



## **E-Government Applications in Education: KurumNet**

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### Abstract

To keep up with the developing and changing world, to meet the needs of the society, to have an efficient management, and to construct an information network, governments have an imperative need for technology and science. Since such is the case, a new system, dubbed *e-government*, has been put into practice. With their comprehensive supplementary applications, E-okul, Mebbis, Tefbis, KBS, and KurumNet are the main elements forming the education field of this system.

The purpose of this study is to measure, based on the opinions of school principals, the benefits offered by KurumNet, a program developed by the private sector, its efficiency, and its return on costs. A total of 34 participants were interviewed in this study with results being examined using content analysis. The results show that since it enables rapid communication and an easy document sharing, KurumNet is an extremely useful application. Considering its annual costs and update casts, most of the applicants are of the opinion that using this application is quite profitable as it allows them to expend less effort and time as well as to reduce stationery costs. However, some applicants emphasized that instead of a private enterprise, the Ministry of National Education itself should meet this need using its own sources.

*Keywords:* E-Government, E-Communication, E-Sign, Network, Internet and Intranet

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## Introduction

Not only life but also technology and its derivatives have experienced a dramatic change in line with the non-stop progress made in the world of science. Thanks to such rapidly developing technology, the 21<sup>st</sup> century has been deemed as the information and communication technologies age. While such technologies as computers and smart phones, with their ability to store large amounts of data and provide rapid data flow, have become an indispensable part of our lives, governments have also kept pace with such developments, starting to use such technology in governmental transactions and operations. Such applications have been called *e-government*. At present, e-government has found itself as one of the means enabling governments to offer more immediate response in the endeavor to satisfy increasing populations and their ensuing demands. The current study has examined development of e-government both in the world and in Turkey has been studied and has included related developments in education.

### Definition of e-Government

E-government is the case in which the government is reorganized benefitting from opportunities offered by technology in accordance with the requirements of the age. As reported in “e-Government: Developments in Turkey,” published in the Informatics Association of Turkey, neither is e-government nor is it a virtual government, as it is presumed to be. In the reorganization, e-government is to play an integrating role in facilitating transparency and accountability in the strategic management process (Odabaş, 2004). E-government appears before us as a model developed to provide citizens with quick, high-quality, and economical service allowing the government to reduce expenditures in several areas (Demirel, 2006).

Referring to electronic government, terms such as *electronic government*, *e-government*, *digital government*, and *on-line government* are used both throughout the world and in Turkey. In the USA, the word *digital* has recently become more preferred for e-government. In this respect, the term *digital government* is frequently preferred in the USA whereas the term *electronic government* is the preferred term on the international level and is used by the United Nations, the European Union, the World Bank, and other international actors. In Turkey, the word *electronic* is predominantly used on the legislative level. E-government seeks to benefit from technology and provide a faster, more effective, and more efficient service (Karagülmez, 2010).



Affixing the prefix e-, meaning electronic, before the word government is not, as it is presumed by the public, merely a technical invention, a science-fiction product, or an adaptation of technological models. This model prioritizes citizens' participation and inquiry needs rather than the government's goal of economic efficiency. Under e-government, citizens are considered to be customers and public administration to be a service. Following a business approach, e-government is an efficiency management system seeking to render a service at its highest quality and at the lowest cost and labor. This new public administration model endeavors to provide individual, differentiated, quick, effective, 24/7 service that is only possible via the information and communication technologies (Uçkan; 2002).

The shift from traditional government to e-government aims to improve citizens' overall living standards (Şahin & Örselli, 2003). While the literature defines the function of the public websites' provision of communication between the government and citizens in various forms, the most commonly used term is *e-government*. In its most general definition, e-government means using electronic media to deliver the highest quality government services in an easy, effective, quick, uninterrupted, and secure manner. Since today's citizens are in need of such organization that will satisfy their needs in the fastest way and at the lowest cost, e-government has experienced an increase in popularity (Seferoğlu, Çelen, & Çelik).

A brief definition of e-government is to use technology to perform government-related tasks that bring individuality to the forefront, provide transparency, and facilitate official transactions over the internet. In Turkey, the most common use of e-government is the *governmental office* website, referred to as the "shortcut to the government" on the website [turkiye.gov.tr](http://turkiye.gov.tr). Via this website, each citizen of the Republic of Turkey may examine, investigate, and perform a great many public operations ranging from tax to debt inquiries, military service to social security inquiries, inquiries to the Ministry of Justice to those to the Ministry of Health. In addition to the governmental office website, e-government applications are subdivided in themselves. For instance, just like all governmental functions, the Ministry of Justice, the Revenues Authority, and the Ministry of National Education all have their own separate e-government services. It is sufficient to look at the category code in the address line to understand whether or not a website is an e-government application. If the category code includes *.gov*, then that website is understood to be a governmental website. The abbreviation *gov* is derived from the English *government*, and its Turkish counterpart is *devlet*.



