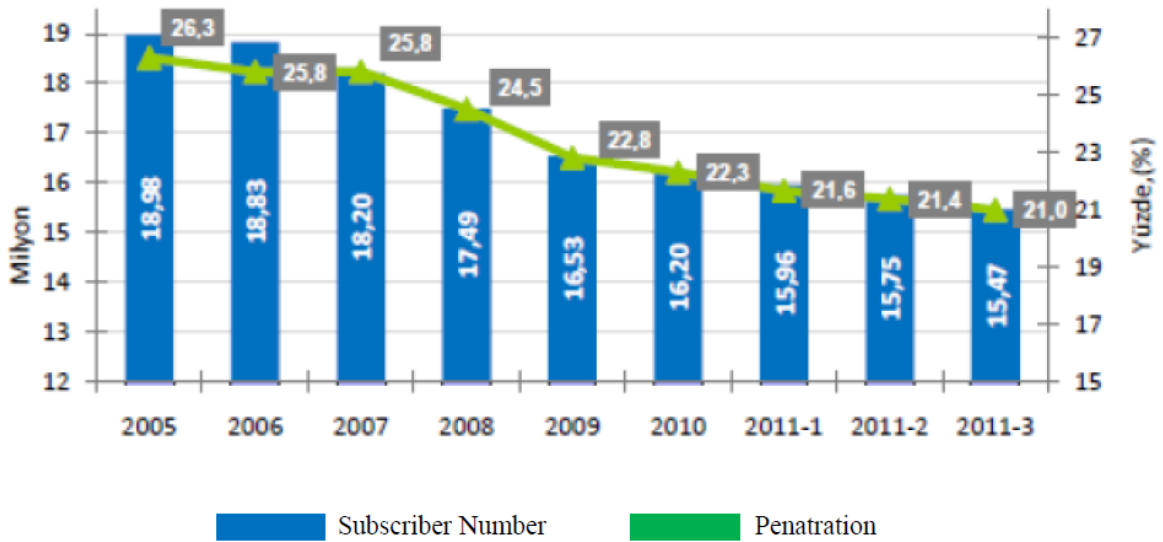


Figure 3.4 Fixed number of subscribers and Penetration

(http://btk.gov.tr/kutuphane_ve_veribankasi/pazar_verileri/ucaylik11_3.pdf:12, 16 November 2011)

Against the decline in immobile subscription, a huge growth was observed in mobile subscription, particularly in the period between 2009 and September 2011, mainly as a result of the introduction of 3G technology.

In the table below is given the rate of mobile subscription, which increased from 2004 to 2011. The table is taken from the 2011 3rd Quarter (July August September) Report prepared by the Corporation of Information Technologies and Communication.



Figure 3.5 Mobile subscribers and penetration in the total population

(http://btk.gov.tr/kutuphane_ve_veribankasi/pazar_verileri/ucaylik11_3.pdf:43,16 November 2011)

3.2.1. Ownership of Mobile Communications Technologies

Mobile technologies are now an ordinary part of individual lives. TÜİK (Turkey Statistics Corporation) showed that 9.6% of the Turkish population had mobile phones in 2011. In addition, those who owned a mobile computer (Laptop or Tablet Pc) were 22.6% (http://www.tuik.gov.tr/VeriBilgi.do?tb_id=60&ust_id=2,16 November 2011).

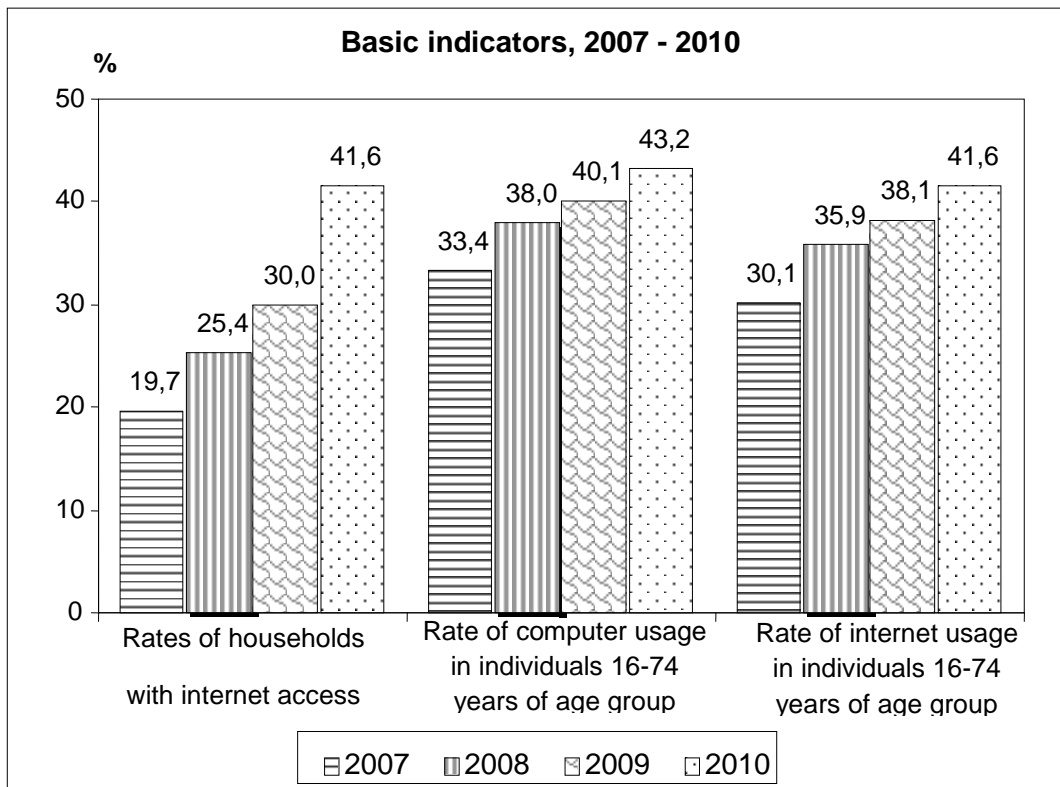


Figure 3.6 Basic indicators 2007-2010 (TÜİK T.C. Prime Ministry Turkey Statistics Corporation, www.tuik.gov.tr, 01.02.2011)

In the table above, it is seen that the rate of individual computer and Internet usage increased each year between 2007 and 2010 for the age group between 16 and 74. According to the April 2010 report on the Household Use of Information Technologies, 41.6% of households had access to the Internet. This rate was 30% in April 2009 (<http://www.tuik.gov.tr> 2011.) The population of Turkey was estimated to be 74.724.269 as of 31 December 2011 (http://www.tuik.gov.tr/PreTablo.do?alt_id=39, 15.01.2013)

According to a study by Turkey Statistics Corporation in January-March 2009 about the reasons why individuals aged between 16 and 74 use the Internet, people use the Internet primarily to obtain information, with sending and receiving e-mails having taken the first rank.

3.3. Development of Mobile Publishing and Broadcasting Systems

People had to speak with wired telephones about 20 years ago. Spread of mobile and personal communication provided additional opportunities for some individuals, households, firms and communities to engage with the dominant networks of information, production and exchange, and to exit the Fourth World (Katz, 2008:38).

Mobile communication is now a necessity of our age. While people had to conduct individual-based communication in the past, they can communicate at any place and time now. Mobile phones pioneered this new situation. According to the report by the Global Mobile Suppliers Association (GSA), number of mobile phone subscription is getting close to a billion (It is available on: [http:// www.ntvmsnbc.com/id/2517106/](http://www.ntvmsnbc.com/id/2517106/), 8 August 2011).

The largest reason for effectiveness of mobile communication is that the Internet can be applied to mobile devices. Launch of both technologies occurred in almost the same period of time. Global System for Mobile Communications (GSM) was launched in 1991, and the first generation of Internet browsers (e.g, Mosaic) was introduced in 1993 (Srivastava, 2008:15). Mobile Internet has changed the way people use their mobile phones. Integration of the Internet to mobile devices provide some advantages such as listening to music, downloading content, playing Games, watching videos, reading news, shopping and banking. Wireless Application Protocol (WAP), Short Message Services, Hyper-text and Markup protocols also began along with the combination of the Internet and mobile phones.

Actually, the first mobile communication occurred through SMS. People often prefer sending a message to making a call as a faster and more intimate alternative to e-mail. The reason for the great and unexpected popularity of SMS seems to be its lower cost than a call's and the convenience of communicating with a busy or otherwise occupied party (Srivasta, 2008:17). In addition, micro-enterprises were realized as a result of SMS. For example, as said in an article from Economist, farms in Warana, India (70.000 of them spread across 7 villages) were able to use their mobile devices to check stock and water levels throughout their sugarcane farms via text messaging, while similar initiatives elsewhere in India and in Kenya allowed fishermen and farmers (respectively) to track market rates for their goods, calling and texting various outlets and ports to make their

deals while ensuring they receive the best offer (*The Economist*, 2008 and Greengard, 2008, as cited in Dick, 2010:5)

The phenomenal uptake of cell phone across the globe has resulted in that all manners of services and apps were ported over from web browsers to social networking. There are now 100.000s of apps available with many social networking, music, productivity, lifestyle, travel, and navigation (Rogers et al., 2011:188).

Besides new mobile Internet users, new Internet users emerged. In the end of 2002 it was seen that mobile technologies became integrated to the mainstream and exceeded immobile ones. This situation started not only in industrialized but also in developing countries. Factors like low costs of installment and cost efficient and prepaid services making payments easy for the user also played a role in this transformation (Srivasta, 2008:16). This situation became possible with the development of mobile devices. As a result of 3G technology, which is two years old now, it is possible to have more immediate access to information. It was also possible to reach information by 2G and 2,5G technologies that preceded it. However, it was quite slower. It is seen that 3G technology has created a huge difference in use of mobile Internet. Thanks to 3G technology, people are now able to reach information easily by their mobile phones; ultimately, mobile phones have become an indispensable part of individuals' lives. Whiteside says the following about this condition:

“Digital mobile and online ads are among the main sources of online growth while subscriptions, TV and music download, video- on-demand, online/mobile video games and e-publishing are other major sources. These improvements will create expansion in the use and penetration of both the Internet and mobile devices.” (Whiteside 2008:3)

As a result of this rapid transformation in the mobile communication sector, we do our daily activities now by our mobile phones. For example, it is not possible to pay bills and transfer money by mobile devices. According to the statistics about Turkish banks' use of information technologies, the number of consumers using mobile banking was 1,663,373 in 2012. ([http:// www.webrazzi.com/2012/08/28/turkiye-mobil-bankacılık](http://www.webrazzi.com/2012/08/28/turkiye-mobil-bankacılık), 03 December 2012)

Figure 2.6 covers rates about use of 3G services. While number of subscribers was 16.6 million in the third quarter of 2010, it reached to 28.6 million in the third quarter of 2011.

Furthermore, along with the 3G service, number of subscribers receiving the Internet service from mobile computers or phones increased from 1.158.866 to 5.324.701 in the same time period. In addition, total rate of mobile Internet use was announced to be 8.561 T Byte in that period.

DATA OF 3G USER			
	2010-3	2011-2	2011-3
NUMBER OF 3G SUBSCRIBER	16.657.286	24.835.453	26.608.069
INTERNET ACCESS FROM MOBILE COMPUTER	1.158.866	3.629.522	1.317.155
INTERNET ACCESS FROM MOBILE PHONE	1.158.866	3.629.522	4.007.546
THE AMOUNT OF MOBILE INTERNET USAGE	3.274.139	5.590.910	8.766.845

Figure 3.7 Data of 3G user

(http://btk.gov.tr/kutuphane_ve_veribankasi/pazar_verileri/ucaylik11_3.pdf:43,16 November 2011)

Now information transfer is faster, thanks to machine to machine communication (M2M). In the web site *Kobiden*, Satko Technology Director of General Nedim Çebiler announced that when they applied M2M technology, they saved oil minimum by 10% at a minimum (http://www.kobiden.com/satko-teknoloji-%E2%80%98m2m-ile-maliyetleri-asagiya-cekiyor-_9770_haber.html, 6 October 2011).

How did mobile communication, which demonstrated a fast development in the last 10 years, become so successful? According to the 2010 ICT Development report, mobile success depends on five factors. These are: competition, common technology, prepaid billing, applications and equipment.

Competition: Introduction of the second-generation technology opened up greater opportunities for new market entrants, due to increased capacity and better spectrum efficiency. Competition has lowered prices, increased services and expanded coverage, creating the right conditions for mobile communications to grow.

Common Technology: Europe established a common regional standard for the second-generation digital mobile technology over a quarter century ago. This led to a de facto global standard for 2G mobile technology.

Prepaid billing: Introduction of prepaid billing in 1996 brought mobile to the masses. There are millions of people around the world who would not qualify for a postpaid mobile plan, let alone be able to afford the required monthly payments.

Applications: Growing number of applications available with mobile networks has increased demand and usage. Roaming, text messaging and mobile broadband have become desirable applications for a growing number of people.

Equipment: Mobile equipment, both on the network infrastructure side as well as on devices, has grown in sophistication while continuing to drop in price” (http://www.uis.unesco.org/Communication/Documents/WTDR2010_e.pdf:198, November 2011).

Also, Burey(2000) argues that emotional responses may determine which interfaces (e.g., websites) people choose to use as they seek pleasure or enjoyment beyond just task efficiency. This places emphasis on the visual design features of the webpage interfaces that promote engagement, pleasure and delight rather than just functionality or ease of use (as cited in, Deng&Pople, 2010:721)

3.3.1. Interface Design and Interaction

In the 21st century, people are completely surrounded by technological products. In our daily life, a wide range of products like remote controllers, mobile phones, mobile computers, and electronic household appliances is produced and continuously developed.

Each technological product has separate use details. While people use some immediately, they use some others after a certain learning and trial process. This situation is defined as user interface and analyzed within the field of human computer interaction. The purpose of user interface is keeping interaction between the user and the device at the maximum level through proper and effective design and guaranteeing the highest productivity. In order to

do this, it is now necessary to design a system interface in the most proper and effective way possible. The user interface is the part of a computer and of its software that people can see, hear, touch, talk to, or otherwise understand or direct (Galitz, 2007, p. 4). Rogers et al. argue that there are many aspects of the user experience's that should be considered when designing interactive products. These are the most important among them: usability, the functionality, the aesthetics, the content, look and feel, and the sensual and emotional appeal (Rogers et al, 2011:15) User interface is usually composed of two ingredients: input ve output. Galitz says that:

“Input is how a person communicates his or her needs or desires to the computer. Some common input components are the keyboard, Mouse, Trackball, one's finger (for touch-sensitive screens, or pads), and one's voice (for spoken instructions). Output is how the computer conveys the results of its computations and requirements to the user. Today the most common computer output mechanism is the display screen, followed by mechanism that takes advantage of a person's auditory capabilities: voice and sound.”(Galitz 2007:4).

First, Graphical User Interface (GUI), which was designed for personal computers, was introduced to our daily life with amazingly rapid development of the World Wide Web (Galitz, 2007: 3).Before making a decision about the interface design of a product, its type should be considered. Different interface types prompt and support different perspectives on the product under development and suggest different possible behaviors (Rogers et al., 2011:406). As seen below Rogers et al.(2011) describe 20 different interface types.

Table 3.1 Types of interfaces

Interface type	Common Design Issue
1.Command-based 2.WIMP and GUI 3.Multimedia 4.Virtual reality 5.Information visualization 6.Web 7.Consumer electronics and appliances 8.Mobile 9.Speech 10.Pen 11.Touch 12.Air-based gesture 13.Haptic 14.Multimodal 15.Shareable 16.Tangible 17.Augmented and mixed reality 18.Wearable 19.Robotic 20. Brain-computer	WIMP and web Augmented and mixed reality Multimedia Mobile and multimedia Mobile Augmented and mixed reality Shareable, touch Shareable, air-based gesture Tangible Multimodal Speech, pen, touch, gesture, and haptic Touch Virtual Reality

Among the aforementioned types of interface, the mobile and Web ones are the most valid since mobile devices are indispensable technological products now.

In our daily life, we can connect to the Internet at any place to get information about current events and to follow developments important for our business. While doing all these, we use screens of mobile or immobile devices; therefore, it is very important that their screens are properly designed. Based on an actual system that requires processing 4.8 million screens per year, an analysis established that if poor clarity forced screen users to spend one extra second per screen, almost one additional person per year would be required to process all screens (Galitz, 2007:5) If all the seconds spent during an operation in an ill-designed screen are calculated, they equal to the total laboring time of that person per year.

The table below shows that each additionally spent 20 seconds are equal to 14 persons a year.

Table 3.2 Impact of Inefficient Screen Design on Processing Time (Galitz, 2007: 5)

ADDITIONAL SECONDS REQUIRED PER SCREEN IN SECONDS	ADDITIONAL PERSON-YEAR REQUIRED TO PROCESS 4.8 MILLION SCREEN PER YEAR
1	7
5	3.6
10	7.1
20	14.2

In contemporary communication environment, which replaced face-to-face communication, an ill designed screen makes use difficult and slows down functionality. In his studies Heines has found out that an ill designed computer screen prevents communication (as cited in Aydın and Kurt, 200:7).

If a product's interface design is to be developed, first the user should be taken into account. Situations which make it difficult to decide for the user should be abandoned. One of the most important conditions for proper interface design is safety. Rogers et al. (2011) argue that safety involves protecting the user from dangerous conditions and undesirable situations. Safety can be related to two aspects. The first one is ergonomics of places where people work. The second depends on users' using keyboard, writing, saving documents and leaving the system (Rogers, et all, 2011:20). As seen below, two examples are given to explain the second aspect. For example, if a user wants to shut down an apple macbook pro laptop, he/she needs to select the shut down option in the apple menü, but the log out apple option is right below it. Log out means exit from the system like shut down. However, when the user logs out, the user's computer is not completely shut down. It only removes the user from the system for security purposes. This application is used for security in computers with more than one user. In addition, the users who do not know the log out option exactly may perceive it as shut down at the first sight. When these users log out, the computer will not be completely shut down, and for the users who do not know the password of the computer, this situation will be perplexing. Instead, either the meaning of

the log out option should be explained, or it should be located at the top rather than below the shut down option as it is in PC applications.

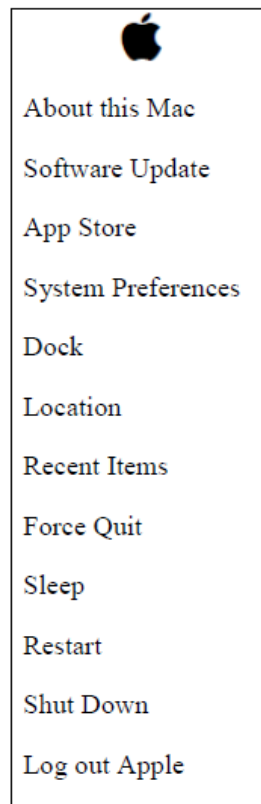


Figure 3.8 Safety for Users depend on interaction design

Before giving a product its actual shape, a model in which the user can participate should be developed. Missing points of the model should be specified and evaluated, and it should be redesigned accordingly.

Kies, et all explained that,Interactive systems are usually designed through an iterative process involving design, evaluation, and redesign as shown in figure 3.9 (Kies, et all ,1998, as cited in Ji et al., 2006:210)

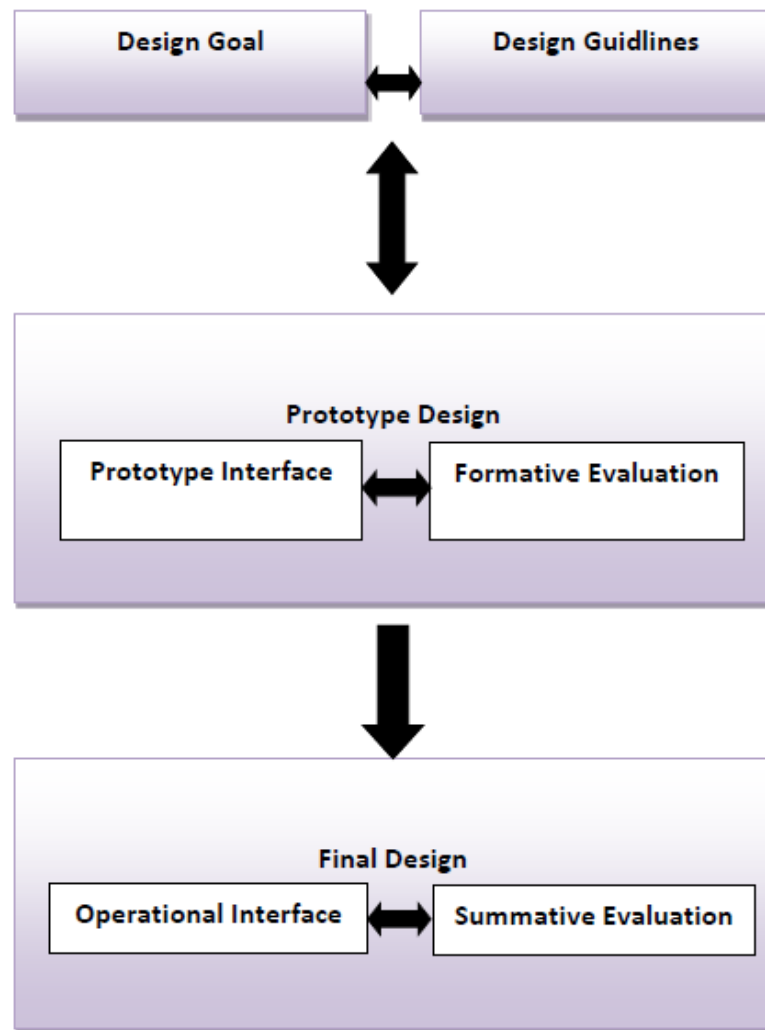


Figure 3.9 Usability evaluation methods in formative usability evaluation (Kies, et all ,1998, as cited in Ji et al., 2006:210)

According to the International Organization for Standardization, the well known user research methods are usability evaluations, task analysis, focus groups and expert reviews (International Organization for Standardization, 1999, as cited in Mannonen, 2009:13)

Moreover, Rogers et al. classify the usability evaluations into three categories depending on the setting. These are:

Controlled settings involving users (examples are laboratories and living labs): User's activities are controlled in order to test hypotheses or to observe certain behaviors. The main methods are usability testing and experiments.