### Objectives of e-Government

The objectives of e-government may be listed as follows (Demirel, 2006):

1. To be economic,
2. To keep paperwork under control,
3. To provide transparency,
4. To provide high quality service,
5. To provide 24/7 public service,
6. To enhancement participation, and
7. To provide fast, easy, and smooth access.

While the expectations that countries and individuals have of e-government applications are different, such expectations usually conjoin at some fundamental points (Şahin & Örselli, 2003; Güler & Döventaş, 2009; Maraş, 2011):

- To make public services common and accessible,
- To clear the way for participatory citizenship by taking the requirements of an individual into consideration in the process of management and service,
- To ensure more rational and more efficient operation of governmental organisations,
- To establish coordination between governmental organizations and users thereof,
- To save time, energy, and money,
- To improve transparency and build an environment of confidence, thus enhancing the government's legitimacy,
- To allow citizens access to the government in various environments on a twenty-four hour basis,
- To ensure information integrity among governmental organization, thus preventing any kinds of misappropriation,
- To strengthen the legal system and the enforcement of laws,
- To improve the quality of public services,
- To materialize good governance principles in the supply of public services,
- To increase the number of those individuals who make use of governmental services,
- To improve the citizens' standard of living and satisfaction,
- To minimize errors arising from the human factor, and
- To support economic development.



The advantages of e-government include sustainable resource management as well as the ability to use information and communication technologies in public administration and to provide lower costs and higher quality service to citizens. From the perspective of citizens, this means lower citizenship costs (i.e., time, labor, and money), higher satisfaction, more effective participation, and more confidence (Uçkan, 2002).

### **E-Government Applications in Turkey**

The e-government transition process in Turkey started with the policies applied beginning from the second half of the 1980s. Information and communication technologies services were reviewed. The very first serious attempts to effectuate e-government were made using investments made in the communication infrastructure after the 1990s. The percentages of computer and internet use increased and several governmental organizations started to provide services over electronic media. By the 2000s, e-government applications had started to be included in administrative policies (Sevinç, Şahin, 2013). As part of the Information Society Strategy implemented in 2006, two strategic priorities (i.e., Citizen-Oriented Service Conversion and “Modernization of Public Administration”) were included to improve and extend e-government services. Moreover, targets for 2010 and the activities to be conducted to achieve these targets were identified. The e-government approach adopted as part of the 2003 Project e-Conversion Turkey is to establish a participatory, transparent, and accountable governmental structure through which citizens may access public services via electronic media and different platforms and in which integrated services are to be provided (DPT, 2007). Çakır (2011) expresses the stages of Turkey’s e-government transition process as follows:

- Information and Economic Modernization Report,
- Turkish National Information Infrastructure Master Plan (TUENA),
- E-Trade Coordination Board (1998-2002),
- KamuNET (1998-2002), and
- E-Turkey Enterprise (2001).

Afterward, e-government applications were gathered under the heading *e-Conversion* under the governmental office and the portal [www.turkiye.gov.tr](http://www.turkiye.gov.tr) was created so that citizens may carry out their affairs and operations with the government on-line. Before one can access this portal however, an e-government password must be obtained from any official post office



branch (PTT). In this way, Turkish citizens may conduct any government-related affair and operation, including SSO and tax inquiries.

### **E-Government Applications in Education**

Once technology began entering various aspects of daily life, e-government and e-communication applications began to be used in a variety of fields, including that of education. Used for various purposes, their common objective is to facilitate fast and easy operations and transactions without becoming entangled in bureaucracy. The following e-government applications are used in education: e-okul, Mebbis, Tefbis, KBS, and KurumNet.

- a. E-Okul:** An application containing data about institutions and students. It is possible to access various information, ranging from the number of classrooms in schools to class schedules and students' family, home, and health information. Parents also have access to their childrens' grades and attendance records by answering three different security questions.
- b. Mebbis:** Abbreviation for Ministry of National Education Information Systems. Mebbis is the application containing information about the personnel employed in educational services, including personal files and on-the-job training activities by which applications regarding teachers may be filed. Mebbis has an extensive area of application. The e-academy application contains those courses that must be taken by an institution's personnel and is available on Mebbis. With a Mebbis password, teachers may enter such governmentally supported educational and sharing sites as Vitamin Education, Vitamin Teacher, and Education Information network (EIN), etc.
- c. Tefbis:** Abbreviation for Educational Financing and Educational Expenses in Turkey Information Management System. Tefbis is used to enter and keep record of educational institutions' financial documents, including revenue and expenditure receipts, invoices, and donations. The chairman of the Parent-Teacher Association is authorized to approve utilization of the school budget as well as the entry of revenue and expenditure data on the website. In the case of a budgetary imbalance, higher authorities immediately begin investigation.
- d. KBS:** as Abbreviation for Public Expenditure and Accounting Information



System. KBS is used to enter information, including payroll, on the extra classes taught by the institution's staff. Remuneration lists may be accessed via this website.