Natural Settings involving users (examples are online communities and public places): There is little or no control of user's activities when determining how product would be used in the real world. The main method is field study.

Any settings not involving users: Consultants and researchers critique, predict, and model aspects of the interface in order to identify the most obvious usability problems. The range of methods includes inspections, heuristics, walkthroughs, models, and analytics (Rogers et al., 2011, p. 437).

The most suitable methodology for evaluating whether mobile interface design is compatible with users' attitudes and behaviors is the establishment of a controlled setting which involves users and where methods of usability testing and experimental design are applied.

Usability testing involves different methods, such as experiments, observation, interviews and questionnaires applied in controlled settings. The main goal is to determine whether an interface is usable by the intended user population to carry out the tasks for which it was designed. This requires examining how typically users perform tasks (Rogers et al., 2011, p. 438).

Some exemplary products taking the user's perspective into consideration:

These are iPod nano-touches developed by Apple and Nike together. From the clock-like iPod the user can learn how far she/he runs and how many calories she/he spends. The intended audience has been analyzed, and the product has been developed according to their needs. By doing so, it is aimed to gain maximum productivity from the product.



Figure 3.10 products taking the user's perspective into consideration

Another example is the product iPad Drchrono developed by Apple for the medical world. Doctors can draw, fax and prescribe from the iPad drchrono by using the mobile electronic health record (EHR) app for the iPad. The free e-prescribing feature is exactly what it sounds like: electronic prescription writing for free. Now doctors can write up a prescription for any drug and send it over to the patient's pharmacy, right from their iPad, free of charge. The FreeDraw tool allows doctors to do free-hand, color-coded drawings on any document from their iPads. For example, a doctor might get an X-ray and circle a suspicious mass or fracture, and then send the X-ray with a note to a specialist for review. A healthcare professional can use FreeDraw on X-rays, skeletal diagrams, and more, and embed the image in their notes (It is available on: <http://vator.tv/news/2011-09-22-doctors-can-now-draw-fax-and-prescribe-from-ipad>, 28 September 2011).

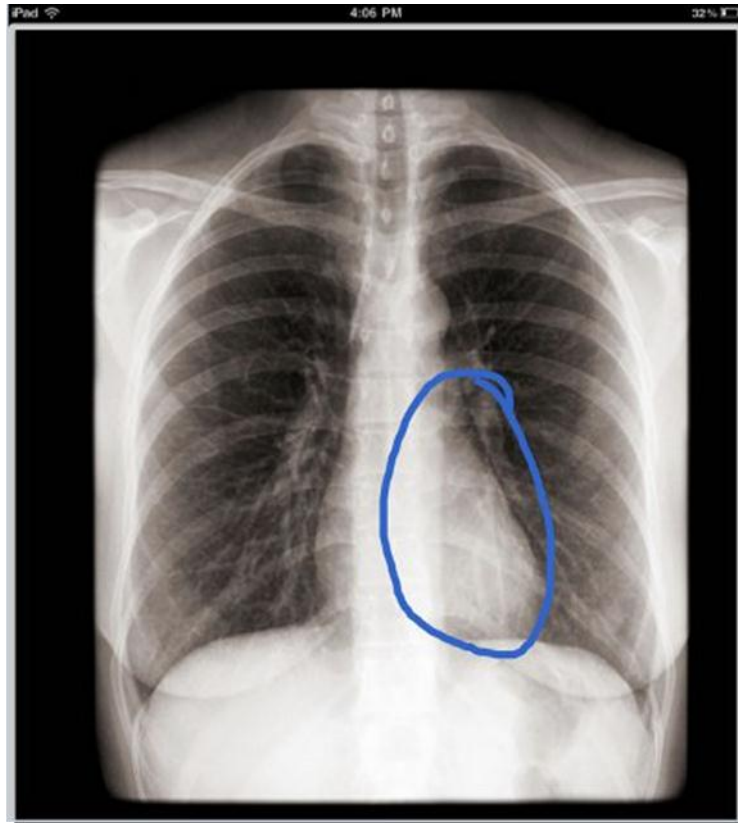


Figure 3.11 products taking the user's perspective into consideration

Socio-Cultural Factors and Accessibility

Cultural factors should be taken into consideration when choosing a suitable interface type for users. Culture has been defined in various ways. The common denominator of all these definitions is that culture is the sum of learned experiences shared by the members of a community that are open to change, that meet biological and psychological needs of human beings, and that have a tendency to unite society.

If the user interface culture is defined in the same way as shared understanding and knowledge about technologies and their user interfaces, members of a group using certain devices can be accepted to belong to a separate user interface culture (Mannonen, 2008: 14). The ISO/IEC DTR 19764 guidelines methodology, and the reference criteria for cultural and linguistic adaptability in information technology products (2005) defines a methodology and a guided check-list for evaluation of cultural adaptability in software, hardware and other IT products. The check-list and guidelines are not only applicable to all IT products, but also can be expanded to meet the requirements of specific cultural

environments(http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csn_umber=35399,18 November 2011).

Johnson explains five interrelated components of interfaces in interface culture: desktop, window, links, text and agents. *Desktop*: Johnson argues that when designers think about desktop design, they encounter with an empty space which waits to be filled. Moreover, they should take into consideration that people's life will revolve around computer desktop. For these reasons, its genius and its limitations should be well-understood. *Window*: Johnson claims that Windows allowed us to frame information flexibly. Users can resize them with a single mouse click. *Links*: Johnson explains that links can be understood as a device which lets us baste with the world into a harmonic shape. *Text*: Johnson highlights the importance of text for the future of interface design.

In addition, according to a paradigm introduced by Johnson, in the future it will be possible to organize text not only within visual spaces on desktops but also around meaning and language. *Agent*: Johnson calls agent as intelligent-agent. For example, agents protect their children from entering undesirable by transforming those sites into web browsers (Slevin, 2000:86-87).

Rogers et al. explain cultural differences by giving an example about use of date and time in different countries. In the USA, for example, date is written as month, day, year (e.g.05/21/12) whereas in many other countries it is written in the sequence of *day, month, year* (e.g. 21/05/12).This can cause problems to designers when deciding on the format of online forms, especially if intended for global use (Rogers et al., 2011: 16). Moreover, colors, images, graphics, elements as well as reading and cognitive styles can change from one country to another.

When planning interface design, it should be considered that it will be used by everybody. Therefore, it should be easy to use, understood by everyone, and all of its applications should be simplified; users don't want to waste their time, they shouldn't be frustrated when using an interface with different applications. Rogers and et al. describe this situation as *Accessibility*. Accessibility refers to the degree to which an interactive product is accessible by as many people as possible. A focus is on people with disabilities. Range of disabilities includes: *Color-Blindness, Dyslexia, Physical impairments* (Roger et al, 2011:16). For example, iPod nano allows visually impaired users to browse and select

songs without viewing the screen. Instead, it enables users to hear a synthesized voice speaking the names of menus, songs, and artists. Moreover, they touch the screen to hear a description of the item under their finger, then double-tap, drag, or flick to control iPod nano. They use the optional Apple Earphones with Remote and Mic to control music without looking at the screen. VoiceOver tells users the name of the song or artist, and it speaks 29 languages (<http://www.apple.com/accessibility/itunes/vision.html>, 28 September 2011).

It was developed according to the ISO standards for disabled persons, so it is called ISO/IEC TR 19766:2007: Guidelines for designing icons and symbols that are accessible by all users, including the elderly and the disabled. They introduce a set of attributes and operations that can be implemented as features of graphic icons to make the functionality of these icons accessible to the widest possible range of users. Textual attributes are emphasized because they can be rendered in various alternate modalities (http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=42128, 18 November 2011).

As can be understood from the examples above, functionality and usability are the key features of mobile technologies. Thus, the user should be accepted as the main characteristic of a product to be designed, and the design should be shaped around him/her. If a product the user has purchased lacks some of the features he/she demands, he/she can have these features added later and increase its productivity. According to Castell the distinguishing feature of today's technological revolution is not the central place of information, but its application to processing equipment (Castells,2008:40).

3.3.2. Web Page Compatibility of Mobile Devices

Compatibility of web pages with mobile devices should be analyzed within two dimensions: Income models like time, advertising, the user's expectations, the action itself and interface design.

Mobile devices differ in terms of screen size and resolution. These features are followed by other technical ones like processing capacity and the Internet speed. For compatibility of web pages with mobile devices, these features should be given preference. Compatibility of web pages with mobile devices is usually understood as complete transfer of pages. For

example, in addition to such real estate sites in Turkey as *Hürriyet emlak*, *mynet* and *sahibinden.com*, which developed mobile versions of their own products, there are other mobile applications. Hürriyet Strategic Reporting Deputy Manager Reha Başoğul relates its reasons to the incomplete maturation of the mobile market in Turkey in terms of income, which is derived either from advertising or from application. He mentions that application and advertising incomes actually transfer banners to mobile environments. He maintains that they sponsor GSM firms due to their difficulty with developing mobile contents. He explains that another reason for the inability to launch a mobile version is that the income models like time, advertising, the user's expectations, the action itself (such as traffic visits) are not mature enough (Reha Başoğul, Interview, 02 June 2012).

Early websites were largely text-based, providing hyperlinks to different places or pages of text. Much of the design effort was concerned with how best to structure information at the interface to enable users to navigate and to have access to it easily and quickly. For example, Nielsen adapted his and Mohlich's usability guidelines to market them to websites where they were applicable, focusing on simplicity, feedback, speed, legibility and ease of use. He also stressed how critical download time was to the success of a website (Nielsen&Mohlich, 1990, as cited in Rogers and et al., 2011:183).

For compatibility of web pages with mobile devices, processing capacities of devices should be taken into account first. The main reason is presentation of information. Hooper and Berkman analyze information presentation in two groups: 1. Classification of information; 2. Organization of information structures. We can classify information into nominal, ratio, interval, alphabetical, geographical, topical, task, audience, social or metaphors groups (Hooper&Berkman, 2011:63-65). On the other hand, news in mobile interface design should be classified as hard news and soft news. Hard news gives information about current political events such as the flash news of the day, while soft news covers magazine issues.

Hooper and Berkman argue that it should be well understood how to structure, organize, mark and define information in mobile interface design. According to them, hierarchy and faceting are the most known ways of information arrangement Hooper and Berkman (2011:65-66).

In addition, it is necessary that people recall the information they have been presented. The system should provide the user with a number of ways for encoding documents mnemonically, including time stamping, categorizing, flagging, and attribution (e.g. color, text, icon, sound, or image) (Rogers et al., 2011:75). Also Hooper and Berkman say the following:

“You can use the way in which people perceive attributes to communicate the relative importance and relationship of informational elements on the page. This design of pages or states, when it falls directly from the information architecture of the entire product, can be called *information design*. Also, Position, size, shape, contrast, color and form influence how users recall any information” (Hooper and Berkman, 2011:66-67).

3.3.3. Developing Mobile Web Content to User’s Expectations

For data transfer within mobile communication it is necessary to determine the expectations and characteristics of the intended audience. In addition, the 2002 report by the Corporation of Information Technologies and Communication, informed that the demand for transition to 3G technology came from users. According to the report, among users’ expectations from the 3G technology were such services as provision of multi-media (voice, data, image) from a single point, high quality, security, and high and volatile speed at a wide band (1-18, http://btk.gov.tr/kutuphane_ve_veribankasi/raporlar/arastirma_raporlari/dosyalar/3G_Raporu_Aralik_2002.PDF). Moreover, Siau and Shen (2003) say:

“Accordingly, information delivered to them via mobile devices also needs to show qualitative features like accuracy, timeliness, and usefulness for the consumer.”

Data transfer within mobile communication is done through the Internet as a result of re-adaptation of web sites to mobile devices. Within this framework, along with the developing mobile web, adapted to mobile communication technologies, transfer of information from PC screens to mobile devices became possible. Dick explained that mobile web can be conceptualized as the World Wide Web formatted for and accessed by mobile devices (Kroski, 2008, as cited in Dick, 2010:1). While the mobile web did data transfer initially through WAB, today data transfer is possible through different versions of

HTTP and can be occur at the rates characteristic of either 2G and 3G or 4G networks (Dick,2010 :2). The mobile web has introduced the concept of mobile content. How was the web content arranged before the mobile web content? How should the web content be arranged in mobile and immobile devices from mobile phones to laptops and to iPads? It will be proper to answer these questions by taking users into account. The Web Content Accessibility Guidelines (WCAG) is a guide for designing a web site. The latest version, WCAG 2.0, was published in 2008 (Rogers et al., 2011:186). These guides include:

- Users, who may not able to see, hear, move, or may not able to process some types of information easily or at all.
- Users who have difficulty reading or comprehending text.
- Users who may not have or be able to use a keyboard or mouse
- Users who may have a text-only screen, a small screen, or a slow Internet connection

Website content also needs to be designed for:

- Users who may not speak or understand fluently the language in which the document is written
- Users who are in a setting where their eyes, ears, or hands are busy or interfered with, e.g. driving to work
- Users who may have an early version of a browser, an entirely different browser, a voice browser, or a different operating system

When we consider the aforementioned user types, we see that a different content has to be developed for mobile devices. Dick explains that the mobile web content should be an improved version. And today, there are open source and commerce browsers more than 40 of which consist of mobile web content. While some of the mobile content is developed only for mobile devices, some of them are arranged for the web pages based on HTML or XML. These web pages are developed according to each mobile device's characteristics and its screen and data service provider (Dick, 2010: 2).

Readers try to reach the mobile content through social networks such as Twitter and Facebook or through Google search. On the other hand, if the mobile content is served to users via faceting, it is possible to have more efficient results. Among the mobile applications which serve mobile contents in a more readable format are *flipboard*, *zite*, *nes360*, *Pulse ve Feedly*. In the web site *webrazzi*, the news article titled “The iPhone attack and future of social tabloid magazines,” explained that at the beginning of 2012, their iPhone versions were produced after the applications of Flipboard and Site iPad, and they were downloaded by almost one million people on the very first day (<http://www.webrazzi.com/2012/01/20/sosyal-ipad-dergilerinin-iphone-atagi-ve-gelecegi/>).

3.3.4. 3G Broadcasting Through Mobile Devices

One of the greatest advantages created by 3G technology is, undoubtedly, the ability to watch videos on mobile devices. The ability to watch live news videos on mobile devices is seen one of the greatest advantages of online journalism, as well. These videos, which can be watched through separate browsers and operating systems of different mobile devices, pioneered mobile TV.

The mobile wide band serves through HSPA (High Speed Package Access) and LTE (Long Term Evolution). According to Kumavarel (2011), users could do operations like scanning or e-mailing on the Internet through HSPA. On the other hand, unlike an immobile modem, HSPA modem enables them to send videos, music and photos by using 3G technology within smart phones. It is expected that interactive TV, mobile video blogging and highly developed games or professional services will enrich users’ experiences through the LTE technology (Kumaravel, 2011:256).

According to the news article “Mobile TV is Alive,” published on TVB Europe in March 2011, mobile devices are personalized, so mobile TV should also be personalized according to the user’s preferences and tastes. The magazine explains the issue with the following words of Cedric Fernandes:

"We believe that to be successful with mobile TV, you need to take the best of both worlds," he remarked, referring to scheduled and personalized TV services. "I think other services haven't done so well because they have worked on the model of doing purely broadcast to the mobile phone. Mobiles are personalized devices, so you must bring personalization to it," he said. (TVB EUROPE, March 2011)

Similarly, Uribe and et al explain that almost all broadcasters broadcast the same TV channels as mobile. Broadcasting the same content by mobile devices will diminish user's experiences due to small screens, short battery life and low operating power. They express that the best solution for mobile TV is display of personalized multimedia content (Uribe and et al ,2011:362).

3.4. Interface Design Applications on Mobile Devices and Their Content Compatibility of Mobile Devices

Internet applications on mobile devices differ from those on desktops and notebooks as screens of mobile devices are also different. This situation requires designing content according to this difference. When designing content, first it is very important to know expectations of the intended audience. Socio-cultural factors, economic situation, nature of Internet access (fiber connection, adsl...), relationship with technology, digital local, digital migrant, Z generation features, purposes of using the Internet and disabilities of the intended audience should be paid attention.

In the research by TÜİK, it was seen that in Turkey an individual uses the Internet to read newspapers or magazines by a rate of 72,5%. On the other hand, online newspapers' web sites on mobile devices are different from those on desktops. Today, almost all online newspapers have web sites adapted to mobile devices, and mobile design started to become important for press corporations. Before going into the compatibility of these online pages with mobile devices, let's remember briefly how the structure of news on an online newspaper is. While news is organized as News Titles, Upper Title, Header, Subtitle, Spot Title and Headlines in the print media, it is organized into its hard and soft versions on online newspapers.

Hürriyet aimed to render users more free to receive news by introducing the Android application for mobile devices in 2010. On the other hand, since the application covered mobile phones of certain brands, it was not widely used. Now it is possible to have access to the web site of Hürriyet through iPads, mobile phones.

Hürriyet has cephürriyet and sms packages as specifically designed for mobile phones. It serves flash news to users of blackberry, iPhone, Nokia and Android based mobile phones. It lists news titles in mobile phones. The top of page is similar to Hürriyet's web page with such sections as authors, sports, agenda, economy, planet, astrology, weather report, cinema, TV and latest news. When you click on the contents, you see that they are the same with those on the web page. Also, they include comments as the web page does (<http://www.hurriyetmobil.com/Content.aspx?p=4>).

Mobile applications of Milliyet are *cepMilliyet* (m.milliyet.com.tr), which is available on iPhone, iPad, Blackberry, Nokia, and SMS packages (news package and sports package). Users can reach to the latest news, column articles, news about technology, economy and sports news and news about astrology through the application *cepMilliyet*.

This mobile application of Milliyet covers news as accompanied by photos unlike Hürriyet's. However, its sections like economy, sports and current news are similar to Hürriyet's. Unlike Hürriyet, Milliyet covers comments about news. Like in Hürriyet, content of a news story in *Milliyet cep* is the same as the one on its web page. In addition, Milliyet uses a white background within its mobile application, which distinguishes it from others.

It is necessary to download the application *imilliyet* from iTunes store for the iPhone and iPad applications of Milliyet. In order to download the Blackberry application of Milliyet, users should write "blackberry milliyet" and message it to 3270. The aim is that Blackberry users reach the latest news, column articles, economy, sports and cinema news via a single click at any time and place. Nokia users can reach economy news and authors by free download of the necessary application.

In the iPhone and iPad applications of Sabah, they can read e-sabah if they pay the subscription fee after one month's free trial. In isabah application, thanks to its feature "it can present a new content by introducing a different category at any time," you can share news through e-mail at any moment you wish by using the share button in its news screens.

With its feature of saving categories automatically to telephone, you do not need to download pages again each time. Thus, the application can be used without Internet connection. Besides all, ATV's online application is available on iPad and iPhone (<http://www.turkuvazmobil.com/Statik/iphone>, 04 February 2012)

Mobile access to Sabah allows seeing news stories as accompanied with photos, as Milliyet does. However, like Milliyet and Hürriyet, it presents news in its entirety and does not cover comments.

Considering the iPad applications of all three newspapers, newspapers' online web pages are the same just as in smart and mobile phones. News is presented with photos. At the top of the page, news is grouped into categories like economy, authors, TV, cinema and current news. On a web page news can be grouped as hard and soft news. As already explained before, while hard news covers globally important issues, soft news focuses on general trends. In iPad, the reader could understand the importance of news as a result of use of different fonts or space allocated to news coverage. In web pages this situation is different in terms of typography and design. Grouping of news into hard news and soft news in mobile phones will become beneficial for the user in terms of use-efficiency and time saving.