- e. **KurumNet:** Unlike the other applications, this application is not supported by the government and was instead purchased from the private sector. As it is a service purchased from the private sector, it includes extra expenditures and disbursements. Institutions use KurumNet to make their official and non-official correspondence. Not only do schools use KurumNet to communicate with one another and with their senior institutions, official letters are sent to schools by the Directorates of National Education, and invitations that do not contain any formality between schools are sent via KurumNet. If so required, these may be formally entered into record or, if not, may be entered without assigning any number. KurumNet may be used over both the internet and intranet. Formal correspondence must be entered into record by assigning each a number. An annual backup is conducted at the end of December and a new numerical recording system is effectuated on January 1 of each year.

#### **What Is KurumNet?**

KurumNet is a program that enables organizations to accelerate and archive communication with one another and to facilitate the flow of documents, such as official letters. As stated KurumNet's official website, the program provides data security.

KurumNet began to be used as a result of the Electronic Signature Act (No. 5070) issued on January 15, 2004, which paved for secure on-line communication.

Once the Electronic Signature Act (No. 5070) and its resulting regulation came into effect on January 6, 2005, a new era of communication between public (e.g., educational and government institutions) and private entities (e.g., citizens and private companies) was realized. In order to facilitate the use of electronic signatures in the public sector, efforts are in progress to establish a central unit to provide public employees with an electronic certification service. As a result of the regulations on central public certification, governmental organizations are barred from creating e-signature infrastructures independent of one another, thereby preventing the waste of resources (DPT, 2005).



According to the information obtained from KurumNet's official website, "a secure electronic signature produces the same legal result as a manually affixed signature" as per Article 5 of the Electronic Signature Act. A digital signature is defined as "the name given to the technological technique used to validate the authenticity and integrity of information communicated over electronic media, ensuring that it definitely belongs to the organization or person sending said information. Due to the nature of digital signatures, any person who sends a signed document may not deny that he has sent it and the recipient may not deny that he has received it.

The criteria required for the generation of a Secure Electronic Signature are listed as follows in the Electronic Signature Act:

- a) That the resulting electronic signature generation data is unique without any duplicate,
- b) That electronic signature generation data is by no means to be removed from the media in which it is stored and that such data is to remain confidential,
- c) That the electronic signature generation data recorded on it is not to be acquired and/or used by any third party or parties,
- d) That the data to be signed should not be modified by any one other than the undersigned and that such data may be seen prior to the generation of the signature by the undersigned, and
- e) That the electronic signature is to be protected against fraud.

KurumNet claims that it satisfies all of these criteria and that it ensures secure communication.

KurumNet is used in 24 provinces throughout Turkey. It is used as part of the Döset Project in Ankara by the Operations Department of the Ministry of National Education. It is used by all Local Directorates of National Education and institutions affiliated thereto in the provinces of Balıkesir, Erzincan, Mardin, Van, Bilecik, Ağrı, and Çankırı. It is used in 20 townships and Institution for Social Works and Protection of Children, in 28 townships in Istanbul, in 10 townships in Aydın, in 2 townships in Edirne, in 5 townships in Konya, in 8 townships in Antalya, in 12 townships in Kocaeli, in 7 townships in Bursa, in 2 townships in Denizli; in 4 townships in Nevşehir, in 5 townships in Gaziantep, in 3 townships in Ankara, in





4 townships in Çanakkale, in 3 townships in Şanlıurfa, in 3 townships in Sakarya, in 1 township in Düzce, and in 1 township in Mersin.

According to the data taken from <https://mebbis.meb.gov.tr/KurumListesi.aspx>, there are a total of 13,297 institutions when the number of institutions present in the above listed townships and provinces are counted. However, this number fails to represent in a realistic manner the number of those institutions using KurumNet. This is because some elementary (grades 1-4) and intermediate (grades 5-8) schools share the same name, building, principals, and assistant principals, even if they are different entities on paper. Since a single server may be installed in such schools, the above cited number fails to reflect reality.

### **What Is the Objective of KurumNet?**

As stated on KurumNet's official website, "[KurumNet] intends to facilitate on-line document exchange and daily communication between the parent institution in the center and its affiliates." As such, KurumNet renders it possible to carry out communication in a faster and less flawed manner where such methods as a Facsimile Chain or Telephone Chain are no longer needed. Further, computers and over electronic communication devices owned by institutions will be used in a more active manner.

The following benefits are stated on KurumNet's website:

- **Reduced expenses:** Through the use of KurumNet, paper consumption will be minimized as any document prepared using electronic media (e.g., any script program running on a computer or any other program used for everyday operations) may be electronically sent to any authorized person/s for approval. There is no difference in terms of costs between sending a document to a single or to one thousand recipients via KurumNet, eliminating the necessity to reproduce the same document by photocopier to send it to multiple recipients. Likewise, the need to send documents by mail, facsimile, or a courier will also be eliminated.
- **Improved quality:** KurumNet will render it possible for institutions to perform existing operations in an easier, quicker, and more economical manner, thereby increasing the quality of such operations. Furthermore, operations such as data



collection and statistics may be quickly and reliably carried out by sending a blank form to all institutions, having them complete it, and then recalling it from them.