Hürriyet, Milliyet and Sabah give the entire news in small screen devices such as smart and mobile phones. This requires the user to do more scrolling. As it is slower than mobile devices with higher operating capacity, scrolling slows down the operation and could make the user bored since he/she has to do more clicks. If editors offer a summary of news contents in online newspapers, it will increase productivity in user-machine interaction. In the interviews with Milliyet, Hürriyet and Sabah, their answer to the question about user's expectations from mobile applications mentioned that user's expectations are acknowledged in mobile applications. Sabah gained feedback by conducting a survey whereby it asked almost 150.000 readers which want to see in its mobile application.

In Hürriyet, by employing software like Google Analytics and web tech, decisions on mobile applications are made by taking into account which news readers read most, which pages they visit most, which mobile devices and browsers they use and what their Internet connection speeds, screen resolutions, screen colors, operating systems and technical features like android app are, besides about which news social media comments are shared

most. In addition, it is concluded that all three newspapers have researched user's expectations as based on previous results and software; they have not carried out a user research that particularly deals with compatibility between news and mobile devices, and usually they measure user's expectations by certain software. Hürriyet Strategic Reporting Specialist Reha Başoğlu explains this situation as such:

“We certainly pay attention to user penetration in mobile devices. There are more Nokia users. There is question whether it is android or iPhone. If user's expectations are “I want to see texts and a detailed segmentation about content,” user's expectations are certainly examined at that point.”

In addition, he explains that they examine user's expectations without face-to-face interviewing. They rather employ software like Google Analytics and web technique. Similarly, Sabah says that they can specify where reader clicks on the newspaper by using this software since the news sections which he/she reads get different colors when he/she visits spaces (white color).

In the interview with Hürriyet Strategic Reporting Deputy Director Reha Öz, he explained that they looked at mobile device use rates by employing such software as Google Analytics and decided on mobile applications accordingly. He mentioned that the most widely used ones are iPhones and tabloids now.

Research about the income models of time, place, advertising, the user's expectations and the action itself should be taken into account for device user interactivity. As it is already known, a large part of income of the conventional media is composed of advertising. However, it is reader penetration which creates advertising revenues in the Internet. In mobile transformation, ranging from web to tabloids and from tabloids to smart phones, the already available rate of readers is not sufficient alone for generating advertisement revenues. Aspects like mobile device use, screen resolution, browser type and the type of the model used as well as income models determine decisions on the advertising budget.

Impact of interface design of mobile devices on advertising revenues

An interface's impact on advertising revenues depends on how frequently a user visits an Internet site and page and how many times he/she clicks it. On the other hand, as a result of active use of 3G within mobile devices, interface design of mobile devices directly influences advertising revenues, besides users' visits to sites. Reha Başıođul from Hürriyet explains this situation with the following words:

“A research done abroad shows that it is tabloids what people read more in restrooms. Due to navigation and interface design of tabloids, this result occurs; naturally, advertising service periods increase. Hours change; for example, mobile use increases at weekends and at religious holidays. It increases even more in tabloids, as we see. There is a web situation in which those over 45 can be adapted to the Web more slowly. Research shows that people from all age groups can be well adapted to tabloids, however. On the other hand, as long as screen resolution increases, rate of and time spent for newspaper reading increases, as well. Let me explain this situation from a different dimension: I serve Hürriyet to readers free of charge on the Web. Hürriyet online has established its own business model as depending on advertising revenues. However, in tabloid, it is served to readers as a subscription that costs 2.99 liras a month. A reader who is used to read Hürriyet free on the Web starts to read the same Hürriyet on tabloid for a certain fee. The number of readers who value this is increasing rapidly.”

Başıođlu says that when they decided on investing into mobile technologies, the problem erupted whether investment into tabloids or smart phones was more feasible. He mentioned that the results of their analysis clearly showed that tabloid was more advantageous for investment and it was possible to earn higher advertising revenues from tabloid. He also said that the current problem with earning advertising revenues from tabloid results from that they do not support flash, and mobile advertising models are not yet compatible with iPads. He says that that none of the flash banners that are seen when accessed to *hurriyet.com.tr* from a desktop will be available on an iPad. Başıođul mentions that the solution is the HTML5 technology, which allows watching advertisements in mobile devices like iPhone, Android, iPad and Blackberry without any need for the flash support.

HTML5 technology for mobile devices

iPads, iPhones, android, blackberry are the most widely used mobile devices today. Each one of them has different service providers and use different browsers. For example, Apple's iPad and iPhone use IOS and safari as its browser; Android devices use Linux and the latest version, Dolphin 7.4. Now Blackberry uses BBX and opera mini.

When Apple developed an application for its products iPad and iPhone, web services had to provide software within the framework designed by Apple. Therefore, advertisements had to be watched according to the rule specified by Apple. The software produced by their developers was introduced to users as in the form of applications like page turning, flipboards, navigation and interaction. Similarly, Blackberry and Android devices work in this manner. These applications were not free. Apple received 30% of the revenues as commission since Applestore distributed them.

HTML 5 provides web service providers with the technology that can work within mobile tools with more than one operating system (Padley, 2011). Today, HTML5 is the best suitable technology for developing future oriented mobile applications, for displaying advertisements without the flash support, and for reducing software costs.

Applications of this software:

In the Web it is possible to learn for how long readers visit a page and which news they read by applications like eye-tracking. Also, through software like Google Analytics and web tech, the user is sent cookies by safari or chrome. Therefore, the user is rendered unique. When the reader connects from another computer and safari, he/she is defined as a second person. This user is defined as unique visitor. While this kind of software can be purchased, some of them like Google Analytics are free. Through information obtained from this software, it is possible to know what user reads and does not read, which mobile devices and versions of browser he/she uses, what his/her operating system, screen resolution and screen colors are, when and how long he/she uses mobile devices, at which frequency he/she make (daily, monthly and annual) visits, what his/her service provider

and input selector (touchscreen, stylus) is and what version of flash they have in their mobile devices. Thus, it is possible to reach any information like which RGB codes should be employed, what screen resolution is and how many people use safari on iPad.

Among this software there are those with cookie based measurement systems and those which define login (user himself/herself). Cookie based software defines user as a different person each time he/she connects to the Internet from a different device or a browser. Therefore, it is estimated that the number of unique visitors in Turkey is 112 million. When this number is compared to Turkey's penetration, it is concluded that there are 28 million mobile device users in Turkey, as also stated in TUIK reports. As of 2012, the user was defined as login. Therefore, regardless of whether the user connects from the same computer or from mobile devices through a different browser, it is possible to define his/her surname. As a result, it is now possible to make certain which news the user reads.

All three newspapers say that the news in the web is the same as in mobile devices. There are mobile editors in these newspapers. They shorten and rearrange news according to mobile devices. In addition, Reha Başıoğlu stated that news reading is different in newspapers, in the web and in tabloid. Therefore, giving Hürriyet as an example, he mentions that in case of market concentration, it can introduce more contents. At this point, he explains, decisions of mobile editors can be prioritized over the data results obtained through software (how many mobile device users are, which browsers they use, when they make visits, and what the social media concentration is). The reason why data obtained through software cannot be used for newsmaking and agenda setting is that this data is numerical whereas detailed results about news requires knowledge of journalism, and social media determines only the most debated topics. He said that for Hürriyet the primary duty of a journalist is newsmaking for the common good, and knowledge of journalism is still necessary for newsmaking. He explained that social media environments do not offer qualified comments and deep analysis yet. Knowledge of journalism will always be necessary, and unless it is available, data obtained through software and the social media will take society back. Başıoğlu explains this with the example of the 28 February process:

“For example, you cannot find a deep analysis about the 28 February process in the social media or in other social networks. This requires master knowledge of journalism. In this

regard, Hürriyet thinks that journalism profession should be positioned as a Hürriyet brand. This has not matured yet. Availability of such an application takes society back. Regardless of numbers, Turkey needs journalist's instincts as regards this. For example, if you bring news about İbrahim Tatlıses into the forefront as it is talked a lot in the social media, you can achieve more page displays. However, in terms of diversity and long-term cost positioning, these numbers can only constitute 50% or 60% of the work for making a decision. Numbers do not tell you whether the 28 February event is important. Perhaps, there might be a lot of interest in the 28 February event, but numbers do not tell you its reason. This can only be deduced through journalist's own mental knowledge. Wikipedia also does not tell you this. Social media does not, as well. Naturally, it will require a journalistic analysis. Finally, doing journalism merely according to the user's tastes and reading preferences and according to the software/survey results takes society back.

Baçoğul stated availability of mobile editors will be a contribution to the brand. In addition, since user-based research is not done about mobile devices, he explained, he was not able to say explicit things on this issue.

In addition, all three newspapers direct the user to the main menu with the "back" at the end of news. This results in time loss for the use since the operating capacity will be slower. In an interview, Milliyet Digital Section IT and Projects Manager Selahattin İmamoğlu explained that current analysis and research on readers recognized this problem, and the user is now able to go back to the previous news with the "back" application. In mobile devices, particularly in mobile phones, when a summary of news content is given, other news titles can be given in place of the back application. Thus, number of clicks will decrease, and productivity for the user will increase.

Along with examples of Hürriyet, Milliyet and Sabah, other online newspapers and all news sites should present links to related news sources when they quote other sources' comments about news. The title, number and place of the page where news is located are quite important for formation and change of the user's perception and opinion. Filtering (faceting), suggested by Hooper and Berkman particularly for interface designs of mobile devices, makes it possible to present the links to all the other sites covering a news story the user is interested in (Hooper and Berkman (2011:65-66). In iPad applications of *News360*, *flipboard* and *zeit*, when the user searches a topic he/she is interested in, the news from all other sites arrive. Presentation style of news is also quite significant for

mobile applications. The way information is presented is related to interface design of mobile devices. Hürriyet, Milliyet and Sabah answered the question whether they present links of other news sources that they do not have such an application, but they cite news sources like the Anatolian Agency and the Cihan News Agency. The primary reason for this is that they see each other as competing media corporations.

Hooper ve Berkman analyzed display of information in mobile devices in four sections. In the first section, *information grouping*, information is listed as nominal, ordinal, ratio, interval, alphabetical, topical, geographical, task, audience, social and metaphor. In the second section, *arrangement according to the architecture of information*, information is ordered as hierarchical and faceting (filtering) (Hooper ve Berkman 2011:63-105). Arrangement of information by the filtering method gathers together information covered in other related web sites and presents it to the user.

In the section, *information design and data ordering*, the authors explained that page display and design is quite important for perception of information and named this situation as design. They said that the position of information is more important than its size. Other important points are shape, contrast, color and form. In the last section they listed information display styles as vertical list, infinite list, Thumbnail list, fisheye list, carousel list, grid list, film strip, slideshow, infinite area and select list. Selahattin İmamoğlu said that for news display in Milliyet's mobile web pages, it is very important how the user perceives information (news) in the best possible way. He gave the red background application in 2009 as an example. He explained that they finally realized that the red background was exhausting for reading. They removed the application and rearranged titles, visuals and spots accordingly. Thus, they decided to have small and large-font titles.

In the 2011 3rd quarter report by the Corporation of Information Technologies and Communication it was announced that mobile device use rates has exceeded 100% recently, except for the age 9. In addition, as already mentioned previously, young people share news and comments in social networks like Twitter and Facebook. With changing understanding of gatekeeping, now the user itself assumes this role. Mobile devices offer access to these social networks. Therefore, many newspapers provide access to their online

versions in these social networks. Taking this into account, news titles of newspapers in mobile devices should also ensure access to social networks.

3.4.1. Comparison of Mobil Interface, Web Interface and GUI (Graphical User Interface)

Consider how you can use the Internet to add value to the reporting that is already available. Can you put your full interviews on the Web? Might you create a timeline? What about a quiz? In this age of short attention spans, you also need to think about how to use different kinds of graphics to portray and simplify complex information (Wallace&Knobel, 2010:173).

We have mentioned that design is very important for explaining thoughts. According to the Lessing, design is important for innovation, as well:

First, because applications run on computers at the edge of the network, it is required that innovators with new applications connect their computers only within the network.

Second, because design is not optimized for any particular application, the network is open to innovation as not originally imagined. What the entire Internet protocol (IP) does is to figure a way to package and route data; it doesn't route or process certain kinds of data as better than others. That creates a problem for some applications (as we will see below), but it creates an opportunity for a wide range of other applications not originally foreseen by the designer.

Third, design affects a neutral platform, neutral in the sense that the network owner can't discriminate against a new innovator's design. If a new application threatens a dominant application, there's nothing the network can do about that. The network will remain neutral regardless of the application (Lessing, 2001:37).

As seen as above table 3.3, design is highly important for explaining thoughts. Mobile interfaces should be designed by keeping their time efficiency at the center. So, how should interface be designed? What should be paid attention to? In the comparative table below, GUI, Web and Mobile are analyzed:

Table 3.3 Comparison of Graphical User interface,web user interface and mobile user interface

GARPHICAL USER INTERFACE (GUI)	WEB USER INTERFACE	MOBILE USER INTERFACE
<p>Interaction</p> <ul style="list-style-type: none"> • Interactions such as clicking menu choices, pressing buttons, selecting list choices, and cutting/copying/pasting occur within context of active program 	<p>Interaction</p> <ul style="list-style-type: none"> • Basic interaction is a single click. This can cause extreme changes in context, which may not be noticed 	<p>Interaction</p> <ul style="list-style-type: none"> • Multimodal input, Touchscreen and using stylus
<p>User’s Conceptual Space</p> <ul style="list-style-type: none"> • Controlled and constrained by program 	<p>User’s Conceptual Space</p> <ul style="list-style-type: none"> • Infinite and generally unorganized 	<p>User’s Conceptual Space</p> <ul style="list-style-type: none"> • Depends on different size
<p>Navigation</p> <ul style="list-style-type: none"> • Through menus, lists, trees, dialogs, and wizard. Not a strong and visible concept. • Constrained by design. • Generally standardized by toolkits and style guides 	<p>Navigation</p> <ul style="list-style-type: none"> • Through links, bookmarks and typed URLs. • Significant and highly visible concept. • Few constraints, frequently causing a lost “sense of place”. • Few standards. • Typically part of page design, fostering a lack of consistency. 	<p>Navigation</p> <ul style="list-style-type: none"> • Based on hierarchical Information structure • Small screen should been take into consideration when Transforing data from large screen to small screen • Minimizing steps are expected by users • Few constraints, frequently causing a lost “sense of place”.

<p>Data/Information</p> <ul style="list-style-type: none"> • Typically created and used by known and trusted sources. Properties generally known. Typically placed into system by users or known people and organizations. • Typically organized in a meaningful fashion. • A notion of private and shared data exists. 	<p>Data/Information</p> <ul style="list-style-type: none"> • Full of unknown content. Source not always trusted. Often not placed onto the Web by users or known people and organizations. • Highly variable organization. Privacy often suspect 	<p>Data/Information</p> <ul style="list-style-type: none"> • Mobile content has to be organized according to target audience • Problems related to Transferring Data/Information from PC to Mobile Devices
<p>Task Efficiency</p> <ul style="list-style-type: none"> • Targeted to a specific audience with specific tasks. • Limited only by the amount of programming undertaken to support it 	<p>Task Efficiency</p> <ul style="list-style-type: none"> • Limited by browser and network capabilities. • Actual user audience usually not well understood. Often intended for everyone 	<p>Task Efficiency</p> <ul style="list-style-type: none"> • Mobile computing requires that integration wireless with long battery • Constraint by Speed of internet connection • Navigation • Limited by processing time
<p>Visual Style</p>	<ul style="list-style-type: none"> • Display color • Signs and Symbols 	<ul style="list-style-type: none"> • Display color • Signs and Symbols

	<ul style="list-style-type: none"> • Photograph and video • Gestalt • Screen icons • Typography • Symbols and Icons are linked other multimedia 	<ul style="list-style-type: none"> • Photograph and video • Gestalt • Screen icons • Typography • Symbols and Icons are linked other multimedia
Touch Screen Not available	Not available	<ul style="list-style-type: none"> • Using virtual keyboard, • Pressing by finger, • Using stylus • Constraint by range of screen

Interaction: Attention should be paid to difficulties that arise from the limitations of the interaction mechanism on mobile equipment. When entering information more efficient and/or less probability for entering incorrect information.

- Mechanism for entering text
- Order entry
- Mechanism for entering numerical data
- Multimodal input
- Controlling input cursor from an application (The cursor is not available on touch screens yet)
- Not using stylus
- Addressing problems connected to entering information when it is not possible for the user to use a stylus

- Interacting with applications without using stylus
- Retrieving data from a database without using keyboard

(Nilsson, 2009:1318-1328)

User's Conceptual Space: Mobile devices have different screen sizes. For this reason, when information is shown, some features should be taken into consideration. Nilsson argued that problems that arise from different layouts create challenges on small screens:

- Presenting elements in lists
- Principles for grouping information
- Mechanism for grouping information
- Mechanism for packing information
- Horizontal scrolling (Nilsson 2009:1318-1328).

Navigation: Navigation is most important feature of mobile devices. Navigation technique is based on point-and click interaction on a hierarchical structure of links (Rias& Ismail, 2010:232). The user scanning information wants to know where he/she is.

When transferring data from a large screen to small one, the navigation feature must be well organized for the user. Kaikkonen and Roto highlighted several issues navigating on smaller devices includes: knowing the current location, finding the way forward and backward and minimizing steps in navigation (as cited in, Rias&Ismail, 2011:233).

In addition to navigation, scrolling web pages on mobile devices make readers worried as they feel lost in large page.

When designing interface of mobile devices, horizontal scrolling is usually worse than vertical scrolling because information on the same line usually is more closely connected than information available on different lines (Nilsson, 2009:1319).

Mobile Content: Mobile content should be developed according to the target audience's expectations. While the mobile web made the data transfer in mobile devices initially

through WAB, now information transfer is available through different kinds of HTTP and can be conducted at rates characteristic of either 2G,3G or 4G networks (Dick, 2010:2).

Mobile web has introduced the notion of mobile content. It will be proper to answers such questions as how the Web content should be arranged and how the mobile content should be developed by taking the user into attention in different mobile and immobile devices from mobile phones to laptops and iPads. Before arranging mobile content, we should research which information the user desires to have or which information he/she desires to be sent. This will ensure more effective use of a web page in terms of design and organization.

Visual Style

Typography

Today's world can be said to experience a visual communication age. Due to rapid changes, some already-known descriptions must be defined once again. Interactive media have introduced a new visual language, one that is no longer bound to traditional definitions of word and image as well as form and place. Typography, in an environment that offers such diversity, must redefine its goals, its purpose and its very identity. It must reinvent itself (Helfand, 2001:106).

In the new transformation, we need to explain some questions about typography: What is the new syntax of screen-based typography? What is its new grammar? What are its new rules in design? What are differences between the written word and the electronic media word? What depends on its differences?

First of all, we can easily say that people explain their emotions and thoughts in writing, so typography is very important. Typography, as the physical embodiment of such thinking, has quite a way to go (Helfand, 2001:107) In the written typography , remarks can explained with different writing styles such as Times new roman, Arial so on. But in the new media, we are lined off with pixel and resolution. In the new environment of technology, it is possible to mobilize our more static texts within writing. The important point is that a text is readable by the user. Moreover, the new electronic typography creates new difficulties, such as sound and animated writing etc. We should to take into consideration these difficulties within typography when planning visual design on

computer. Mobile users are constantly moving; they interact with devices smaller than desktops. Therefore, when choosing writing characters, we should take readability into account.

Hooper and Berkman (2007) examined some characters in term of legibility for mobile devices, such as sans serif, which is a well choice that is used by almost everybody and works with all sizes. However, serif may not facilitate readability. Verdana also is a good choice with its larger height and simpler shapes, designed specifically for on-screen readability. Italic is not suitable for digital display within high resolutions. If a designer has to use italic, it should have a true and preserved legibility. Moreover, the designer should use the plain-color background with text instead of graphical or patterned background to prevent the eye's capability to discern the difference.

Colour:

It is a term to delineate the extended and permanent elements of light such as hues, saturation and brightness. The color of an object is connected to the capacity of changing light of a surface. So, color is the way an object reflects and absorbs light and the kind of light that hits an object (Aydin, 2007:165).

Color has three perceptual elements like hue, value and saturation. Hue is what we usually mean by color, red, green, so on. Value is the amount of black or white in color. Value is an important element for designing documents. Saturation is the purity of a hue, often described as the amount of color plus some amount of black, white or gray. Bright red is highly saturated, while pink is not. Saturated colors retain their distinctiveness in bright light (Hilligoss and Howard, 2002:17).

Color presents a different complimentary case to that of perspective, rather than a radical contrast. It is blatant that color perception is an important part of human eyesight. Unlike perspective, it has been possible to describe color in exact scientific terms as a property of light, but color perception changes from person to person. Visual image's representational aspect could be balanced with the resemblance provided by correct depiction of color. However, supposedly unrestricted variations of hue, tint and shade provide stubborn resistance to such classification. No effective system could be found for standardizing the construction of picture space by color (Mirzoeff, 2003:51-53). For selecting color,

audience should be analyzed elaborately, and colors which stimulate response, definable, well-known and easy to remember should be chosen. Color mixes must be restricted by two or three at most. Color is the most direct way to address the feeling of the target audience (Aydın, 2007:156). Kemp states that colored light relies on adding light together, based on the primary colors blue, green and red. Paint and other forms of pigment absorb specific forms of light from the image owing to generating the perception of a certain color and therefore using red blue and yellow as primaries (citer, Mirzoeff, 2003:53).

Photograph and video: As already known, the most differentiating feature of online newspapers is that they freely use photos and videos. Particularly as a result of the web 2.0 and the following third generation communication technology as well as due to the Internet access in mobile devices, people can share their own photos or photos they see on the Internet in such social networks like Facebook, Twitter, Foursquare and like by MMS, Bluetooth and whatsapp. Performance, reflexivity, visibility and connection should be considered for these operations the user usually performs on a daily basis. Processing a photo and sending it to friends is the main criterion for performance.

- Reflexivity: Visual environments allow the user to configure shared photos in the format of a digital journal, so to speak.
- Visibility: Photos prove that the related person legally exists in real life and in the social environment. Connection allows sharing photos so that a link is formed among people in the visual environment (Scifo B., 2009: 189).

Gestalt:

It is a psychological structure that functions as a unified whole. Perception tools of Gestalt are the concrete psychological foundations that the visual references for the dimensions of graphic information are based on. Gestalt exerts solid evidence how the human eye arranges its visual experiences; therefore, we are interested in Gestalt psychology of perception. According to Gestalt, human beings are more attracted to well-ordered visuals and texts. Viewers can be satisfied by a designer who applies balance and similarities, which prevent visual uncertainties.

What Gestalt Theory is;

- Parts of a visual image can be thought, perceived, analyzed and evaluated as free elements.
- The unified whole of a visual differs from the summation of its components.

For example, when we look at a picture of a landscape, we can see mountains, trees, the sky, the sunset and like and evaluate each of them separately. However, in the same picture each element contributes to one another emerging different story of beauty (Aydın, 2007, :39).

Having created effective figure-ground contrast and visual grouping through proximity and similarity, we would fulfill the most important perceptual principles of layout; the rest are based mainly on Gestalt principles together with semiotic theory and creative approaches of design. These ideas will emerge subtly within the combination on the pages that are designed (Hilligoss and Howard, 2002:97).

Readers think that documents are constituted of text and visuals ‘on’ a background, the visual field or Gestalt of the page or screen, which needs to be taken advantage of. Having placed text and visuals, we can do ‘squint test’: holding documents at arm’s length or step away from the screen and squint to become aware of the major areas of the field as to looking at the relationships of the parts to each other and to the whole visual field then we make thumbnails (small sketches of the pages or screens) to stay aware of the overall Gestalt. Whatever placed on the page or screen can be made conspicuous by using white or black backgrounds. White space should be used to group and separate. Diminished contrast is good for continuity of text. We should be careful of extra space that groups our knowledge wrongly. We should also pay attention and examine the shapes which the white space creates. The visual field is created as much by these shapes as by the images on it. It is appropriate to use dark text on a light background or light text on a dark background. To be removed from the background, text must contrast in value from the background. Value stands for a graphics term meaning the relative lightness or darkness of a color such as using light colors for the text on dark backgrounds or vice a versa. Some background choices are more a matter of cultural differences than perception. Bright colors like yellow or pink may provide good figure-ground contrast for a dark text. As aforementioned, colors

are not usual for backgrounds; they may not be good choices for long readings on screens. It is also important to abstain from patterned screen backgrounds that reduce the legibility of the text as they can considerably diminish the figure-ground contrast of text on the screen, where the resolution is substantially less than it is expected from the printed page. Many of the web site pages' backgrounds fail the test that text is located on highly patterned backgrounds therefore it is almost illegible (Hilligoss and Howard, 2002:97-99).

Readers, who look for visually-distinct items struggling with the complex structure of a screen, are thought to focus on the dominant visual that is either a picture or a contrasting area of type. When new typefaces or other elements are added they need to be clearly different in size and structure from others in the field. Drop shadows can be used to highlight and to increase figure-ground contrast being careful to keep it simple. To eschew not being conspicuous of small graphics or type features, screens should be designed with heavier, coarser elements that can withstand the degradation. Another effective practice in the document is to apply the principle of proximity, by which items need to be grouped. For example, headings need to be close to the text they represent. Figures and illustrations should be placed close to the text that interprets them. Sections need to be made visually distinct, and white space can be used as main separator. Readers tend to group the repeated items in terms of their shape similarities.

According to the Gestalt, the principle of good permanence entails that the eye follows the line created by text edges. Thus alignments must be kept strong and simple.

- It is good to effort not to mix alignments on a screen.
- Keep one major alignment in a document: left, right or center.
- Align each element with something else in the visual area.
- Abstain from extreme left or right alignments on screen as the center of the screen is in focus

Visual balance is more than symmetry. Symmetry aligning along the center of the page maintains balance as each half of the field is an identical image of the other. Symmetrical layouts are thought to be extremely stable. If target audiences do not automatically read the document, try asymmetrical, balanced layouts to create tension and therefore interest.

Placing small conspicuous items farther and higher from the center of the screen or the page balance a large picture or text block. We may see two different approaches to balance in On the left hand side two identical columns are symmetrical. On the right, asymmetrical layout uses the high contrast of the small, black rectangle in the header in order to offset the lower tonal density of the large, gray block. Many design elements are available to use, but what to use is a matter of decision. First we need to figure out what we want to highlight the most. Instead of eliminating a feature, we may try to make an item smaller, so it has less prominence on the page or screen. If the feature is markedly different from everything else, match its shade, shape or color with another element to create a relationship. If we have many of the aforementioned features, we may try squint test to see their relationship (Hilligoss and Howard, 2002:100-104).

Organizing multiple screen documents:

It is important to keep it mind that how much the user sees at once and how much the user needs to retain from panel to panel:

- Place a table of contents or navigation bar as to represent an overview of multi-panel documents.
- Put links and navigation buttons in the same positions from screen to screen so users can find them easily.
- Multiple panels can be unified by a grid (Hilligoss and Howard, 2002:106-108).

Signs and symbols

The systematic study of signs is known as semiology. Signs are things which stand for other things or add a different dimension to the matter, anything that can be made to stand for something else (Berger, 199:1). Signs are also organized in code systems. The meanings of codes change from culture to culture. Therefore meanings of codes are conventional and created by the people of the culture.

The founding father of sign analysis, the Swiss linguistic Ferdinand de Saussure wrote in his *Course in General Linguistics*:

‘Language is a system of signs that expresses ideas and is therefore comparable to a system of writing, the alphabet of deaf-mutes, symbolic rites, polite formulas, military signals, etc. But it is the most important of all these systems.

A science that studies the life of signs within society is conceivable; it would be part of social psychology and consequently of general psychology; I shall call it semiology (from Greek semeion ‘sign’). Semiology would show what constitutes a sign, what laws govern them’ (citer, Berger, 1999: 3-4).

Umberto Eco’s in *A Theory of Semiotics* statement has a slightly different approach:

‘Semiotics is concerned with everything that can be taken as a sign. A sign is everything which can be taken as significantly substituting for something else. This something else does not necessarily have to exist or to actually be somewhere at the moment in which a sign stands for it. Thus semiotics is in principle the discipline studying everything which can be used in order to lie. If something cannot be used to tell a lie, conversely it cannot be used to tell the truth; it cannot in fact be used ‘to tell’ at all. I think that the definition of a ‘theory of the lie’ should be taken as a pretty comprehensive program for a general semiotics’ (citer, Berger, 1999:4).

Having denotative and connotative meanings make signs rather mighty, and, therefore, they are hard to be dealt with in order to get our ideas across flawlessly.

Swiss linguistic Ferdinand de Saussure calls the study of signs as semiology, and according to his study signs are divided into three categories: ‘Sign’, ‘signifier’ and ‘signified’. A sign could be everything that can be used to stand for something else. Signifier is the image of the sign that we perceive. Signified is what sign tells us as mental concept (Fiske, 2003).

Another important academician, who worked on signs, is American philosopher Charles Sanders Peirce. He calls the study of signs as semiotics. According to him, there are three different signs as ‘icon’, ‘index’ and ‘symbol’. His study says that icon and index can be

found in the nature, but symbols cannot. They are created, and their meanings are conventional as well as change from culture to culture (Fiske, 2003).

As one of the latest semiologists, Roland Barthes advanced the aforementioned theorists' studies and added the terms of 'denotation', 'connotation' and 'myth'. Denotation is what sign makes us think about directly without pushing ourselves to the meaning. Connotation is what sign can be associated with, which is thought to be the most complex and dangerous one as signs can be loaded with many meanings (Fiske, 2003). Myth is a lot to do with cultures. In order to decode a sign on the myth level, we need to know its cultural background.

Task Efficiency: Operating capacity of mobile devices is more limited than those of immobile devices. Operating capacities primarily depend on device size, Internet connection speed and browser capacity.

As seen in the figures xx and xx below, according to the 2011 3rd quarter (July, August, September) report by the Corporation of Information Technologies and Communication, which shows distribution rates of Internet subscribers, use of immobile devices is more than 67,1% at 100 Mb and above. And access to the Internet from mobile phones concentrates on the 0-5Mb interval by a rate of 41%.

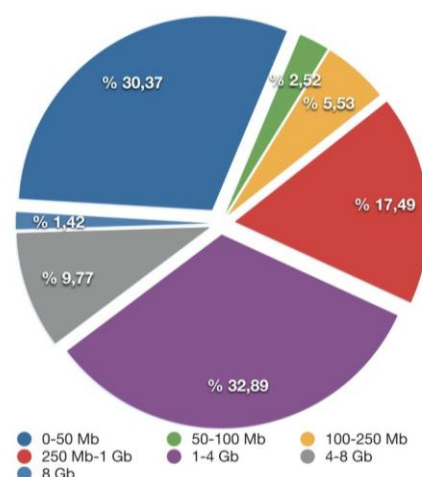


Figure 3.12 The distribution by internet subscribers usage from mobile computer

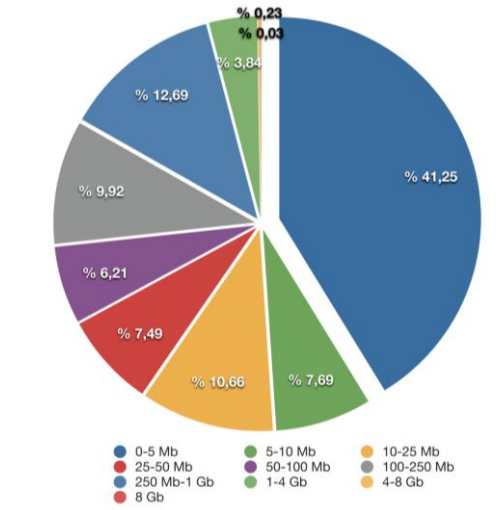


Figure 3.13 The distribution by internet subscribers usage from mobile phone
 (http://btk.gov.tr/kutuphane_ve_veribankasi/pazar_verileri/ucaylik11_3.pdf:35, 16 November 2011)

3.4.2. Contribution of mobile interface design to the reader's access to news

The main purpose of mobile devices is that an individual have access to news in the most efficient, simplest and quickest way. In contemporary communication technologies, mobile interfaces are designed with the aim of ensuring that the individual has access to news objectively and by his/her own initiative. The best implementations of this situation are found in smart phones and tabloids. For example, with its application it has designed for smart phones, news360 allows the individual to classify the topics he/she is interested in and present all the sources of a particular topic or news. Thus, the user is able to construct his/her viewpoint objectively. In short, the user has the opportunity to customize news according to his/her likes and expectations.

Furthermore, the mainstream press in Turkey argues readers' comments on news lack deep analysis, which requires mastership in journalism instead, and they are not competent for setting the agenda and making comments yet. However, they consider the reader's expectations and likes in their social media applications like Facebook and Twitter. According to the news entitled "How the Presidential Candidates Use the Web and Social Media," the users' accounts for Barack Obama's November 2012 election campaign were created on nine different platforms (Facebook, Google+, Pinterest, Tumblr, YouTube, Flickr, Instagram, Spotify and two accounts on Twitter (@BarackObama and @Obama2012)). Considering that the president of a country like the USA, which is among

the most powerful in the world, attempts to influence the social media for his election campaign and formulates his policies accordingly, we may come to the conclusion that comments in the social media are highly significant. It also demonstrates that users are considered competent for commenting on a political election, and their opinions are recognized as important. (http://www.journalism.org/analysis_report/degree_digital_effort_obama_far_outweighs_romney)

Whereas the mainstream newspapers and web sites cover only their own authors' opinions about news, Flipboard, news 360 and similar applications present the reader all the sources of the news he/she is interested in. Today, when mobile devices is a part of our daily life, the reader will be allowed to see the other sources of the news and to put forward his/her own viewpoint within his/her comments. Besides all these, considering the features like device capacity, connection speed, screen resolution and operating capacity, when he/she customizes the news, he/she can use the device more efficiently and have more interaction as a result of features like sharing and commenting on news, so media corporations will gain more benefits from their advertisement revenues, the most important one among their income models.

4. RESEARCH

4.1. Research Methodology

Three different methods, interviews, surveys and experimental design, were used in the study. In-depth interviews, which lasted 60-70 minutes, were conducted with executives in charge of mobile device applications in Hürriyet, Milliyet and Sabah between March and June 2012. The interviewees were asked open-ended questions. The reason for choosing Hürriyet, Milliyet and Sabah is that they have both web and online newspapers developed for mobile devices. The interviews were recorded by a voice recorder upon the interviewees' consent. During the face to face in-depth interviews, the interviewees were set free to interpret the topics of the open-ended questions, in order to create a friendly environment so as to be able to get further information about the topics. The reason why

the in-depth interview model has been chosen as the method is to learn more about the ideas and the perspectives of the executives interviewed about online newspapers.

Main topics of the interviews are below:

- Readers' expectations from design
- The targeted audience's expectations from mobile news content
- Limits to mobile devices' operating capacity
- Mobile devices' operating capacity
- Mobile devices' screen sizes
- Mobile devices' touch screen related features
- Visual style features of online newspapers on mobile devices
- Readers' ability to share news by mobile device applications
- Information display types
- Web page design
- Display of news sources by mobile newspaper applications
- Reader's perceptions
- Comparison of the conventional and new media
- Trends in the social media

Also a survey was conducted with 393 Turkish citizens over the Internet between August and September 2012. The entire population of the survey was Turkish citizens, and the sample was composed of Internet users. So as to gain more information from the interviews and the survey, some research were made about the related literature before developing the interview and survey questions. In addition, a number of articles published in international peer-reviewed journals and dissertations about mobile devices have been considered. Also, Internet news about interface designs of mobile devices has been scanned, and information about use of mobile devices has been obtained through correspondence with the Corporation for Information and Communication Technologies. Answers given to the survey have been put through the SPSS Program and the results gained from it have been deciphered.

Main topics of the survey are below:

- Daily news reading periods of the participants
- Their ability to read news on mobile devices
- Their ability to share news by mobile devices
- Visual aids used by online newspapers for mobile devices
- Navigation applied by online newspapers for mobile devices
- Mobile devices' touch-screen features
- Mobile devices' operating capacities

Another method used in the study is experimental design, which is usually employed in studies about human-machine interaction. For detailed information about this issue, see Research methods in human computer interaction (Lazar J., et al.,2010). In the study conducted on September 20, 2012 with seven randomized students from Yeditepe University School of Communication Department of Visual Communication Designs, the participants were asked to read news from Android and iOS based tabloids and smart phones by Hürriyet web, iHürriyet, Hürriyet's android application as well as the news360 (See table 4.34). The daily Hürriyet has been chosen because it has both android and IOS applications so that it is possible to compare the same newspaper in different environments. The study, which were conducted with three people, two observers and one researcher, lasted around 3,5/4 hours and was recorded on video in order not to overlook anything. Three of the randomized students were found out to be foreigners (French). These students were asked to read news only by the news360 application.

Main topics of the experimental design are below:

- Reading news to up to the end
- Resizing news
- Reading comments about news
- Commenting on news
- Sharing news in the social media
- Reading news from other sources

- Communicating with the author of news
- Sending news by e-mail
- Access to news related visual aids
- Archiving news
- Printing out news

Also formal reports and academic studies prepared by national and international institutions and academies about ICT, online newspapers and mobile interface have been examined in addition to articles published in online and printed newspapers about mobile broadcasting, mobile communications, social media, global mobile communication use rates, web 2.0 technology, 3G communication, mobile applications and web page design.

4.1.1. Aim of the research

The purpose of the study is to search the suitability of web pages of newspapers, of the most trustworthy sources for informing society in new communication environments where ICT technologies are developing rapidly and information transmission has been going through a rapid transformation, for mobile devices and to examine the data obtained from the reader's perspective. Within this framework, first, executives from Hürriyet, Milliyet and Sabah, popular dailies in Turkey, were interviewed about mobile broadcasting related issues such as the importance of page design and of readers' expectations for proper news transmission, perception of news in the best possible way and uses of mobile devices to this end. Then, it was tested by the survey and experimental design methods whether the data obtained from these interviews corresponded to readers' expectations or not.

4.1.2. Research question

The main question this study sought an answer to was which features should be taken into consideration for transferring news interfaces, which have been designed for the web and also applicable to mobile devices; the research hypotheses were constructed within this framework.

4.1.2.1. Research hypothesis

It is necessary first to examine readers' expectations and perceptions within the framework of human-machine interaction for the suitability of web pages of newspapers for mobile

devices. Therefore, newspapers should develop interface designs for their web pages on mobile devices by considering aspects like readability of news, navigation, visual style and news sharing.

Within this approach, the main hypotheses of the research are below:

- There is a meaningful relationship between newsreadability in mobile news sites and visual aspects of news in mobile news sites.
- There is a meaningful relationship between smart navigation in mobile devices and news readability in mobile news sites.
- There is a meaningful relationship between news readability in mobile news sites and functionality in mobile news sites.
- There is a meaningful relationship between news sharing in mobile news sites and visual aspects of news in mobile news sites.
- There is a meaningful relationship between news sharing in mobile news sites and smart navigation in mobile devices.
- There is a meaningful relationship between news readability in mobile news sites news sharing in mobile news sites.

4.1.3. Research restrictions

It lasted around 3 months for communicating and making an appointment with the executives in charge of mobile communication from the dailies Hürriyet, Milliyet and Sabah. In addition, it took nearly two months for minimum 384 people to fill in the survey on the Internet.

Technical impediments like the slow Internet rate, screen freezing experienced during the implementation of the experimental design method took around 3,5/4 hours. I implemented the experimental design method in Yeditepe University School of Communication where I took my doctorate education. And the survey was accessible by anybody with an Internet connection.

4.2. Survey Findings

Research findings, which were gained by SPSS Program, encompass reliability, factoranalysis, rotated component matrix, frequency tables and correlations. Also the experimental design method was implemented with seven students that were randomly chosen.

Since five factors, sharing, reading, resolution and hardware, were considered primary at the beginning, it was decided to exclude from the model a question in the sharing factor after the reliability analysis of the questions about these factors.

Table 4.1. Reliability Statistics

Cronbach's Alpha	N of Items
,761	6

Table 4.2. Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q15	11,06	14,084	,318	,775
Q16	11,49	12,847		,715
Q17	10,71	12,157	,518	,723
Q18	11,29	12,288	,583	,704
Q19	11,63	13,383	,535	,720
Q20	11,76	13,087	,545	,716

After this question was excluded, factor analysis was conducted, and according to the findings of our survey, the number of the factors which should be taken into consideration for interface design rose to seven. The reliability analysis results, which were based on these seven factors, are given below:

Table 4.3. Rotated Component Matrix

	Component						
	1	2	3	4	5	6	7
Q24	,756	,055	,147	,134	,094	,147	,041
Q23	,745	,092	,128	,068	,185	,007	,017
Q22	,689	,000	,174	,160	,180	,043	,107
Q21	,559	,191	-,018	,183	,096	-,029	,224
Q25	,534	,109	,315	,035	,236	,211	,010
Q31	,508	,171	,092	,038	,063	,311	,200
Q37	,079	,754	,212	,178	-,016	,116	,132
Q43	,058	,746	,253	,100	,184	,087	-,056
Q36	,060	,733	,046	,150	,177	,014	,124
Q38	,168	,565	,139	,197	-,071	-,021	,232
Q42	,071	,499	,220	,139	,256	,415	-,098
Q41	,213	,441	,248	,051	-,120	,311	,137
Q47	,047	,228	,768	,031	,058	-,032	,114
Q45	,203	,169	,730	,107	-,119	,108	,137
Q46	,066	,075	,656	,148	,254	,272	-,055
Q44	,199	,135	,652	-,026	,253	-,145	,124
Q48	,177	,229	,412	,107	,097	,155	,081
Q18	,112	,108	,086	,776	,150	-,039	,146
Q19	,293	,104	,010	,682	,174	-,145	,228
Q17	,001	,074	,066	,647	,063	,408	-,035
Q20	,175	,292	,183	,612	,004	,063	,058
Q16	,066	,265	-,005	,583	-,049	,313	-,119
Q27	,181	,160	,093	,039	,661	-,032	,149
Q26	,225	-,021	,125	,138	,652	,257	-,008
Q29	,305	,100	,074	,148	,567	,240	,170
Q28	,284	,417	,073	,052	,529	-,064	,070
Q32	-,045	-,211	,235	-,010	,463	,321	,343
Q40	,062	-,029	,143	,328	,036	,633	,183
Q30	,338	,079	-,063	-,160	,185	,547	,153
Q39	,116	,272	,063	,109	,179	,509	,133
Q34	,024	,097	,116	,043	,174	,138	,764
Q33	,170	,091	,196	,125	,120	,062	,687
Q35	,332	,225	-,020	,061	,018	,150	,607

4.2.1. Reliability of survey

In the study, the reliability coefficient was individually measured for each factor.