- **Secure communication:** Since all users are identified on KurumNet's central server, unregistered persons may not access the system. All documents may be encrypted and opened by their intended recipients only before they are sent using Public Key - Private Key (PKI) technology. All documents are also digitally signed so as to authenticate the identity of the sender. It is impossible for a third part to change a document once encrypted. Furthermore, since the digital signature of the institution sending the document accompanies it, the identity of the sending institution is ensured.

### **Modus Operandi of KurumNet**

As stated on KurumNet's official website, the project consists of three components. Of these, the first one is the *Central Server*, which operates solely in KurumNet's headquarters. The second component is the *Institution Server* that is to be installed in each affiliated institution. The final component is the *KurumNet Terminal* software that is to be installed on the computer of each user authorized to use the system.

- All institutions included in the system are identified under certain logical categories, such as categorization by institution type, on KurumNet's central server.
- Each employee is given a username associated with his institution on the server and assigned initial passwords.
- Once the server software is activated, connection requests from terminals may be accepted.
- A terminal program is uploaded onto the computer of each user. Users may log in using the user name and password designated to them by KurumNet.
- Users may change the password given to them by KurumNet as well as their signature or initials.
- Upon logging in to the server, the user immediately receive an auditory notice accompanied by flashing icons indicating that he has a message, document, or other communication waiting for him.



- The user is able to see whether other users are logged in to the system and may communicate with those who are logged in to the system through via messages or chat.
- The user is able to send messages or documents to other users who are not currently logged in to the system to be received at a later time. Such messages and documents are stored on the server and are automatically conveyed to their intended recipient once that user logs in to the system.
- Documents typed using Windows-compatible software are converted into a special format and are then signed and sent to their intended recipients by documents' authors. A document sent in this manner may not be modified in any form by its recipient.
- Documents may be sent to recipients in their original formats if so desired. If such documents are completed and returned by their recipients, institutions may perform data collection tasks more easily.
- It is not necessary for the computer on the recipient's side to remain connected to the internet during file exchanges and correspondence as the recipient automatically receives the documents and files sent to him upon connecting to the internet. Users are therefore not required to remain connected to the internet throughout the day. Instead, they may log in several times a day to send and receive documents and then disconnect from the internet. In doing so, telephone lines' being tied up by internet use use is kept to a minimum.
- Institutions can communicate and exchange documents both with their headquarters between themselves.
- All correspondence (e.g., incoming and outgoing documents) may be reported daily using the Document Registration feature contained in the program. Searches may be conducted and monthly reports may be devised with decimal codes via registered correspondence.
- Such operations as initialing, signing, forwarding, returning a document without approving it, and writing notes on a document before returning it are carried out over an electronic medium.



## Method

A semi-structured interview method was used in this study. The study was conducted with a total of 34 individuals, employed in a variety of schools in Ayvalık Township by the Balıkesir Provincial Directorate of National Education. Of the participants, 1 was a local national education director, 1 was a local national education branch director, 11 were school principals, 14 were assistant principals, 2 were school counsellors, 1 was an information technologies teacher, 1 was a research and development employee, and 1 was a supervisor, and 2 were civil servants employed in said township's Directorate of National Education. The interview questions were prepared by the author of this article.

Interviews collect data through verbal communication. Although interviews are usually conducted face to face, they may also be carried out using real-time audio and video transmitters, such as through telephone or video conversations. Moreover, using sign language with individuals with hearing and speech impairments is another interview technique and category (Karasar, 2012).

Interviews are one of the most extensive data collection techniques used in qualitative researches as they are very effective in gathering the experiences and views of individuals. Since those interviewed express their views verbally, they are able to express themselves more comfortably (Yıldırım & Şimşek, 2011).

Through interviews, school administrators' views were solicited to investigate KurumNet's return on costs (ROC). Since the most appropriate way to investigate KurumNet through the eyes of executives is through interviews, it was decided that interviews asking open-ended questions be used to collect qualitative data in this study. Interviews were carried out using an audio recorder. Of the total 34 participants, 29 allowed their interview to be recorded. While the shortest interview lasted 4 minutes and 30 seconds and the longest 20 minutes and 20 seconds, the average length of interviews was 10 minutes. Five people chose to complete the form in writing as they did not want their interview to be recorded. Seventeen individuals (13 via audio recording and 4 in writing) were interviewed on Monday, April 28, 2014; 12 individuals (all via audio recording) on Tuesday, April 29, 2014; and 5 individuals (4 via audio recording and 1 in writing) on Wednesday, April 30, 2014. Participants were considered to be sincere in their answers.



### Findings

The interview form completed as part of this study was assessed separately on a question-by-question basis. Thirty-four individuals participated in the study. Statistical information on participants' demographics (i.e., gender, seniority, and age) are provided in Table 1 below.

**Table 1: Participants' Demographic Information**

By gender:								
Female		Male			Total			
8		26			34			
By seniority:								
6-10 years	11-15 years	16-20 years	21-25 years	26-30 years	31-35 years	36-... years	Total	
3	3	8	8	5	6	1	34	
By age:								
20-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	Total
-	1	3	4	8	10	2	6	34

### Interview Data

Prepared by the author of this article following research on the subject under examination, ten questions were asked on the interview form. Participants' answers were assessed using content analysis techniques. The results for each question are as follows:

**Question 1:** How do you define the concepts of e-government, electronic signature, and e-communication? Why are they important?

All participants stated in their answers that the current age is one of technology and that technology makes life easier. Participants stated that e-government applications not only facilitate the relationship between citizens and the government but also expedite procedures and operations. According to the participants, e-government is important because in addition to being personal and specific, it reduces bureaucracy. All government-related correspondence



can be realized online without leaving one's seat. E-government applications are defined as economic, fast, and secure applications that reduce bureaucracy, office supplies, and manpower.

Participants defined e-signature as a signature used online that replaces a wet signature. Two participants stated that e-signatures are objectionable. Two participants stated that e-signatures are not used but that scanned signatures were used in correspondence on KurumNet instead.

Participants defined e-communication as e-mail, social networks, and social media, stating that it reduces bureaucracy and paper consumption. They also stated it to be a useful application facilitating mutual communication, conversation, and exchange of ideas.

Participant 14 made the following comments on e-school, one of the educational applications of e-government:

Now, you know, our life is all technology. It has entered all areas of life. And education is a reality of life and even the heart of life in my opinion. Therefore, KurumNet and e-school have made things easier. In the old days, perhaps you don't know this, but we used to make open lists at high schools. Now they're not required at all. When you made a mistake, you'd have to start all over again. So, e-school has really made things easier. However, on the other hand, this is a historical building. It's a 124-year old building. When I think about the records of the past; I mean the registers of teachers, students, and what not, I can't say I don't feel nostalgic. Former teachers or students, relatives of students who have long graduated may come and find their parents' identities, their childhood pictures. They're able to take a walk down memory lane. I mean, e-school, yes, it's very good in technological terms and has made things easier for us, but it seems to me that in a sense, it has alienated relationships. There's a saying: "Words are transient, but what is written is permanent." For instance, when I take a look into the old inspection books, school rosters, student registers, diploma books, I can see what people here experienced in the past, where they came from and where they went, how they came, and even how much money they were paid in the books. However, those who follow us may not even find our records here when they try.



Approaching this issue from a different perspective, Participant 16 expressed the following:

With the development of technology, KurumNet, as well as the resulting exchange of documents and information, has made things very easy for us. Being a senior former principal, I am a National Education member who has clearly experienced it in person. Even before KurumNet, I would send my formal letters not only to teachers and other principals but also to the Directorate of National Education in a signed e-mail in order to illustrate that I believe in online communication. Of course, I think that there are also some risks due to sending correspondence over e-mail online, but I couldn't think of any risks at the time. You understand it over time. This KurumNet is a rather useful and good system that doesn't cause any loss of time or manpower distributing documents.

In general, participants hold that e-government applications are useful and save time and labor while emphasizing that e-communication is important in exchanging information.

**Question 2:** In your opinion, what are KurumNet's intended objectives? What can you say about KurumNet's being used in regards to its intended objectives or about how well it achieves its intended objectives? (KurumNet claims that it makes savings in office supplies, and consumable materials and that facilitates document storage. Has this helped you experience savings? How?)

Upon examination of the interview forms, it is observed that participants highlighted that KurumNet seeks (i) to facilitate document storage and flow, intra- and extra-institutional communication, archiving, (ii) to reduce bureaucracy and office supply use, and (iii) to ensure secure communication. They also stated that documents are not lost, that communication is fast and easy, that savings in labor are realized, and that correspondence may be realized without being hindered by procedures.

Except for one participant, all of the participants expressed that KurumNet is used in a manner appropriate to its intended objectives. Stating that whether KurumNet is used in a manner that realizes its intended objectives depends on each individual user, two participants emphasized that one must have sufficient knowledge and experience.

On savings in office supplies, four participants stated that although they were not able to save as the Provincial and Local Directorates of National Education because they print



incoming documents, their costs have been somewhat reduced. Stating that archiving carries high importance in Turkish bureaucracy, six participants emphasized the relevance of this feature. One participant argued that the claims made by KurumNet are not true and that more savings could be obtained by making certain arrangements. Two participants stated that such an application should be made by Turkey's own Ministry of National Education.

Participant 3 stated his views on this issue as follows:

The purpose of KurumNet is to provide fast communication and an instant exchange of information. Previously, we would use a telephone chain when it we needed to provide any institution connected to the Local Directorate of National Education when there was no such system available. However, it had many holes. In terms of instant information exchange, I think that KurumNet is an excellent service. All in all, the purpose of KurumNet is well known; that is, to facilitate a fast exchange of information and flow of documents. As such, I think that it's used according to itsintended objectives in our town and institution. I haven't experienced any negative aspects of it. The costs of office supplies have been substantially reduced. It used to be required to type even the simplest of information and then deliver it to the relevant authority. This is very important in terms of time as well. For this reason, I think it has definitely made savings in terms of printed materials. As for document storage, we no longer print out all the letters we receive over KurumNet. If it is absolutely necessary to provide staff members with information, then we print out the letters. So, we kind of just store them. Otherwise, we can archive incoming documents by downloading monthly reports via KurumNet.