F1: News readability in mobile news sites:21,22,23,24,25,31

F2: Visual hardware components of tabloids:36,37,38,41,42,43

F3: Visual hardware components of smart phones:44,45,46,47,48

F4:News sharing in mobile news sites:16,17,18,19,20

F5:Smart navigation in mobile devices:26,27,28,29,32

F6:Functionality in mobile news sites:30,39,40

F7: Visual aspects of news in mobile news sites: 33,34,35

Table 4.4 Factor of news readability in mobile news sites
Reliability Statistics

Cronbach's Alpha	N of Items
,806	6

Table 4.5 Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
21. I am pleased that a lot of news and news titles are available on home pages of mobile internet news sites.	11,89	12,284	,483	,795
22. I easily understand which section of newspaper it is in while reading news on mobile internet news sites.	11,72	11,563	,606	,766
23. Location of links and menus on mobile internet sites is standard, and I easily recognize them.	11,57	11,726	,643	,758
24. I can immediately see the menus related to the news I read most on mobile internet news sites.	11,68	11,922	,664	,754
25. Design of mobile internet news sites is meaningful and easy to learn.	11,70	12,888	,517	,786
31. I do not get lost while navigating through pages on mobile internet news sites.	11,60	12,522	,489	,793

The reliability coefficient for factor of news readability in mobile news sites was found out to be 0,806. Thus, the validity of the questions constituting this factor is at an approvable level.

Table 4.6 Factor of visual hardware components of tabloids, Reliability Statistics

Cronbach's Alpha	N of Items
,806	6

Table 4.7 Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
36. I am more pleased to read news on tabloid.	10,44	12,814	,590	,771
37. I can resize news on tabloid whenever I wish.	10,92	13,262	,685	,748
38. The higher the resolution of mobile devices is, the more pleased I am to read news.	10,98	14,692	,494	,791
41. I need to have a lot of technical information in order to read mobile news sites easily.	10,75	15,543	,435	,802
42. I can turn pages on tabloid.	10,60	14,038	,519	,786
43. I can read news more comfortably due to the touch screen feature of tabloids.	10,93	13,399	,677	,750

The reliability coefficient for factor of visual hardware components of tabloids was found out to be 0,806. Thus, the validity of the questions constituting this factor is at an approvable level.

Table 4.8 Factor of visual hardware components of smart phones
Reliability Statistics

Cronbach's Alpha	N of Items
,761	5

Table 4.9 Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
44. I am more pleased to read news on smart phones.	9,07	9,429	,528	,719
45. I can enlarge or minimize news while reading on smart phones.	9,83	10,155	,618	,694
46. I can turn news pages on smart phones.	9,24	9,343	,519	,723
47. I can read news more comfortably due to the touch-screen feature of smart phones.	9,61	9,427	,636	,680
48. Use of keyboard in tabloids and smart phones are more comfortable.	9,61	10,601	,383	,768

The reliability coefficient for factor of visual hardware components of smart phones was found out to be 0,761. Thus, the validity of the questions constituting this factor is at an approvable level.

Table 4.10 F4 factor: News sharing in mobile news sites reliability statistics

Cronbach's Alpha	N of Items
,775	5

Table 4.11. Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
16. I can navigate news on mobile internet news site to the third persons by sending them links.	8,96	9,774	,518	,743
17. I can archive the news I read on mobile internet news sites.	8,18	9,045	,512	,750
18. I can make comments on the news I read on mobile internet news sites.	8,76	8,963	,617	,708
19. I can read comments about news on mobile internet news sites.	9,10	10,006	,556	,732
20. I can share news on mobile internet news sites in the social media like Facebook and Twitter.	9,23	9,820	,550	,733

The reliability coefficient for factor of news sharing in mobile news sites: was found out to be 0,775. Thus, the validity of the questions constituting this factor is at an approvable level.

Table 4.12 F5 factor: Smart navigation in mobile devices
Reliability Statistics

Cronbach's Alpha	N of Items
,699	5

Table 4.13 Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
26. Mobile internet news sites always offer comprehensible and useful guiding messages when I do not know how to proceed through the page I am on.	11,12	7,905	,517	,624
27. Titles and contents of news on mobile internet news sites are compatible with each other.	11,36	8,179	,512	,628
28. Colored pictures, videos and voice content used on mobile internet news sites help me understand news more easily.	11,71	8,662	,404	,670
29. In terms of navigation, I can easily find anything I want on mobile internet news sites.	11,41	8,060	,546	,615
32. Page scrolling, blinking content or animation features of mobile internet news sites do not disturb me.	10,37	8,034	,339	,713

The reliability coefficient for factor of smart navigation in mobile devices was found out to be 0,699. Thus, the validity of the questions constituting this factor is at an approvable level.

Table 4.14 F6 factor: Functionality in mobile news sites Reliability Statistics

Cronbach's Alpha	N of Items
,556	3

Table 4.15 Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
30.I do not need to move a page from left to right while reading news on mobile internet news sites.	5,33	3,061	,314	,538
39.I do not need to wait long while displaying pages on mobile internet news sites.	5,68	3,036	,409	,392
40.I can print out contents of news on mobile news sites.	5,54	2,898	,380	,433

The reliability coefficient for factor of functionality in mobile news sites was found out to be 0,556. Thus, the validity of the questions constituting this factor is at an approvable level.

Table 4.16 F7 factor: Visual aspects of news in mobile news sites Reliability Statistics

Cronbach's Alpha	N of Items
,706	3

Table 4.17 Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
33.A sufficient amount of photos and graphs (visual aids) is used on mobile internet news sites.	4,76	2,191	,559	,571
34.Sizes of the photos used on mobile internet news sites are sufficient.	4,74	2,170	,541	,595
35.Text fonts used on mobile internet news sites help me understand and follow news.	4,98	2,494	,475	,674

The reliability coefficient for factor of visual aspects of news in mobile news sites was found out to be 0,706. Thus, the validity of the questions constituting this factor is at an approvable level.

4.2.2. Factor analysis of survey

Evaluation in the experimental design method has been made on the basis of the five factors. In addition, at the end of the survey, those five factors have been regrouped into seven.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy for the research is 0,883 an significance value is 0,000 (Table 4.18).

Table 4.18 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,883
Bartlett's Test of Sphericity	Approx. Chi-Square	4444,397
	Df	528
	Sig.	,000

The 33 questions of the survey have been categorized to the 7 groups listed below (Table 4.19-Table 4.25)

Table 4.19 News readability in mobile news sites

NEWS READABILITY IN MOBILE NEWS SITES	24. I can immediately see the menus related to the news I read on mobile internet news sites.	,756
	23. Location of links and menus on mobile internet news sites is standard and I can easily recognize them.	,745
	22. While reading news on mobile internet news sites, I easily understand which section of the newspaper it is on.	,689
	21. I am pleased that there is a lot of news and news titles on home pages of mobile internet news sites.	,559
	25. Design of mobile internet news sites is meaningful and easy to learn.	,534
	31. I do not get lost while navigating through pages on mobile internet news sites.	,508

Table 4.20 Visual hardware components of tabloids

VISUAL HARDWARE COMPONENTS OF TABLOIDS	37. I can resize news as I want when I read it on tabloid.	,754
	43. As a result of the touch-screen feature of tabloids, I can read news more comfortably.	,746
	36. I am more pleased to read news on tabloid.	,733
	38. The higher the resolution of mobile devices is, the more pleased I am to read news.	,565
	42. I can turn news pages on tabloid.	,499
	41. I need to have a lot of technical information in order to use mobile news sites easily.	,441

Table 4.21 Visual hardware components of smart phones

VISUAL HARDWARE COMPONENTS OF SMART PHONES	47. As a result of the touch-screen feature of smart phones, I can read news more comfortably.	,768
	45. I can resize news while reading it on smart phones.	,730
	46. I can turn news pages on smart phones.	,656
	44. I am more pleased to read news on smart phones.	,652
	48. Use of keyboard in tabloids and smart phones is comfortable.	,412

Table 4.22 News sharing in mobile news sites

NEWS SHARING IN MOBILE NEWS SITES	18. I can make comments on the news I read on mobile internet news sites.	,776
	19. I can read comments about news on mobile internet news sites.	,682
	17. I can archive the news I read on mobile internet news sites.	,647
	20. I can share news from mobile internet news sites through the social media like Facebook or Twitter.	,612
	16. I can navigate news on mobile internet news sites to third persons by sending them links.	,583

Table 4.23 Smart navigation in mobile devices

SMART NAVIGATION IN MOBILE DEVICES	27. Titles and contents of news available on mobile internet news site are compatible with each other.	,661
	26. Mobile internet news sites always offer comprehensible and guiding messages when I do not know how to proceed through the page I am on.	,652
	29. In terms of navigation, I can easily find anything I want on mobile internet news sites.	,567
	28. Colored pictures, videos and voice content used on mobile internet news sites help me understand news easily.	,529
	32. Page scrolling, blinking content or animation features of internet news sites do not disturb me.	,463

Table 4.24 Functionality in mobile news sites

FUNCTIONALITY IN MOBILE NEWS SITES	40. I can print out news contents from mobile news sites.	,633
	30. I do not need to move a page from left to right while reading news on mobile internet news sites.	,547
	39. I do not need to wait long while displaying pages on mobile news sites.	,509

Table 4.25 Visual aspects of news on mobile news sites

VISUAL ASPECTS OF NEWS ON MOBILE NEWS SITES	34. Sizes of the photos used on mobile internet sites are sufficient.	,764
	33. A sufficient amount of photos and graphs (visual aids) are used on mobile internet news sites.	,687
	35. The text font used on mobile internet news sites helps me understand and follow news easily.	,607

4.2.3. Frequency of survey participants

Table 4.26 Age group

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 17-30	298	75,8	75,8	75,8
30-45	78	19,8	19,8	95,7
45 and +	17	4,3	4,3	100,0
Total	393	100,0	100,0	

95,7% of the participants are at the age group 17-45.

Table 4.27 Income Group

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	200	50,9	50,9	50,9
2	81	20,6	20,6	71,5
3	71	18,1	18,1	89,6
4	27	6,9	6,9	96,4
5	14	3,6	3,6	100,0
Total	393	100,0	100,0	

89% of the participants are at the income group 750-5000 TL.

Table 4.28: Mobile Device Used

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Smart phone	286	72,8	72,8	72,8
Tabloid	15	3,8	3,8	76,6
Bothi	92	23,4	23,4	100,0
Total	393	100,0	100,0	

Of the participants, 72,8% use smart phones, 3,8% use tabloid, and 23,4% use both of them.

Table 4.29 The newspaper you read most on your mobile device

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Akşam	2	,5	,5	,5
Bugün	3	,8	,8	1,3
Cumhuriyet	20	5,1	5,1	6,4
Güneş	64	16,3	16,3	22,6
Habertürk	124	31,6	31,6	54,2
Hürriyet	51	13,0	13,0	67,2
Milliyet	15	3,8	3,8	71,0
Posta	18	4,6	4,6	75,6
Radikal	17	4,3	4,3	79,9
Sabah	1	,3	,3	80,2
Takvim	1	,3	,3	80,4
Türkiye	6	1,5	1,5	81,9
Vatan	1	,3	,3	82,2
Yenişafak	8	2,0	2,0	84,2
Zaman	62	15,8	15,8	100,0
Total	393	100,0	100,0	

Table 4.30 How many hours you spend reading news on mobile devices

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 15-30 minutes	259	65,9	65,9	65,9
1-2 hours	78	19,8	19,8	85,8
2-3 hours	14	3,6	3,6	89,3
3 hours and above	12	3,1	3,1	92,4
I do not read	30	7,6	7,6	100,0
Total	393	100,0	100,0	

65,9% of the participants read news for 15-30 minutes whereas 85,8% of them read news for between 15 minutes and 2 hours in their mobile devices.

Table 4.31: How many times a day you enter news sites by your mobile devices

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1-2	165	42,0	42,0	42,0
3-4	118	30,0	30,0	72,0
5-6	42	10,7	10,7	82,7
7-8	12	3,1	3,1	85,8
9-10	16	4,1	4,1	89,8
I do not enter news sites	40	10,2	10,2	100,0
Total	393	100,0	100,0	

72% of the participants said that they enter news sites by their mobile devices up to 4 times a day, whereas 89,9% of them said that they visit news sites up to 10 times a day.

Tablo 4.32: Which one below is the screen resolution of your mobile device?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Low	8	2,0	2,0	2,0
Middle	134	34,1	34,1	36,1
High	251	63,9	63,9	100,0
Total	393	100,0	100,0	

34,1% of the participants said that their screen resolution are at a mid level, whereas 63,9% of them said that it is high.

4.2.4. Correlations between questions

Table 4.33. Correlations

Spearman's rho	F1		F5	F7	F3	F4	F6	F2
F1	Correlation Coefficient	1,000	,409**	,292**	,286**	,295**	,357*	,343**
	Sig. (2-tailed)	.	,000	,000	,000	,000	,000	,000
	N	393	393	393	393	393	393	393
F5	Correlation Coefficient	,409*	1,000	,293**	,287**	,300**	,349*	,278**
	Sig. (2-tailed)	,000	.	,000	,000	,000	,000	,000
	N	393	393	393	393	393	393	393
F7	Correlation Coefficient	,292*	,293**	1,000	,239**	,222**	,263*	,272**
	Sig. (2-tailed)	,000	,000	.	,000	,000	,000	,000
	N	393	393	393	393	393	393	393
F3	Correlation Coefficient	,286*	,287**	,239**	1,000	,207**	,210*	,407**
	Sig. (2-tailed)	,000	,000	,000	.	,000	,000	,000
	N	393	393	393	393	393	393	393
F4	Correlation Coefficient	,295*	,300**	,222**	,207**	1,000	,261*	,378**
	Sig. (2-tailed)	,000	,000	,000	,000	.	,000	,000
	N	393	393	393	393	393	393	393
F6	Correlation Coefficient	,357*	,349**	,263**	,210**	,261**	1,000	,294**
	Sig. (2-tailed)	,000	,000	,000	,000	,000	.	,000
	N	393	393	393	393	393	393	393
F2	Correlation Coefficient	,343*	,278**	,272**	,407**	,378**	,294*	1,000
	Sig. (2-tailed)	,000	,000	,000	,000	,000	,000	.
	N	393	393	393	393	393	393	393

** . Correlation is significant at the 0.01 level (2-tailed).

F1: News readability in mobile news sites

F2: Visual hardware components of tabloids

F3: Visual hardware components of smart phones

F4: News sharing in mobile news sites

F5: Navigation in mobile devices

F6: Functionality in mobile news sites

F7: Visual aspects of news in mobile news sites

***There is meaningful relationship news readability in mobile news sites (F1) and visual aspects of news in mobile news sites (F7).**

Correlation Coefficient came out to be 0,292. Thus, there is meaningful relationship news readability in mobile news sites (F1) and visual aspects of news in mobile news sites (F7).

***There is a meaningful relationship between visual hardware components of smart phones (f3) and news sharing in mobile news sites (f4).**

Correlation Coefficient came out to be 0,207. Thus, there is a meaningful relationship between visual hardware components of smart phones (f3) and news sharing in mobile news sites (f4). (Sig. (2-tailed)=0.000)

***There is a meaningful relationship between navigation in mobile devices (f5) and news readability in mobile news sites (f1).**

Correlation Coefficient came out to be 0,409. Thus, There is a meaningful relationship between navigation in mobile devices (f5) and news readability in mobile news sites (f1) (Sig. (2-tailed)=0.000).

***There is a meaningful relationship between news readability in mobile news sites (f1) and visual hardware components of tabloids (f2).**

Correlation Coefficient came out to be 0,343. Thus, there is a meaningful relationship between news readability in mobile news sites (f1) and visual hardware components of tabloids (f2).

***There is a meaningful relationship between visual hardware components of tabloids (f2) and smart navigation in mobile devices (f5).**

Correlation Coefficient came out to be 0, 278. Thus, there is a meaningful relationship between visual hardware components of tabloids (f2) and smart navigation in mobile devices (f5).

***There is a meaningful relationship between news readability in mobile news sites (f1) and functionality in mobile news sites (f6).**

Correlation Coefficient came out to be 0, 357. Thus, there is a meaningful relationship between news readability in mobile news sites (f1) and functionality in mobile news sites.

***There is a meaningful relationship between news readability in mobile news sites (f1) and visual hardware components of smart phones (f3).**

Correlation Coefficient came out to be 0, 286. Thus, there is a meaningful relationship between news readability in mobile news sites (f1) and visual hardware components of smart phones (f3).

***There is a meaningful relationship between visual hardware component of tabloids (f2) and news sharing in mobile news sites (f4).**

Correlation Coefficient came out to be 0,378. Thus, here is a meaningful relationship between visual hardware component of tabloids (f2) and news sharing in mobile news sites (f4).

***There is a meaningful relationship between visual hardware components of smart phones (f3) and smart navigation in mobile devices (f5).**

Correlation Coefficient came out to be 0,287. Thus, there is a meaningful relationship between visual hardware components of smart phones (f3) and smart navigation in mobile devices (f5).

***There is a meaningful relationship between news sharing in mobile news sites (f4) and visual aspects of news in mobile news sites (f7).**

Correlation Coefficient came out to be 0, 222. Thus, there is a meaningful relationship between news sharing in mobile news sites (f4) and visual aspects of news in mobile news sites (f7).

***There is a meaningful relationship between news sharing in mobile news sites (f4) and smart navigation in mobile devices (f5).**

Correlation Coefficient came out to be 0,300. Thus, there is a meaningful relationship between news sharing in mobile news sites (f4) and smart navigation in mobile devices (f5).

***There is a meaningful relationship between smart navigation in mobile devices (f5) and functionality in mobile news sites (f6).**

Correlation Coefficient came out to be 0,349. Thus, there is a meaningful relationship between smart navigation in mobile devices (f5) and functionality in mobile news sites (f6).

***There is a meaningful relationship between news readability in mobile news sites (f1) and news sharing in mobile news sites (f4).**

Correlation Coefficient came out to be 0,295. Thus, there is a meaningful relationship between news readability in mobile news sites (f1) and news sharing in mobile news sites (f4).

4.3. Evaluations of Research Results

Research results can be analyzed under three main categories: evaluation of the interviews, evaluation of the surveys, and evaluation of the experimental design.

4.3.1. Evaluations of interviews

Readers' expectations about the suitability of web pages of newspapers for mobile devices
It has been seen Milliyet, Hürriyet and Sabah did not conduct a specific study with their readers about the suitability of the web pages for mobile devices; they published it on their own sites by the programs like Google Analytics and measured readers' expectations by asking similar questions in the question-answer-comment format.

Factors considered for transferring web pages of newspapers to mobile devices like iPads and smart phones.

All three newspapers were seen to have considered particularly iPads and iPhones among mobile devices. They explained that iPads and iPhones have the same screen resolution whereas Androids phones have four different ones. In transferring photos, they attempt to develop technical solutions which will ensure minimum transfer. For example, in the iPhone application, a picture of 500*800 pixels is turned into 320 pixels. In addition, ergonomics of human-machine interaction has not been considered much for the touch-screen feature of mobile devices.

Sharing news in the social media, making comments and communicating with the author/editor

It has been observed that none of the three newspapers have features like sharing news in the social media, making comments, direct communication with the author in its iPhone and iPad applications. However, they stated that these features would be included in their mobile device applications soon..

Conducting a study about how readers perceives the information (news) in the best possible way for news display on web pages of newspapers

All the three newspapers stated that they have not conducted a study with readers about newspaper design but attempted to determine it by the software demonstrating which spaces readers click, depending on the technical opportunities of the application, and they have planned the menu locations of news according to which sections are read more.

Mobile editors for newspaper adaptations of mobile devices

All the three newspapers stated that they do not have a mobile editor. In addition, Hürriyet Strategic Reporting Director Reha Başoğul expressed that employment of different editors for web and smart phones might determine the reader segmentation and explained this situation with the example of decrease in gold prices. The data showed that for readings news in mobile, in the web and in tabloids, in case of a reader concentration on the gold market, Hürriyet might decide to develop different contents about this issue, and mobile

editors might decide on those contents. He said that although situation would be a plus for Hürriyet brand, he was not able to say definite things on mobile editors since a user-based study on mobile devices has not been conducted yet.