The following explanation by Participant 14 is of interest:

KurumNet has really sped up the flow of information. We used to use telephone chains in the past, but it was a loss of time. This has alleviated schools' telephone burden. In this respect, what they claim is true, I subscribe to it in its entirety. Numerous school principals, assistant principals, there's no one at school. No matter how long you would try to reach someone, you couldn't get ahold of anyone. Then you throw in the towel at last. And then they used to say that they were not aware of it. Some may deny, saying, for example, that they didn't receive





such information. They can't make that claim that with KurumNet. And another thing, you can see whether or not users are logged in to KurumNet. Who has logged in and when? In a way, it allows for administrators to be followed up on. For instance, I sometimes look and find that letters have arrived from the Local Directorate of National Education at 4:55 or 5:00 PM to see whether administrators are in their offices.

**Question 3:** What can you say about the specifications and purposes of KurumNet's servers and terminal computers?

According to the interview forms, seven participants stated that they had no information about this specific issue. Other participants agreed that the specifications of the server computer needed to be better in comparison to terminal computers. They also stated that the server computer needed a lighter work load and that it should stay with institutions' principals. Participants further emphasized that operations and procedures are implemented by forwarding formal letters arriving at the server computer to the relevant assistant principal's terminal. While one participant expressed that he manually distributes documents in the institution, another participant mentioned that the flow of documents is interrupted due to problems arising from internet connection speed. Mentioning that KurumNet needed to be kept on at all times and that this places a burden on computers, one participant stated that it would be better for the company to design the program in such a way that it places a lighter burden on computers. While one participant stated that KurumNet authorizes terminals, another participant mentioned that the school principal can authorize terminals based on intra-institutional trust relationships.

Participant 4 expressed his opinion on this matter as follows:

The server computer is the host computer that KurumNet is connected to. Other terminals may not be switched on before it has been switched on. They are all connected to it. The principal forwards the documents to the terminals via the server computer. In essence, terminals are sub-computers that serve the host computer.

Participant 11 stated the following about computers' technical specifications:

KurumNet server and terminal computers don't require higher than normal specifications. KurumNet may run on any computer sufficient for a normal home user. The programs don't require a large amount of memory. The programs require



the server to be a computer not used more than the other terminals or to be a computer not used by many people. Terminal computers should also be personal computers, but the server computer holds a rather important place as data is stored on it.

**Question 4:** What is your opinion concerning the reliability of KurumNet? What is your reason for choosing KurumNet?

According to the interview forms, three participants think that KurumNet is wholly unreliable. Participants stated that reliability is considerably reduced as passwords are simple. Four participants stated their belief that KurumNet offers no data security, as no data are safe on the internet. While three participants stated that the company is responsible for security, other participants were of the opinion that data security is sufficient. According to the comments of one participant, data may be lost in the case that a computer crashes. The importance of updates is another issue dwelled upon by participants. Moreover, in addition to one participant stating that a company earning such a high amount of money should avoid those acts that jeopardize security, three participants expressed their malaise at the private sector recording and storing information about them.

When asked about the reason why they had chosen KurumNet, twenty of the participants stated they were not given the choice, but rather that it was chosen by the Directorates of National Education. Eight participants, however, stated that they had chosen it because it facilitates of document flow.

On the matter, Participant 6 articulated his distress as follows:

I'm a bit distressed about this matter. How? Yes, it's reliable, the software doesn't change, but since authority can't be shared between the principal and assistant principals in the authorization section regarding electronic signatures, an assistant principal may, in my absence, affix his signature on a letter that I don't want to send. This causes great distress. When you leave a proxy, he can send letters using my signature when he finds it more convenient to do so. We use it because every part of the Ministry of National Education is using it, and I do see its advantages. We use it in order to be linked to the whole system because they think it's easy.

Participant 8 stated his opinion on the matter as follows:



No data is secure on the internet or electronic media. I mean, KurumNet remains weak in this regard, as even the strongest servers are hacked by hackers. However, I don't think it's a system that's tampered with a lot by hackers as it doesn't contain classified government secrets or other important information. The basic reason why we've chosen KurumNet is that it allows, more or less, for the fastest possible communication.

**Question 5:** What aspects of KurumNet do you consider advantageous, negative, or deficient?

All of participants considered the same aspects to be advantageous; namely, savings in office supplies and consumable materials, savings in time and labor, its facilitation of document flow, its filing system, and its easy access to archives.

Upon examination of those aspects considered negative, we see that three of the participants articulated their dissatisfaction regarding signatory power, stating that another person in the system can use the school principal's signature to reply to letters even if the principal is not at school. Participants listed interruption in data flow arising from issues related to the internet, electric power blackouts, or headquarters as negative aspects. Four participants mentioned the problem of security. Two participants stated that they felt uneasy because information about the school is possessed by the private sector. Ignorance of those using KurumNet was also put cited as a negative aspect. Two participants stated that KurumNet was costly and that its cost needed be reduced.

Regarding deficient aspects of KurumNet, participants stated that bandwidth needed to be increased, that access to the decimal system needed to be made easier, that a solution needed to be found to subsequent corrections to official correspondence being continuously sent from the local Directorate of National Education, that the system's feature of cataloguing archived correspondence by subject and the inter-institutional messaging feature needed to be restored, that sending files in picture formats needed to be made easier, and that backing up and deleting entries needed to be more flexible. In addition, participants also stated that different institutions should use KurumNet and that communication with such institutions must be established via KurumNet. They further stated that it was imperative that training be provided about how to use KurumNet consciously.



Participant 19 conveyed the advantageous, disadvantageous, and deficient aspects of KurumNet as follows:

The aspect I consider to be deficient is when you make a mistake you can simply redo and resend it ad nauseum on KurumNet. Too many mistakes occur in the Ministry of National Education. They send a letter and then corrections to it. One after another, one after another. This is a big complaint of mine. I don't know which letter is correct as they send too many corrections. They may set it in a system, for instance. I mean, they may find something for it in my opinion. Other than this, it's very reliable. Easiness, like I've said, savings in time. I think it's very easy. Yes, there are savings in everything.

Participant 27 shared the following:

Like I said, it's useful, very useful in terms of savings. It is very useful in storage. In terms of time, it is faster than sending faxes. I mean, let's say you're required to send a document somewhere, it's very helpful for us in sending urgent documents. It's very helpful in retrieving documents. As for its negative aspects, naturally, there are also confidential documents. But, it does have a confidential section, too. We've discovered it, but there may be some problems in the confidential section as well. It's said that when you select the confidential section, another person can't open it when he needs to. We may receive such feedback. But all in all, documents are highly exposed, and I wonder if this could be restricted to a greater extent. Can everyone see every document? I mean, some consideration should also be given to this fact.

**Question 6:** What are KurumNet's features? Which of these features do you use? Have you ever received training to use KurumNet?

All participants stated that KurumNet facilitates not only communication between users but also the flow, forwarding, following up, and archiving of documents. All of the participants stated that they use such features. Twenty-seven of the participants expressed that they had not received any training about KurumNet. Five participants stated that they had been provided with training, mentioning that they had learned how to set up server and terminal computers in under two hours.

Regarding the features of KurumNet, Participant 9 articulates the following:



Of all its features, we only use correspondence and its features of sending, receiving and transmitting documents. We don't use any other of KurumNet's features. We very rarely use the messaging feature. I haven't received any training for KurumNet. As a matter fact, it's very simple to use. I've been working as an administrator for several years. I've learned how to use it during exchanges of ideas with my colleagues. Its system is really very simple. A person who knows how to turn a computer on and off can easily use it.

Participant 29 stated his opinion on the issue as follows:

.... There are specific sections for sending and receiving documents, for archive management, and for document flow. It also has an intra-institution messaging feature. We use almost all of these features. I haven't received any training for KurumNet. I learned how to use it by myself.

**Question 7:** What is the cost of KurumNet for your institution? (Who uses it? Have they received training?)

Participants stated that the annual assistance and updating cost is 90 Turkish Liras. Twelve participants either did not know the cost or knew it incorrectly. Six participants stated that the amount paid is markedably low considering the services rendered. Participants stated administrators and other officials used KurumNet in their institutions and that KurumNet had installed in the guidance offices of three schools. One participant considered the price to be excessive, one participant stated that KurumNet's costs were covered by the Parent-Teacher Association, and another participant iterated that KurumNet's costs should either be paid by the government or that another system be selected due to restricted financial resources.

The opinions provided by Participant 16 and Participant 22 on this matter are very enlightening. According to Participant 16:

Its cost? I do not know how much it cost as it's been many years. But I can say that it costs 90 Turkish Liras a year. I think it's deemed an annual maintenance fee. We pay 90 Liras for this service, but I can't remember how much we paid for it when we first bought it. We paid 175 or 250 Liras, something like that. But I really can't remember. Our officials use it, I use it, our assistant principal uses it, our school counsellor uses it, and our computer teacher uses it. The computer teacher helps us wherever we come to a deadlock.



According to Participant 22:

I think it cost 70 Turkish Liras last year. This year, it should be 90 Liras. There's a recurring fee that increases each year. Nevertheless, although we paid our dues last year, once the institutions separated, they charged some 125 Liras for an initial installation fee. I mean they have charged it this year. Earlier, we were included under Sakarya Primary School. When we were divided into Sakarya Elementary School and Sakarya Junior High School, they made Sakarya Primary School an elementary school and charged an extra 125 Liras because they identified Sakarya Junior High School as a preexisting user. I use it, the principal uses it, other than this, there was an official earlier, and he could also use it. Now, two of us use it.