Influence of mobile devices on news reading

All the three newspapers agreed that Internet connection rates completely changed the reading situation. Hürriyet, Milliyet and Sabah also include the feature of reading newspaper by access through wi-fi without using 3D. Thus, all the three newspapers expressed that the habit of reading newspapers particularly on tabloids has developed as a result of e-newspapers. They stated that they were able to evaluate this by certain software. On the other hand, explaining that readers spend more time on tabloids than on the web, they said that mobile devices contribute to the development of the reading habit due to their touch-screen, their ability to resize news as well as their usability, navigation and interface design. They said that the advertising period has changed as a result, and that the rate of mobile newspaper reading has increased more on tabloids particularly during holidays and at weekends. They added that another factor is the ability to do an operation by using fingers instead of a mouse.

Fulfilling the user's expectations

All the three newspapers explained that they are able to make two types of measurement by using free software such as core matrix, webtrends, click tracks, omniture and googleanalytics so that they can detect the following:

- The user's browser type,
- The country/city from which the user connects,
- The pages the user visits,
- For how long the user stays on pages,
- For how many minutes the user stays on the site
- How much time a month the user spends on the site
- The frequency of the user's visits to the site (once a month, five times, eight times and so on).

Accordingly, they said that they are able to decide on what the screen resolution should be, how many different types it should be implemented in, what the RGB codes are and which colors they should use.

Cookie based Login measurement:

Cookie based measurement: For example, the user connected to hurriyet.com.tr at home in the morning; then he/she connected at work and by safari in the evening. The cookie based measurement accepts the user as three persons. In addition, if the user's name is known, it is possible to know his/her user ID instead of his/her cookie ID regardless of what device he/she uses to connect. Thus, the number of individual cookies in Turkey is 112 millions, but this number is not rational. However, considering that people connect by various browsers on different devices, this number seems reasonable. If proportioned to Turkey's population, this number is not reasonable, however. The number of users in Turkey is measured on the basis of the panelist data; a sample at TUIK standards is detected, and the cookies are considered. Today the number of individual users is 28 millions. It is statistically measured upon the reasonable data and divided on a city basis.

As a result of such software, it is possible to differentiate the following:

- The user's browser type,
- The country/city from which the user connects,
- The pages the user visits,
- For how long the user stays on pages,
- For how many minutes the user stays on the site
- How much time a month the user spends on the site
- The frequency of the user's visits to the site (once a month, five times, eight times and so on).
- The pages which the user leaves immediately after his/her visit or the pages the user navigates frequently.

Naturally, data can be obtained without asking the reader. If segmented, it is possible to detect different combinations like the readers who follow authors and sports news, the readers who follow authors by the mobile and like. This situation is related to how much a product is known.

In addition, Hürriyet stated that users had replaced cookies as of 2012, and Hürriyet has headed towards this. They expect the world to head towards this, as well. They express that different business models will be formed if the user is known.

Social Media Trends

Hürriyet stated that they do not make a choice about whether to make individual or the public oriented news. They leave this situation to the reader's expectations by different applications. They keep the daily Hürriyet and its website with their agenda as determined by editors. On the other hand, they also consider the social media's agenda. They explained that Hürriyet does not choose either one of them but considers both. The analysis obtained demonstrated 50%. For example, despite the expectation that people would show great interest in the February 28 case, numbers alone could not speak about its importance, and it was impossible to find deep analyses in the social media or in other social networks since this process has not matured yet. Therefore, they thought it to require mastership in journalism.

They said that doing journalism according to the trends in the social media, the user's likes and dislikes, his/her reading preferences and software/survey results will take society back. The main reason is that the quality of Google as a search engine has depreciated. For example, views about cinema films are not available except for torrents; a number of sites offer copy-paste contents. As a result, they think this completely automatized situation does not correspond to access to any real content.

Regardless of the numbers and data obtained through the social media in Turkey, a sense of journalism is necessary, in their view.

For example, if your feature news about İbrahim Tatlıses because he is discussed a lot in the social media, these numbers can constitute only 50 or 60% of the work considering cost locating and diversity in the long term.

If compared to mobile journalism cases in Europe and the USA, do we use the latest mobile application technology?

All the three newspapers explained that they use the latest technology for mobile devices of iPhone, iPad and android. What really matters here is the ability to use this technology

effectively, which can be decided by the user, according to them. Başoğul also said that journalism should be specialized according to the device instead of the user. Mobile broadcasting should be done by considering what patterns the user follows and what news should be reduced or enlarged. He said that they might need an application for his, but Hürriyet uses the same news as it is on the web.

Is there a difference between conventional and web journalism in terms of news transmission and rates of visual and written news?

All the three newspapers said that there is a huge difference particularly in use of photos and graphs. They expressed that they can use them depending on how many seconds readers stay on a news story. Readers might also look at its photos and videos without the details of a news story.

4.3.2. Evaluations of survey

As a result of this research, the five factors have been regrouped into seven. The relationship between these factors is as follows:

- There is meaningful relationship news readability in mobile news sites and visual aspects of news in mobile news sites.
- There is a meaningful relationship between visual hardware components of smart phones and news sharing in mobile news sites.
- There is a meaningful relationship between navigation in mobile devices and news readability in mobile news sites.
- There is a meaningful relationship between news readability in mobile news sites and visual hardware components of tabloids.
- There is a meaningful relationship between visual hardware components of tabloids and smart navigation in mobile devices.
- There is a meaningful relationship between news readability in mobile news sites and functionality in mobile news sites.
- There is a meaningful relationship between news readability in mobile news sites and visual hardware components of smart phones.

- There is a meaningful relationship between visual hardware component of tabloids and news sharing in mobile news sites.
- There is a meaningful relationship between visual hardware components of smart phones and smart navigation in mobile devices.
- There is a meaningful relationship between news sharing in mobile news sites and visual aspects of news in mobile news sites.
- There is a meaningful relationship between news sharing in mobile news sites and smart navigation in mobile devices.
- There is a meaningful relationship between smart navigation in mobile devices and functionality in mobile news sites.
- There is a meaningful relationship between news readability in mobile news sites and news sharing in mobile news sites.

4.3.3. Evaluation of experimental design

In the study conducted on September 20, 2012 with seven students randomly chosen from among those at Yeditepe University School of Communication Department of Visual Communication Design, the students were asked to read news on Hürriyet web and ihürriyet on Android, ipad and iPhone by android, news360 and iPad applications The study, which was conducted with three people, two of whom were observers, lasted around 3,4 – 4 hours and was video-recorded in order not to overlook any situation. Three of the randomized students were foreigner (from France). These students were asked to read news only through the news360 application. The table given to the students to evaluate their observations and the scenario table they were asked to implement are as in Apendix 2 and Apendix 3.

Table 4.34 Experimental Design Method General Evaluation

EVALUATION CRITERIA		TABLOID			SMART PHONE				
		iOS hürriyet web	iOS İhurriyet	iOS News360	iOS iphone ihurriyet	iOS iphone hürriyet web	Android (Sony xperia) Hürriyet Android	Android (Sony xperia) Hürriyet Web	iOS iphone news360
readability	Attention	****	***	****	***	****	***		***
	Simplicity	***	**	****	**	***	**		***
	Perceptible	***	**	****	*	***	**		**
	Readability	****	*	****	**	****	***		****
sharing	Conformity with the user expectations	***	*	***	*	***	*		****
navigation	Predictability	***	**	***	**	***	*		***
	Learnability	****	**	***	**	****	***		***
	Familiarity	****	**	***	**	****	*		***
	Memorability	****	***	***	**	****	*		***
resolution	Simplicity	****	**	****	**	***	**		****
	Perceptibility	***	**	***	**	***	*		***
	Visibility	****	**	***	**	***	**		***
hardware	Task effort	***	***	****	**	**	*		***
	Utility	***	**	****	**	**	**		***
	Safety	***	***	****	**	**	**		***
	Customizability	**	**	****	*	**	*		****
	User controlled applications	**	**	****	*	**	*		***
	Conformity with user the expectations	**	*	****	*	**	*		***
	Controllability	***	*	****	*	***	**		***
	Responsiveness	***	*	****	*	***	*		****
	Individualization	*	*	****	*	*	*		****
	Feedback	*	*	****	*	*	*		****
	Flexibility	**	*	***	*	**	*		****
Error indication	*	*	***	*	*	*		****	

Readability: Considering the criterion of attention for Hürriyet web and ihurriyet, Hürriyet web catches the user's attention to the full extent with its news sharing and news display features. Ihurriyet, on the other hand, is not as effective as Hürriyet web in presenting news to the user in an attractive manner. The criterion of simplicity is individually considered for Hürriyet web and ihurriyet on a comparative basis, as well. It is seen the Hürriyet web application is found simple and used without hesitation since it is closer to the user's past experiences. On the other hand, the user lives difficulty with resizing and sharing news in the ihurriyet application. In terms of readability, it is expressed by the participants that texts in the ihurriyet application are blurry, as well. Moreover, the users do scrolling in order to read the whole news in the iPad, iPhone and android applications. By the application of news360 on iPads and iPhones, beside resizing texts, the user can also benefit the opportunity of changing the font. In addition, the participants stated that they read the application of Hürriyet and news360 more easily on tabloid.

Sharing: News sharing was easily recognized and comfortably performed by the participants as this option is located right below news in the Hürriyet web application. In the ihurriyet application, however, the participants could not predict how to share news. Having thought over it for a while, they did it by a button available at the bottom of news. Here it is appropriate to explain news sharing in the news360 application. News sharing in the news360 application is performed by the rightwards arrow in the square at the end of a news story, as it is in the ihurriyet application. In addition, in the news360 application of iPhone, the screen size is small, which limits this operation.

Navigation: In terms of predictability, the user demonstrated hesitancy against navigation in the ihurriyet iPad and iPhone applications and the Android Hürriyet application. For example, the arrows that are available at the upper right of news in the ihurriyet application have been actually designed to ensure that news is read till the end. However, the participants thought that those buttons were for transfer among news. In terms of learnability, the navigation arrows guided the reader as requested. As already said before, the application of sharing also exemplifies this situation. In terms of familiarity, the participants said that the ihurriyet application is different from Hürriyet web in terms of design. In terms of memorability, ihurriyet was not much memorable since the figures are not accompanied by their explanations. In addition, it has been seen that Hürriyet web is more easily memorable by the user. On the other hand, the news 360 application was much

more memorable since the user was previously notified about the operations to be performed.

Resolution:In terms of *simplicity*, texts appear blurry in the iPad and smart phone applications of ihürriyet due to low resolution. On the other, there is no problem of readability in the android application of Hürriyet. And with the alternatives it offers in terms of readability, the news360 has attempted to solve the problem by considering all its users. In terms of perceptibility, whereas the user did not live much difficulty in the ihürriyet iPad, iPhone and news360 applications, he/she was not able to make predictions about such operations as news sharing or news resizing on Android (xperia) smart phones. The user even thought that these applications were not available. In terms of *visibility*, picture resolution is low in theihurriyetipad, iphone, and android web applications; it is impossible to enlarge photos individually. In the news360 and iPad applications, however, it is possible to display and enlarge the photos and videos that are right above news.

Software:In terms of *task effort*,ihurriyet, hürriyet web and news360 demonstrate diverging performances according to the Internet rate. Operations took longer in smart phones. In addition, in the news360 application, the user is informed while news is downloaded or displayed and read from its original source.

*Conformity with the user's expectations and individualization:*These two features meet the user's expectations at a desirable level in the ihürriyet iPhone, iPad and android (sonyxperia) applications. On the other hand, the news 360 application seems to meet the user's expectations about the simplest operations (feedback navigation, access to photos and videos, readability and personalization) to a great extent. Moreover, its greatest feature is its ability to present the same news from different sources.

*Customizability and individualisation:*These two features have been arranged completely on the basis of the user's likes about access to news and news clusters only in the news360 application. When entering the news360 site, the user clicks the topic he/she likes, be it sports, fashion, technology or politics, and has immediate access to news about that topic.*Safety, utility and responsiveness:* These explain the reader's ability to perform an operation in securitywithout transfer to a false application. For example, in iMac pro computers, when the user wants to turn down a computer, the log out and shout down options appear as one under the other. If the user clicks the log out option, a warning

appears on the computer screen, about which the user does not know what to do. Not leaving the user in such dilemmas is highly important for development of interaction. In the applications of *ihürriyet*, the “share news” option at the bottom of news (the sign of the rightwards arrow in the square) is perceived by the user as “turn back.”

Utility, responsiveness, safety and feedback, Error indication: On the other hand, in the *news360* application, the same sign is accompanied by the option “share news” so that the user does not live a dilemma.

General evaluation:

ihürriyet and Hürriyet web in the iPhone, iPad and android applications of Hürriyet, news360 in the iPhone and iPad applications

Hürriyet’s iPad, iPhone and android applications are generally the same except for their screen resolution. On the other hand, news 360 is differentiated from others with its emphasis on personalization and its individual oriented interface design. In addition, in both applications news resizing cannot be performed by hand but by the A+ and A- applications. In interaction design, the criteria like news sharing, navigation feedback, visual style (typography and colors), ability to make comments on and read news, visual applications (photo and video) should be considered particularly for mobile applications of online newspapers:

Navigation, news sharing and feedback

Back to the home page: In Hürriyet’s iPad and iPhone applications, “home page” written in white on a red background at the bottom left of news is perceived by the user as “back.” One of the largest problems experienced by readers in web sites is to get lost amidst pages. This situation should be considered for interaction design in terms of readers’ perceptions. And in *news360* the back button at the upper left of news is shown by capital letters and by a leftwards back sign. This application helps the user recognize it and prevents him/her from wasting time.

The signs shown in the navigation buttons and in the news sharing options cause the user to falter. Users were obliged to make a compulsory choice when they recognized that there

were not any other options. According to Hooper and Berkman (2011), the best way to prevent this situation particularly for mobile devices is giving the user short information about the operation he/she is about to perform. They suggest that the contextual choice be usually made as a modal dialogue by simple and clear communication.

Confirmation, Confirmation is the best way to define what is to be done within mobile devices. The user should be informed about his/her available location or his/her past behavior, if possible. If not, the user should be presented options. The user should not be kept in suspense about the steps he/she is to take. For example, pertaining to message writing, instead of asking the user whether he/she will use SMS or MMS, the message writing box should be developed as including additional options. If the user selects the required option, the message will automatically turned into MMS. If he/she does not, it will automatically become a SMS. Here, the user is still obliged to make a choice, but since he/she will see the consequences of his/her choice clearly, this situation does not perplex him/her; it does not require him/her to think about the results of this operation. Consequently, he/she will the use Internet more efficiently and achieve a higher level of interaction.

They explain other solutions as exit guard, pop-up, wait indicator and titles (Hooper S. veBerkman E, 2011: 110-111).

News sharing: It is performed by a rightwards arrow in the square available at the bottom of news in the iPad and iPhone applications of Hürriyet. The user perceives this as “back” at the first instance. As already explained before, perceptibility is one of the most important criteria for interaction design. Perceptibility influences readability and navigation directly. And in the news360, if the rightwards sign in the square at the upper right of news is clicked, options of sharing by Google, sending by mail and sharing with Facebook and Twitter immediately appear right below it. Since it presents the sharing option as accompanied with its explanation, it is easy to recognize.

Communicating with the author: One of the most significant features of online newspapers is that they offer an opportunity to communicate with the author directly. However, it is seen that the iPhone, iPad and android applications of Hürriyet lack this feature.

Reading and making comments on news: The social media has now become an indispensable application of mobile devices. The social media applications like Facebook and Twitter are now available particularly within smart phones so that information can be shared in these social media environments. This feature should be considered for mobile device interaction design of newspapers. It is seen that the iPad, iPhone and Android applications of Hürriyet do not have this feature yet. On the other hand, in the news360, making and reading comments is performed through original news sources.

Photograph and video: As already known, the most differentiating feature of online newspapers is that they freely use photos and videos. Particularly as a result of the web 2.0 and the following third generation communication technology as well as due to the Internet access in mobile devices, people can share their own photos or photos they see on the Internet in such social networks like Facebook, Twitter, Foursquare and like by MMS, Bluetooth and whatsapp. Performance, reflexivity, visibility and connection should be considered for these operations the user usually performs on a daily basis. Processing a photo and sending it to friends is the main criterion for performance.

- Reflexivity: Visual environments allow the user to configure shared photos in the format of a digital journal, so to speak.
- Visibility: Photos prove that the related person legally exists in real life and in the social environment. Connection allows sharing photos so that a link is formed among people in the visual environment (Scifo B., 2009: 189).

As regards with these four dimensions, it has been observed it is impossible to share, resize or download photos in the iPhone, iPad and android applications of Hürriyet. The user was not able to apply these main characteristics of mobile devices on photos. In addition, the user stated that photos had low resolution. A video about news appear right below it so that it is immediately recognized and watched by users. Also, they are able to display that video in full screen and to share it. If photos are clicked, they can be individually displayed; it is also possible to transfer from one photo to another by the rightwards/leftwards signs at the lower left. Moreover, the leftwards sign, at the upper left of a photo, indicating “back,” allows the user to return the home page.

Typography: It is seen that the iPad and iPhone applications of Hürriyet suffer a problem of readability. On the other hand, readability is clearer in its android application. However, in the news360, there is not such a problem. In order to solve the problem of readability, Hooper and Berkamn(2011:503) suggested the following points be considered for typography:

List of legibility guidelines for mobile devices:

- Avoid using capital letters within a text
- People experience pupil shrink, and their eyes receive a low amount of light, depending on age. In order to provide a desirable conjunction of the form in some situations, use the kind of typefaces that include different visual characters.
- Older viewers with aging eyesight can benefit from typefaces that have consistent stroke widths, open counters forms, pronounced ascenders and descenders with wider horizontal proportions, and more distinct forms for each character (such as tails on the lowercase letters t and j).
- Try to use plain-color backgrounds within a text, because graphical or patterned backgrounds interfere with the eye's ability to discriminate differences.
- Sans serif is usually the default choice, which is thought to work quite well in any font size. Serifs can or cannot help readability; therefore, there is no special reason for using them. As regards with the sensitivity of IOS, characters like Helvetica (iPhone's default typeface) should be considered. In adaptation, it is better than Verdana since it has a higher length of x and includes simple figures that have been designed particularly for screen readability.

Use of colors: Black characters are used on a white background in the iPad, iPhone and Android applications of Hürriyet. Red, as in Hürriyet's logo, is preferred for categorizing news into sections like authors, agenda, economy, sports and technology, and texts are highlighted in white. In the iPad and iPhone applications of the news360, on the other

hand, black characters are used over pale blue on the page. Other news sources are shown in white on a white-blue background so that the user can recognize them immediately.

Use of colors in newspapers is very significant for importance, perceptibility and readability of news. Thus, for constructing meaning on newspapers by colors, Hooper and Berkman(2011) say that yellow is used for displaying interactive elements, blue for images and graphs, illustratively for visualizing information, grey for undistinguishable elements, orange for focusing on a single element, and ? for scrolling or for indicating the main button (XXV).

5. CONCLUSION

As a result of rapid developments in the mobile world, corporations perform brand and product communication by mobile channels and constructions recently. Consumers' communication by mobile devices with the brand is more effective and rapid than it was by conventional applications. One of the main factors which influence this situation is that it is easier to manage contents in mobile devices with their high performance in sharing, navigation, access, readability, functionality.

Particularly wireless communication has ensured great freedom and sustainability in communication by smart phones and tabloids. This situation has made it necessary to readjust conventional marketing methods, and corporate communication and brand management strategies to 3G technologies.

In the social media, shares, written expressions and photos endure permanently. In addition, information flow is permanent. Thus, reliability of any information has become very important. Accordingly, newspapers and television continue to be the most reliable news sources. For example, news sites on the Internet copy their contents from newspapers. This situation became a contested issue at the end of 2012. Complaining that their labor was disregarded, newspapers owners claimed that newspaper contents were the mere property of newspapers.

As use of photos became more flexible with the offset print system, newspapers developed different designs so as to increase their circulation rates. As a result, differently designed newspapers came out. To solve this problem, newspapers started to reshape their pages

according to the user's perceptions mainly because page design was as important as news content for high circulation rates. This situation is also valid for current online newspapers. Web designers develop their pages by considering the user's perceptions. This is an adequate approach. In addition, in today's world, people continuously interact with mobile devices beside computers. Therefore, in addition to Gestalt's theory of perception, interface design is highly significant for perceptibility of information. The way people read online newspapers on mobile devices, particularly on tabloids and smart phones, should be paid consideration. The most important feature of interface design for tabloids and smart phones is their touch-screen. As a result of this feature, users' interaction with devices enhances; the user's experience is maximized. Sharing information by mobile devices is the first among the user's experiences. As a result of access by mobile devices, user numbers demonstrated a significant rise particularly in the social media like Facebook and Twitter, and information sharing is more rapid now. As reported by www.teknoblog.com on October 15, 2012, the number of mobile subscribers around the world reached to 6 billion. Similarly, www.webrazzi.com reported on September 6, 2012 that the number of Facebook users around the world was 543 millions. It is 14 millions in Turkey. Sabah wrote on March 16, 2012 that the number of Twitter users around the world was 465 millions whereas it was 7.2 millions in Turkey, as announced in the Digital 2012 Conference organized by webrazzi. Thus, newspapers take into consideration shares, comments, likes and trends in the social media for developing their news content. Corporations, persons and brands also rebuild their PR and marketing methods according to Facebook and Twitter users. The best example was that the US President Barack Obama used Facebook and Twitter simultaneously for his election campaigns both in 2008 and in 2012. Consequently, companies in the sector information-communication technology have added Facebook and Twitter applications to the interfaces of their smart phones.

As already known, advertisements are the most important income source of newspapers. While circulation is the determining factor for the advertising income of the press, it is the number of clicks for online environments. For mobile devices, the factors determining whether the user stays on a page are limitations like their Internet connection rate, operating capacities and screen resolutions. All of these influence whether the user stays on the site or not. In addition, iPad, iPhone, Android and Blackberry use different servers and browsers. For example, Apple's iPad and iPhone use IOS as their operating system and

safari as their browser, whereas Android devices employ the Linux operating system as well as Dolphin 7.4, which is the latest version. On the other hand, Blackberry uses the BBX operating systems and prefers opera mini as its browser recently. Accordingly, there is not a common language of hardware among the smart phones and tabloids with the android operating system and among those with IOS, and advertisements cannot be displayed on them without flash support. HTML5 offers the kind of technology that can function on mobile devices with more than one operating system. Today, it is possible to display advertisements on mobile devices without flash support by HTML 5. It also locates itself as the most suitable technology for reducing time and hardware development costs and for future-proof mobile applications.

Users can make comments on news, share them by e-mail and communicate with their authors directly on mobile devices, mainly as a result of readability and navigation. In online environments, the user's greatest problem is getting lost among pages and being unable to return the home page. Therefore, navigation is highly important for interface design of mobile devices. Readability, which is another factor, can be ensured by choosing adequate font types for mobile devices. It is also necessary for readability to know the reader's characteristics well. For example, the character of Helvetica is employed in iPhone applications within the framework of human-machine interaction. Besides all these, the greatest advantage of information transfer in online environments against printed newspapers is access to all other sources. Considering current online newspapers, it is seen that they can show other news sources depending on competition among them. Which font is used in news, where news is located and how much it is covered in its original source might influence how the reader perceives it. Therefore, in its applications for tabloids and smart phones, the news360 site provides access to other sources at the end of a news story. Furthermore, the reader can mark keywords like fashion, sports and economy in the news360 site after his/her first log-in so that he/she can personalize the site according to his/her likes and expectations. Considering that leftist, rightist and mainstream printed or online newspapers reflect their own viewpoints in producing and displaying news, in today's postmodern world, where individuality is highly important, the user's ability to organize pages on mobile devices as he/she wishes is a very appropriate approach.

Current online newspapers perform their user-based measurement by software like core matrix, webtrends, click tracks, omniture and Google analytics. They can measure whether

the user connects from a tabloid or from a smart phone, what type of browser he/she uses, which country/city he/she connects from, which pages he/she visits, for how many minutes he/she stays on a page or on a site, how much a month he/she spends on that site and how frequently he/she visits it (once a month, five times a month, eight times a month and like). Accordingly, they can make such decisions as what screen resolution they should use and what RGB codes and which sections they should feature. It is possible to evaluate the user's expectations and like by these applications. However, this hardware is not sufficient for detecting users' individual evaluations and observations. These points should be considered within the framework of human-machine interaction.

In our daily life, either we perform reflexive activities like breathing, seeing, recalling, listening, planning, eating, hearing, talking, problem solving, decision making, learning, attention paying, or we learn some activities through our experiences such as driving or riding. A human being receives information and transmits messages to related locations according to the signals coming from the brain so that an activity takes places. Realization of all these transactions depend on our behaviors, thus on cognitive psychology, which is at the center of human-machine interaction.

Accordingly, for interface design of mobile devices, such criteria as attention, simplicity, perceptibility, readability, conformity with the user expectations, predictability, learnability, familiarity, memorability, simplicity, visibility, task effort, utility, safety, customizability, user controlled applications, conformity with user the expectations, controllability, responsiveness, individualization, feedback, flexibility, error indication should be paid consideration.

At the first phase of the study, authorities from Hürriyet, Milliyet and Sabah about mobile communication were interviewed, and the data obtained was compared to the literature review. Survey and experimental design methods were constructed accordingly.

As a result, it was found out that for adjusting web pages of newspapers to mobile devices, seven factors (news readability in mobile news sites, visual hardware components of tabloids, visual hardware components of smart phones, news sharing in mobile news sites, smart navigation on mobile devices, functionality in mobile news sites, visuals aspects of news in mobile news sites) should be considered before designing web sites.

APPENDIX A: Implementation of Experimental Design

Hürriyet iPad Application

Participant 1 and Participant 2

Reading news upto the end: The news randomly chosen from the home page of Hürriyet's iPad application had a low level of resolution. However, they did not have difficulty with reading it although the text was a bit blurry. In addition, the up and down buttons, highlighted in white over a red background, created a perception of scrolling up and down, whereas these buttons were actually meant to be used for transfer to the previous or following news story. The following evaluations were made according to the transactions that occurred during news reading:

- **Scrolling:** Since the user read the news upto the end, the pages were easily downloaded during scrolling.
- **Use of visual keyboard:** The user used the visual keyboard in great comfort.
- **Access to news related visual aids like videos and photos:** In Hürriyet's application, the photo that stood next to news could not be resized by hand, and it was observed to have a low level of resolution. However, news videos, if available at the end, were easily accessed and watched.
- **Resizing news:** It is possible to resize news only by A+ or A-.
- **News reading period:** The news reading period was influenced by news' length. Another factor was scrolling.
- **Returning the home page after reading news:** Returning the home page was easily performed by "home page" written at the upper left.
- **Sharing news:** It is performed by choosing from the options of Facebook, Twitter or e-mail available at a window that appears after clicking on a sign, reminiscent of return, inside a square at the lower right of the page. The user first perceived it as the return option. However as he/she did not recognize any other options for sharing, he/she clicked it and shared the news. It was seen that use of visual keyboard was very comfortable during the transaction of sharing.
- **Reading comments on news:** Comments about news are not available on the related page.

- **Ability to read the same news from other sources:** iHürriyet did not cover other sources about the same news.
- **Ability to connect the editor/reporter:** It is possible to see the author of news at the end of the related page, but there is no option of e- mailing.

- **Visuals about news**

Display of colors: A white background was accompanied by red as in Hürriyet's logo. Use of black characters on the white background aimed to create a more comfortable reading experience.

Photograph and video: It was checked whether photos are shared, resized and downloaded in the iHürriyet application. In addition, the user stated that the resolution of the photos was low. A video-link (webtv.hurriyet) was available at the end of news but the screen frozeduring downloading, thus taking time, which annoyed the participants.

Typography: Use of fonts without serif on digital screens helps the reader read news more comfortably. Moreover, low resolution creates a perception of blur on the reader.

- **Print Out:** There is no option of print-out.
- **Pop up window:** There are no pop-up windows.
- **Navigation:** The up and down buttons at the upper right of the newspaper created a perception of scrolling up and down news on the reader. These buttons ensures transfer among news items. These buttons, developed without any explanation for the user, guide the user to make a compulsory choice.
- **Archive:** There is no feature of archiving.

Participant 1 and Participant 2

Participant 1 and Participant 2 were asked to read the news they read previously on Hürriyet again on the web by iPad.

- **Scrolling:** Since the user is able to see news as a whole inside a page, there is not much need for scrolling.
- **Use of visual keyboard:** Both users used the visual keyboard in great comfort.
- **Access to news videos and visual aids:** Both users had easy access to photos and videos, but whereas videos were easily downloaded, it was impossible to download photos separately.
- **Resizing news:** Resizing news by hand was performed in great comfort.
- **News reading period:** Since there was not much scrolling and since it was possible to display news as a whole, it took shorter than it did in the application of iHürriyet.
- **Returning the homepage after reading news:** The user headed for the forward-backward buttons at the top of the page in order to return the home page after reading news. However, as he/she understood that they were inactive, he/she returned by clicking on “homepage” written in a small font size at the top. The user thought over it for a while, hesitated and then recognized “homepage” written at the bottom. This transaction should be performed by a return sign and by a backward arrow explaining it, available at the end of news.
- **Sharing news:** It was comfortable to share news by the Facebook, “suggest” and Twitter signs at the end.
- **Making and reading comments on news:** Comments about news can be recognized right below it; the reader can read comments very easily. On the other hand, in order to make comments on news, the user should first login.
- **Ability to read the same news from other sources:** This option is not available.
- **Communicating with the editor/reporter:** The name of the author of news is available at the top, but it is impossible to e-mail him/her.
- **Visuals about news:**

Display of colors: A white background was accompanied by red as in Hürriyet’s logo. Use of black characters on the white background aimed to help the reader read news more comfortably.

Photography and video: While it is impossible to resize photos by hand, to share them in the social media and to send them by e-mail in the iPad application Hürriyet, videos can be shared within Facebook and Twitter or be sent by e-mail. Whereas photos are included within a text as an indispensable part of news, videos are visual aids which can be separated from texts and shared.

Typography: It was possible to read news more comfortably in the webhurriyet application of iPad.

- **Print Out:** There is an option of print-out.
- **Pop up window:** There were no pop-up windows.
- **Navigation:**As in Hürriyet's iPad application, the up and down buttons at the upper right of the newspaper created a perception of scrolling up and down news on the reader.
- **Archive:**There is no option of archiving.

HÜRRİYET IPHONE and ANDROID APPLICATIONS,

Participant 7 and Participant 8 (iPhone)

- **Scrolling:**The participants can read news comfortably.
- **Use of visual keyboard:** It is quite comfortable to use the visual keyboard.
- **Access to videos and visuals about news** A video about news is available at the end as it is in the iPad application. When a participant clicks that video, he/she connects to webtv.hurriyet by a link. On the same page are also available other news. This situation makes the participant think as if the other news were also related to the video. Photos are included in news, but they cannot be resized unlike in the iPad application.
- **Resizing news:** News cannot be manually resized. It can be done by A+ and A-.

- **Returning the homepage after reading news:** The transaction of returning the home page is indicated by a backward application, with “homepage” written in white over a red background at the upper left of news.
- **Sharing news:** The transaction of news sharing is indicated by a rightwards arrow in a square available at the lower right of news. The participant first perceived it as the return option. Then, when he/she clicked it, he/she was able to share news by choosing from the options of Facebook, Twitter and e-mail.
- **Making and reading comments about news:** It is impossible to see comments about news, thus preventing the participant from making comments, as well.
- **The ability to read the same news from other sources:** This feature is not available.
- **Communicating with the news editor/report:** It is impossible to communicate with the author of news.
- **Visuals about news:**

Display of colors: As in the iPad application, a white background was employed as accompanied by red as in Hürriyet’s logo. Use of black characters over the white background aimed to help the reader.

Photograph and video: As in the iPad application, it is impossible to resize, share and download photos. Similarly, the participants stated that the resolution of the photos was low. Videos are located right below news and easily recognized and watched by users. For sharing a video in the social media, it is necessary to click the video inside news, connect to the video page in Hürriyet’s web-tv page and use the Facebook (suggest) or Twitter options below the video there.

Typography: As in the iPad application, it has a problem of readability.

- **Print Out:** There is no option of print-out.
- **Pop up window:** There were no pop-up windows.
- **Navigation:** The backward and forward buttons at the upper right of the newspaper creates a perception of scrolling up and down news on the user. These buttons are meant to provide transfer among news, however. Without

any explanation accompanying them, these buttons require the user to make a compulsory choice.

- **Archive:** There is no option of archiving:

Participant 7 and Participant 8

- **Scrolling:** The users had to do too much scrolling since news is covered as a whole, similar to Hürriyet's web site.
- **Use of visual keyboard:** They generally used the visual keyboard comfortably.
- **Access to videos and visuals about news:** Photos and videos about news are located right below it, and the participants are able to resize those photos.
- **Resizing news:** It is possible to resize news by hand.
- **Returning the home page after reading news:** The transaction of returning the home page is available through "home page" written at the upper left of news.
- **Sharing news:** The transaction of news sharing is very comfortable to perform both through "Facebook" and "Twitter" at the upper left of news or through Facebook, Twitter and e-mail at the end.
- **Making and reading comments about news:** Comments about news are seen right below it, and in case he/she enters for the first time, the user can make comments about news after subscription.
- **The ability to read the same news from other sources:** This feature is not available.
- **Communicating with the editor/reporter of news:** The author of news is not indicated in it.

- **Visuals about news**

Display of colors: Black characters were used over a white background. As in Hürriyet's logo, red was preferred for categorizing news into sections like authors, agenda, economy, sports and technology, with texts highlighted in white.

Photo and video: The screen resolution is the same in the iPhone web application as it is in the iPad web. It was possible to see photos and videos clearly. It was impossible to share a photo as independent of news in the social media, however.

Videos were in full screen as independent of news. They were also shared in the social media and sent by e-mail.

Typography: Characters without serif were preferred so as to make reading more comfortable.

- **Print Out:** It is possible to print out at the end of news.
- **Pop up window:** There were no pop-up windows.
- **Navigation:** Since the participants were able to see news as a whole on the home page, they did not live much difficulty with navigation.
- **Archive:** There is no option of archiving.

Participant 7 and Participant 8 (Android Hürriyet web) Sony XPERIA

- **Scrolling:** Scrolling was performed in comfort but took too much time according to the length of news, thereby wasting the user's time depending on the Internet connection speed.
- **Use of visual keyboard:** It was observed that the visual keyboard was easy to use.
- **Access to videos and visuals about news:** Videos about news are located below it. The participants click and open those videos on another page. Then, he/she can watch them after clicking them. Three clicks are necessary to watch videos as in iPhone.
- **Resizing news:** It is possible to resize news by hand.
- **Returning the home page after reading news:** It is performed by "home page" written at the top of the page.
- **Sharing news:** It is easy to perform by the "share in the social media" options available both at the top and at the end of news.
- **Making and reading comments about news:** It is possible to read and make comments about news.
- **The ability to read the same news from other sources:** This feature is not available.
- **Communicating with the editor/reporter of news:** It is impossible to communicate with the author of news directly.

- **Visuals about news**

Display of colors: Texts are written in black over a white background. At the top of the page, the sections including the home page, the world, agenda, authors and sports were highlighted in white over a red background. These colors are the ones in Hürriyet's logo.

Photograph and video: Photos about news are given beside it, but due to their low resolution, it is impossible to see them clearly.

Typography: It is easy to read news clearly.

- **Print Out:** It is possible to print-out.
- **Pop up window:** There are no pop-up windows.
- **Navigation:** Since the participants were able to see news as a whole on the home page like in the iPhone Hürriyet web application, they did not live much difficulty with navigation.
- **Archiving:** There is an archive.

Participant 7 and Participant 8 (Android Hürriyet) Sony XPERIA

- **Scrolling:** The participants perform a lot of scrolling according to the length of news like in the iPhone application. This situation, depending on the Internet speed and on the operating capacity of the device, wasted the participants' time a little.
- **Use of visual keyboard:** As it has a touch screen, the user does not use the visual keyboards as comfortably as he/she did by the iPhone application.
- **Access to visuals and videos about news:** News is accompanied by photos beside it on the home page. In addition, it is possible to display those photos separately. The video about news is displayed inside it; if the video is clicked, Hürriyet webtv opens on another tab. In the mean time, it took some time to download the video depending on the Internet speed and on the operating capacity of the device. It was possible to watch the full video and to share it in the social media or to send it by e-mail.

- **Resizing news:** It is possible to resize news by hand. Also, unlike in the iPhone application, the operations of A+ and A- are not available on the home page.
- **Returning the home page after reading news:** It is performed by “return” written at the top of the page.
- **Sharing news:** The operations of “share in the social media” and “send by e-mail” are not available on the screen. These operations are available within the device, but they do not appear inside news. It is necessary to click the pin points at the top of the device in order to see them.
- **Making and reading comments about news:** Comments about news are not available on the screen.
- **The ability to read the same news from other sources:** This feature is not available.
- **Communicating with the editor/reporter of news:** It is impossible to communicate the author of news directly.
- **Visuals about news**

Display of colors: Texts were written in black over a white background. At the top of the page, the sections including the home page, the world, agenda and authors were shown in white over a red background. These colors are the ones in Hürriyet’s logo.

Photograph and video: The photo about news is presented beside it, but due to its low resolution, it is not clearly seen.

Typography: It is possible to read news clearly.

- **Print Out:** It is impossible to print out.
- **Pop up window:** There are not pop-up windows.
- **Navigation:** Navigation is not available, and the user scrolls down news by hand after opening it.
- **Archive:** There is no option of archiving.

NEWS 360 IPAD APPLICATION

The participants were asked to read news about iPhone 5. They reached it by writing iPhone 5 in the search section.

Participant 3 (Foreign Student: France)

- **Scrolling:** He reads news very comfortably; he performs scrolling very easily.
- **Use of visual keyboards:** He uses the visual keyboard very comfortably.
- **Access to videos and visuals about news:** He perceives the visuals like photos and videos available at the top of news as advertising mainly because, he says, advertisements are usually located at the top of online newspapers in his home county. However, those visuals available right at the top of news are the photos about that news.
- **Resizing news:** It is impossible to resize news by hand just as in the iHürriyet application. This operation is performed by A+ and A-.
- **Returning the home page after reading news:** A backwards button at the upper left of a news is indicated by a leftwards sing. This operation helps the user recognize it without wasting time.
- **Sharing news:** News is shared in the social media by clicking a rightwards arrow at the end.
- **Making and reading comments about news:** Comments about news are not recognized at the first sight; however, the user can recognize the original news source just at the end of news. If he clicks this, he can both see the original format of that news and read the comments about it.
- **The ability to read the same news from other sources:** The greatest feature of news360 is that it presents the user the same news from other sources. The user can see the same news from other sources easily.
- **Communicating with the editor/reporter of news:** In order to communicate with the author of news, the user should first click the original source given at the end of news. He can communicate with the author from there.

- **Visuals about news**

Display of colors: Black characters were used over pale blue so that the participants were able to concentrate on news on the page easily. The other sources about news were shown in white over white blue so that the participants were able to recognize them easily.

Photograph and video: Photos and videos about news were not located at the top of the page. The foreign student said that there were usually advertisements at the top of online news pages in his home country France. Therefore, he did not think that those photos were about news itself. He perceived them as advertising.

Typography: Characters are without serif and in bold so that people can read them easily without any need for enlarging.

- **Print Out:** He cannot recognize the print out button.
- **Pop up window:** There are no pop-up windows.
- **Navigation:** Navigation is easy; the user does not live difficulty about what he should do for reading news.
- **Archive:** The user can recognize the archiving feature at the end of news easily.

Participant 4

- **Scrolling:** He reads news very comfortably; he performs scrolling very easily.
- **Use of visual keyboard:** They used it very easily.
- **Access to videos and visuals about news:** Visuals about news are right above it; they can be immediately recognized.
- **Resizing news:** This operation can be performed by A+ and A-. It is impossible to resize manually.
- **News reading time:**
- **Returning the home page after reading news:** A backwards button at the upper left of news is shown by a leftwards capitalized sign. This operation helps the user recognize it and save time.
- **Sharing news:** News can be shared in the social media and e-mailed by clicking a rightwards arrow at the end.

- **Making and reading comments about news:** Comments about news cannot be recognized at the first sight. However, the reader recognizes the original news source at the end and clicks it, so he can both see the original format of news and read the comments about it. He can also make comments about news through the original source. In addition, if the tabloid is horizontally oriented, the original source of news appears as minimized in a box right next to it. Thus, the participant was able to recognize where and how news was located in its original source.
- **The ability to read the same news from other sources:** The greatest feature of news350 is that it presents the user the same news from other sources. If the sources at the top of news are clicked, the same news can be read from different sources.
- **Communicating with the editor/reporter of news:** The user should first click the original source given at the end of news so as to communicate with its author. He can communicate with its author from there.
- **Visuals about news:**

Display of colors: Black characters were used over pale blue so that the participants could concentrate on news easily. Other sources of news were shown in white over white blue. Thus, the user was able to recognize them immediately.

Photography and video: The participant was able to recognize and open the photos at the top of the page. With the rightwards and leftwards signs at the lower left of the photos, he was able to transfer among them. In addition, a leftwards sign available at the upper left of a photo, indicating return, enabled him to return the home page. The participant also said that the resolution of the photos was very good.

Typography: Characters were used without serif so that the participant was able to read them comfortably.

- **Print Out:** He cannot recognize the print out button. In order to print out, he needs to click the original source of news.
- **Pop up window:** There are no pop-up windows.
- **Navigation:** Navigation is easy; the user does not live difficulty about what he should do for reading news.

- **Archive:** The user can find the archiving feature immediately. There is a “saved” option right below news, as accompanied by a sign of star. It can be saved by this way.

Participant 5

- **Scrolling:** He reads news very comfortably.
- **Use of visual keyboard:** He was able to use it very comfortably.
- **Access to videos and visuals about news:** The video about news can be watched inside the same page; the participant is pleased that that video is not opened on another tab. In addition, he can watch the video on a larger screen. He can also see photos individually.
- **Resizing news:** This operation can be performed by A+ and A-. It is impossible to resize manually.
- **News reading time:**
- **Returning the home page after reading news:** The back button at the upper left of news is shown by a leftwards and capitalized sign of back. This operation helps the user recognize it immediately and save time.
- **News sharing:** He can share and e-mail news.
- **Making and reading comments about news:** Comments about news can be seen in its original source; it is also possible to make comments on it through its original source.
- **The ability to read the same news from other sources:** The greatest feature of news360 is that it presents the user the same news from other sources. The user can see the same news from other sources comfortably.
- **Communicating with the editor/reporter of news:** In order to communicate with the author of news, the user should first click the original source given at the end of news. He can communicate with the author from there.
- **Visuals about news**

Display of colors: Black characters were used over pale blue so that the participants were able to concentrate on news very comfortably. Other sources of news were

shown in white over white blue so that the user was able to recognize them immediately.

Photograph and video: The user was able to recognize and open the photos at the top of the page. As the other participant was, he was able to transfer among the photos with the rightwards and leftwards signs available at the lower left of the photos. In addition, a leftwards sign available at the upper left of a photo, indicating back, enabled him to return the home page. Similarly, the participant said that the resolution of the photos was very good.

Typography: Use of characters without serif on digital screens helps the reader. In addition, no blurring occurs while news is resized in the news360.

- **Print Out:** He cannot recognize the print out button.
- **Pop up window:** There are no pop-up windows.
- **Navigation:** Navigation is easy; the user does not live difficulty about what he should do for reading news.
- **Archive:** The user was able to find the archiving feature right at the end of news immediately.

Participant X (Foreign Student: France)

- **Scrolling:** Reading news up to the end occurs slowly depending on the connection speed.
- **Use of visual keyboard:** Using the visual keyboard is quite comfortable.
- **Access to videos and visuals about news:** Visuals about news are available at the top of the page. However, the participant cannot recognize them immediately.
- **Resizing news:** He first wants to resize news resizing, but he cannot do it due to the feature of the application. Then, he recognizes the text options and performs the task.
- **News reading time:**
- **Returning the home page after reading news:** It can be performed by a back sign available at the upper left.
- **Sharing news:** News can be comfortably shared by the “share” button at the end.

- **Making and reading comments about news:** He can make or read comments about news on the original page.
- **The ability to read the same news from other sources:** At the end of news, a text which indicates that the original news source has been downloaded is recognized so that news is read from its original source.
- **Communicating with the editor/reporter of news:** He can communicate with the author of news by e-mail.

Visuals about news: He cannot recognize the news related videos and visuals, which are available at the top of the page. This foreign student also said that there were usually advertisements at the top section of online news pages in France. Therefore, he did not think that those photos were about news, but perceived them as advertising.

Display of colors: As in the iPad application, black characters were used pale blue so that the participants were able to concentrate on news on the page very comfortably. Other sources of news were shown in white over white blue so that the user was able to recognize them immediately.

Photography and video: The user was able to recognize and open the photos available at the top of the page. Like the other participant, he was able to transfer among the photos with the rightwards and leftwards signs available at the lower left of the photos. In addition, a leftwards sign available at the upper left of a photo, indicating back, photo enabled him to return the home page. Similarly, the user stated that the resolution of the photos was very good.

Typography: Use of characters without serif on digital screens helps the reader. In addition, no blurring occurs while news is resized in the news360.

- **Print Out:** It is impossible to print out. It is necessary to click the original source of news in order to print out.
- **Pop up window:** There are no pop-up windows.
- **Navigation:** Navigation is quite comfortable.

- **Archive:**News can be archived by saving it.

NEWS 360 IPHONE APPLICATION

Participant 4

- **Scrolling:** It is comfortable to read news up to the end.
- **Use of visual keyboard:** It is comfortable to use the visual keyboard.
- **Access to videos and visuals about news:** He can have immediate access to and watch videos about news.
- **Resizing news:** This operation cannot be performed by hand. Like in the iPad application, it is possible by A+ and A-.
- **News reading time:**
- **Returning the home page after reading news:** After seeing news in its original source, he can return easily by using the back button.
- **Sharing news:** Like in its iPad version, news is shared by a rightwards arrow available in a square. The difference of the iPad version from the iPhone one, depending on the screen size, is that it does not show written options like “share,” “back” and “text.” Therefore, the user perceives the share option as return. After thinking for a while, he recognizes that there are no other options so that he can share news in the social media by this application.
- **Making and reading comments about news:** It is possible to reaching the original source of news immediately and to making and read comments about it there.
- **The ability to read the same news from other sources:** The iPhone application of news360 present news from other sources as its iPad application does.
- **Communicating with the editor/reporter of news:** The user should first the click the original source given at the end of news in order to communicate with its author.
- **Visuals about news**
Display of colors: Similar to the iPad application, black characters were used over pale blue so that the participants were able to concentrate on news on the page very

comfortably. Other sources of news were shown in white over white blue so that the user was able to recognize them immediately.

Photograph and video: The participant was able to recognize and open the photos at the top of the page. Like the other participants, he was able to transfer among them with the rightwards and leftwards leaning signs available at the lower left below the photos. In addition, a left leaning sign available at the upper left of a photo, indicating back, enabled him return the home page. Similarly, the participant said that the resolution of the photos was very good.

Typography: Use of characters without serif on digital screens helps the reader. In addition, no blurring occurs while news is resized in the news360.

- **Print Out:** It is impossible to print out.
- **Pop up window:** There are no pop-up windows.
- **Navigation:** Navigation is quite comfortable.
- **Archive:** He cannot find the buttons for archiving immediately. He can recognize them later and archive news.

Participant 5

- **Scrolling:** It is performed according to the length of news. It did not create difficulty for downloading news and for waiting periods. For reading news up to the end and for removing the user from scrolling, it was indicated that news has not ended, which was immediately followed by an eye sign and a reader mark. If that sign is clicked, the user is navigated to the remaining part of news. This application cannot be recognized at the first sight by the user. Instead, if it was replaced by a “click and continue” mark, the user would understand it more easily.
- **Use of visual keyboard:** It is comfortable.
- **Access to videos and visuals about news:** All videos and photos about news are located side by side at the top of it. Transfer among them is comfortable. The user

is enabled to see photos and videos in the same space and to have access to them by clicking them.

- **Resizing news:** It can be performed by an Aa sign (small, medium and large).
- **Returning the home page after reading news:** A back button at the upper left of news is indicated with a leftwards and capitalized sign of back. This application helps the reader recognize it immediately and save time.
- **News sharing:** If the rightwards sign in the square available at the upper right of news is clicked, options of sharing with Google, sending by e-mail and sharing with Facebook and Twitter appear right below it. In addition, since the sharing element is not presented to the user with its explanation, unlike in the iPad application, the user cannot recognize it immediately; he perceives this button as the return option.
- **Making and reading comments about news:** Comments about news are made and read on its original source. However, the user cannot recognize this immediately at the first sight. After thinking for about 5 seconds, he goes to the original source and reads the comments.
- **The ability to read the same news from other sources:** The same news is also shown from other sources at its top section.
- **Communicating with the editor/reporter of news:** If the tab “to open web,” at the bottom of news, is used together, the user can also understand that he is able to communicate with the editor/reporter.
- **Visuals about news**

Display of colors: Like in the iPad application, black characters were used over pale blue. Other sources of news were shown in white over white blue so that the user was able to recognize them immediately.

Photograph and video: The resolution of the photos and videos are quite clear.

Typography: The greatest difference of the news360 is that it has prevented blurring in its mobile device adoptions. Texts are comfortably read.

- **Print Out:** If news is displayed on its original source, it is possible to print it out. However, the user cannot recognize this option immediately. As a result,

in order to print it out, a “click the original source” sign should be used together with the tab “to open web” so that the user can recognize it.

Solution: A sign “for print and connection with editor” can appear on the screen for five seconds in order to explain the navigation of the tab “to open web.”

- **Pop up window:** There are no pop up windows.
- **Navigation:** Navigation is quite comfortable.
- **Archive:** There is no feature of archiving.

Participant X (Foreign Student: France)

- **Scrolling:** The user reads news comfortably.
- **Use of visual keyboard:** It is comfortable.
- **Access to videos and visuals about news:** He can reach the visuals about news, available at the top of the related page.
- **Resizing news:** He tries to resize by hand, but he fails. Then, he recognizes the text options and performs the task. This operation causes the reader to lose time and perplexes him.
- **Returning the home page after reading news:** He can return by using the back button.
- **Sharing news:** He can share news with the rightwards arrow available in a square at the top of news. However, like the other participants, he first perceived this sign as the return option.
- **Making and reading comments about news:**
- **The ability to read the same news from other sources:** Other sources of news can be recognized at the top of it.
- **Communicating with the editor/reporter of news:** He can connect with the author.
- **Visuals about news:**
Display of colors: Like in the iPad application, black characters were used over pale blue. Other sources of news were shown in white over white blue so that the user was able to recognize them immediately.

Photograph and video: The resolution of the photos and videos are quite clear.

Typography: The greatest difference of the news360 is that it has prevented blurring in its mobile device adoptions. Texts are comfortably read.

- **Print Out:** It is not available.
- **Pop up window:** There are no pop up windows.
- **Navigation:** It is comfortable.
- **Archive:** It is impossible to archive news.

A1. Evaluation form for participant

Hürriyet and News 360 °

▲ Rating Method: Put “X” inside the box, with 1 standing for the most difficult and 5 for the easiest.

- Reading news up to the end

1:	2	3	4	5
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- Resizing news

1	2	3	4	5
---	---	---	---	---

- Reading comments about news

1	2	3	4	5
---	---	---	---	---

- Making comments about news

1	2	3	4	5
---	---	---	---	---

- Sharing news in the social media; i.e., Facebook

1	2	3	4	5
---	---	---	---	---

- Reading news also from other sources

1	2	3	4	5
---	---	---	---	---

- Communicating with the author of news

1	2	3	4	5
---	---	---	---	---

- Sending news by e-mail

1	2	3	4	5
---	---	---	---	---

- Access to visuals about news

1	2	3	4	5
---	---	---	---	---

- Archiving news

1	2	3	4	5
---	---	---	---	---

- Printing out news

1	2	3	4	5
---	---	---	---	---

A 2. Evaluation of scenarios

Main Level	Secondary level	Task scenarios	Smart Phone	Ipad
Internet Access	Hürriyet, News360	Access to the requested news	*Web site Evaluation	*Which Web site Evaluation
Reading	Access to the news headlined X	Reading the news up to the end	<p>*Scrolling the page from right to left a)1 b)2 c)3 d)4 e)5 Evaluation.....</p> <p>*Using the visual keyboard a)1 b)2 c) 3 d)4 e) 5 Evaluation.....</p> <p>*Access to the news related visuals like videos and photos a)1 b)2 c) 3 d)4 e)5 Evaluation.....</p> <p>*Resizing news</p>	<p>* Scrolling the page from right to left a)1 b)2 c)3 d)4 e)5 Evaluation.....</p> <p>* Using the visual keyboard a)1 b)2 c) 3 d)4 e) 5 Evaluation.....</p> <p>* Access to the news related visuals like videos and photos a)1 b)2 c) 3 d)4 e)5 Evaluation.....</p> <p>* Resizing news</p>

			<p>a)1 b)2 c)3 d)4 e)5</p> <p>Evaluation.....</p> <p>.....</p> <p>* Scrolling news</p> <p>a)1 b)2 c)3 d)4 e)5</p> <p>Evaluation.....</p> <p>.....</p> <p>*News reading time</p> <p>a)1 b)2 c)3 d)4 e)5</p> <p>Evaluation.....</p> <p>.....</p> <p>*Copying news spaces</p> <p>a) 1 b)2 c)3 d)4 e)5</p> <p>Evaluation.....</p> <p>.....</p> <p>*Returning the home page after reading news</p> <p>a)1 b)2 c)3 d)4 e)5</p> <p>Evaluation.....</p> <p>.....</p> <p>*Readability of news</p> <p>a)1 b)2 c)3 d) 4 e) 5</p> <p>Evaluation.....</p> <p>.....</p> <p>*Access to the news related visuals</p> <p>a)1 b)2 c)3 d) 4 e) 5</p>	<p>a)1 b)2 c)3 d)4 e)5</p> <p>Evaluation.....</p> <p>.....</p> <p>* Scrolling news a)1 b)2 c)3 d)4 e)5</p> <p>Evaluation.....</p> <p>.....</p> <p>* News reading time</p> <p>a)1 b)2 c)3 d)4 e)5</p> <p>Evaluation.....</p> <p>.....</p> <p>* Copying news spaces</p> <p>a) 1 b)2 c)3 d)4 e)5</p> <p>Evaluation.....</p> <p>.....</p> <p>* Returning the home page after reading news</p> <p>a)1 b)2 c)3 d)4 e)5</p> <p>Evaluation.....</p> <p>.....</p> <p>* Readability of news</p> <p>a)1 b)2 c)3 d) 4 e) 5</p> <p>Evaluation.....</p> <p>.....</p> <p>* Access to the news related visuals</p> <p>a)1 b)2 c)3 d) 4 e) 5</p>
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			Evaluation.....	Evaluation.....
Sharing news	Sharing news on the Internet	Sharing news in the social media	<p>* News sharing time</p> <p>a)1 b)2 c)3 d)4 e)5</p> <p>Evaluation.....</p> <p>*Using the visual keyboard</p> <p>a)1 b)2 c) 3 d)4 e) 5</p> <p>Evaluation.....</p>	<p>* News sharing time</p> <p>a)1 b)2 c)3 d)4 e)5</p> <p>Evaluation.....</p> <p>* Using the visual keyboard</p> <p>a)1 b)2 c) 3 d)4 e) 5</p> <p>Evaluation.....</p>
Commenting	Commenting on news	Commenting on the news X	<p>*Using the visual keyboard</p> <p>1 b)2 c)3 d)4 e) 5</p> <p>Evaluation.....</p> <p>*Using input tools</p>	<p>* Using the visual keyboard</p> <p>a) 1 b)2 c)3 d)4 e) 5</p> <p>Evaluation.....</p> <p>* Using input tools</p>

			<p>like joy stick</p> <p>a)1 b)2 c)3 d)4 e)5</p> <p>* Personalizing the visual keyboard</p> <p>a)1 b)2 c)3 d)4 e) 5</p> <p>Evaluation.....</p> <p>.....</p> <p>.....</p>	<p>like joy stick</p> <p>a)1 b)2 c)3 d)4 e)5</p> <p>* Personalizing the visual keyboard</p> <p>a)1 b)2 c)3 d)4 e) 5</p> <p>Evaluation.....</p> <p>.....</p> <p>.....</p> <p>..</p>
Reading comments about news	Reading comments about news	Reading comments about news	<p>*Scrolling the page from right to left</p> <p>a)1 b)2 c)3 d)4 e)5</p> <p>Evaluation.....</p> <p>.....</p> <p>* Scrolling</p> <p>a)1 b)2 c)3 d)4 e)5</p> <p>Evaluation.....</p> <p>.....</p> <p>.</p> <p>* Time for reading comments</p> <p>a)1 b)2 c)3 d)4 e)5</p> <p>Evaluation.....</p> <p>.....</p> <p>.....</p> <p>*Using the navigation buttons</p> <p>a)1 b)2 c)3 d)4 e)5</p>	<p>* Scrolling the page from right to left</p> <p>a)1 b)2 c)3 d)4 e)5</p> <p>Evaluation.....</p> <p>.....</p> <p>* Scrolling</p> <p>a)1 b)2 c)3 d)4 e)5</p> <p>Evaluation.....</p> <p>.....</p> <p>.</p> <p>* Time for reading comments</p> <p>a)1 b)2 c)3 d)4 e)5</p> <p>Evaluation.....</p> <p>.....</p> <p>.....</p> <p>* Using the navigation buttons</p> <p>a)1 b)2 c)3 d)4 e)5</p>

			Evaluation.....	Evaluation.....
Sending news by e-mail	Ability to send news by e-mail to the requested people	Sending news by e-mail	<p>*Time for sending news</p> <p>a)1 b)2 c)3 d)4 e)5 Evaluation.....</p> <p>*Using the visual keyboard</p> <p>a)1 b)2 c) 3 d)4 e) 5 Evaluation.....</p> <p>* Using input tools like joy stick</p> <p>a)1 b)2 c) 3 d)4 e) 5 Evaluation.....</p> <p>* Personalizing the visual keyboard</p> <p>a)1 b)2 c) 3 d)4 e) 5 Evaluation.....</p>	<p>*Haberigöndermesür esi</p> <p>a)1 b)2 c)3 d)4 e)5 Evaluation.....</p> <p>*Sanalklavyekullanıl ması</p> <p>a)1 b)2 c) 3 d)4 e) 5 Evaluation.....</p> <p>* Using input tools like joy stick</p> <p>a)1 b)2 c) 3 d)4 e) 5 Evaluation.....</p> <p>* Personalizing the visual keyboard</p> <p>a)1 b)2 c) 3 d)4 e) 5 Evaluation.....</p>

<p>Reaching the same news from other sources</p>	<p>Seeing the read news in other sources</p>	<p>Access to other sources of the news X</p>	<p>* Scrolling the page from right to left</p> <p>a)1 b)2 c)3 d)4 e)5 Evaluation.....</p> <p>*Scrolling</p> <p>a)1 b)2 c)3 d)4 e)5 Evaluation.....</p> <p>*Using the links to other news related sites</p> <p>a)1 b)2 c)3 d)4 e)5 Evaluation.....</p>	<p>*Scrolling the page from right to left</p> <p>a)1 b)2 c)3 d)4 e)5 Evaluation.....</p> <p>*Scrolling</p> <p>a)1 b)2 c)3 d)4 e)5 Evaluation.....</p> <p>* Using the links to other news related sites</p> <p>a)1 b)2 c)3 d)4 e)5 Evaluation.....</p>
<p>Contacting the editor</p>	<p>Communicating with the author of news</p>	<p>Communicating with the author of the news X by e-mail, Facebook and Twitter</p>	<p>* Using the visual keyboard</p> <p>a)1 b)2 c)3 d)4 e)5 Evaluation.....</p> <p>* Using input tools like joy stick</p> <p>a)1 b)2 c)3 d)4 e)5 Evaluation.....</p>	<p>* Using the visual keyboard</p> <p>a)1 b)2 c)3 d)4 e)5 Evaluation.....</p> <p>*Joystick gibi input araçlarının kullanılması</p> <p>a)1 b)2 c)3 d)4 e)5 Evaluation.....</p>

<p>News related visuals</p> <ul style="list-style-type: none"> • Display of color • Symbol • Photograph and video • Typography • Graphics 	<p>Access to and downloading the news related visuals like photos and videos</p>	<ul style="list-style-type: none"> • The background on which news is displayed and its color • Presenting symbols in news • Downloading and opening photos and videos in news • The font size and writing style of news • The font size and character of news • Graphs shown in news 	<p>* Perceptibility of colors a)1 b)2 c)3 d)4 e)5 Evaluation.....</p> <p>* Perceptibility of symbols a)1 b)2 c)3 d)4 e)5 Evaluation.....</p> <p>* Ability to download photos and videos a)1 b)2 c)3 d)4 e)5 Evaluation.....</p> <p>* Readability of news a)1 b)2 c)3 d)4 e)5 Evaluation.....</p> <p>* Perceptibility of graphs a)1 b)2 c)3 d)4 e)5 Evaluation.....</p>	<p>*Renklerin algılanabilirliği a)1 b)2 c)3 d)4 e)5 Evaluation.....</p> <p>* Sembollerin algılanabilirliği a)1 b)2 c)3 d)4 e)5 Evaluation.....</p> <p>* Fotoğrafların ve videoların indirilmesi a)1 b)2 c)3 d)4 e)5 Evaluation.....</p> <p>* Haberlerin okunabilirliği a)1 b)2 c)3 d)4 e)5 Evaluation.....</p> <p>* Grafiklerin algılanabilirliği a)1 b)2 c)3 d)4 e)5 Evaluation.....</p>
<p>Print out</p>	<p>Printing out news</p>		<p>*Ability to print out news a)1 b)2 c)3 d)4 e)5 Evaluation.....</p>	<p>* Ability to print out news a)1 b)2 c)3 d)4 e)5 Evaluation.....</p>

Pop up windows	Opening pop-up windows while reading news	Closing pop-up windows while reading the news X	*Ability to close pop up windows while reading news a)1 b)2 c)3 d)4 e)5 Evaluation.....	* Ability to close pop up windows while reading news a)1 b)2 c)3 d)4 e)5 Evaluation.....
Navigation	Ability to move back and forward, or to the left and to the right while reading news		*Scrolling a)1 b)2 c)3 d)4 e)5 Evaluation.....	*Scrolling a)1 b)2 c)3 d)4 e)5 Evaluation.....
Archives	Archiving news		Evaluation.....	Evaluation.....

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