**Question 8:** When you experience problems with KurumNet from whom and by what means can you seek assistance?

Of the participants, twenty-five knew that the assistance service center located in Izmir was to be contacted by phone in case of any problems. Ten participants stated that they first consulted the computer teacher, five participants requested help from the trained teachers available in their local Directorate of National Education, and 5 participants attempted to find solutions by themselves. Twenty participants stated that they first tried to solve the problems through their own means or through those of their school and then call the assistance service center located in Izmir in the event that they fail to find any solution.

Participant 18 stated the following on this matter:

I'm available to support others. Since I teach information technologies and since I guide people on how to deal with this matter in our institution, they share all their problems with me. I do try to reconcile issues to the best of my knowledge. However, if it goes beyond my knowledge, I mean, if it's beyond my abilities and if I can't solve it, we seek assistance from KurumNet's technical services, which is possible through a remote connection. If the person on the other side isn't capable of solving the problem in question, a basic software program is downloaded upon request and the technical staff of InstitutionNet solve the problem through remote assistance. Yes, this is also a good thing. They do a good job assisting us.

Expressing his opinion on this matter, Participant 7 stated that he pursued the following remedy:



If it's a problem that we can solve by ourselves, then we try to solve it. If not, we may seek assistance either by internet or telephone from the local Directorate of National Education, and finally from KurumNet's own assistance service.

**Question 9:** How do you assess the technical assistance service that KurumNet offers?

While twenty-seven participants stated that they were satisfied with KurumNet's technical assistance, three stated that they had not even the slightest knowledge on this matter and four stated that they did not need technical assistance. Participant 12 stated the following on this matter:

It could be a little better. It's good, but could be better. Instead of directly saying that they can do it or telling the teacher not to do it a certain way, they employ the remote access feature to a greater extent. They don't emphasize telling us to do it a specific way. This isn't necessary. But we're connected to them in a network for access. We may benefit from their services by using this network. However, it may be caused by a lack of personnel as well. They don't emphasize telling us to do it this way or that way. I mean, it's a little bit on the deficient side.

Participant 14 expressed his opinion as follows:

They've established a good system. In fact, they, as private entities, have thought of what our ministry should have thought of. They've satisfied a need. I mean this must be what they call entrepreneurship, right? I mean they've found a good method of earning money by evaluating the field. Entrepreneurship is certainly good. I'm happy with the technical assistance.

**Question 10:** Do you have anything to add about KurumNet?

Seven participants responded saying that they had nothing to add. Eleven participants stated that the services provided were good and that they were satisfied with them. Thirteen participants emphasized the deficient or replaceable aspects of KurumNet – namely, that it should be provided by the Ministry of National Education, that messaging should be restored, that subject search should be made easier, and that its price should be reduced. Two participants articulated that training should be provided so that the program might be used according to its intended objectives.

Participant 19 stated the following opinion on this matter:



I say that I wish it would spread throughout Turkey so that all employees would be at ease. For instance, you write a letter and you don't have to take everything to the Directorate of National Education.. It's convenient for assistants as well. That is, they don't have to walk all that way. As for me, I like it very much. I It is very easy and simple. I It certainly does provide convenience.

Contrary to the above opinion praising KurumNet, Participant 34 stated, "KurumNet needs to be removed from our institutions and another system that relies on local resources needs to replace it."

When the data from the interview forms are studied, it is found that of the total 34 participants, 30 participants considered KurumNet to be particularly useful in the region where the study has been implemented. Four participants (i.e., Participants 9, 14, 21, and 34) stated that they felt uncomfortable because official correspondence was in the possession of the private sector, iterating that this should be in the sole hands of the government.

## Results

Governmental institutions must do their fair share to adapt to changing conditions and to keep pace with global progress. E-government applications developed in this way must be made operative in all institutions. A private company noticing a gap in e-communication at schools made an attempt to close it by making KurumNet available to Turkey's Ministry of National Education.

Upon analysis of the data obtained from interview forms, administrators' attitudes toward KurumNet were examined so as to investigate the program's effectiveness and return on costs. Emerging as a result of the study is that the attitude that nearly all of KurumNet's users are particularly pleased that the gap in e-communication has been closed. On the other hand, of the total 34 participants, four stated that they would prefer that this gap be closed by the Ministry of National Education itself.

## Conclusions





When examined in terms of costs, it is noteworthy that participants regarded the fee paid as quite reasonable considering the services rendered. When the savings in office supplies, consumable materials, time, and labor offered by KurumNet are examined in detail, KurumNet is found to offer significant savings compared to times prior to KurumNet. Considering the financial losses incurred when an assistant or another government employee is sent to receive or deliver documents, when classes are disrupted in order to transport documents to rural schools where the number of staff members is few in number, and when letters are delayed, instant communication and the effortless transfer of daily correspondence also help to offset transportation and labor costs.

In the past, schools used to purchase a program called Bilsa from the private sector in order to prepare class schedules and to maintain school records. The Ministry of National Education did remain a mere spectator and established the e-school website, which is similar to and whose services are even more extensive than those offered by Bilsa. Now, the same is true for KurumNet. The Ministry of National Education is preparing to devise a program similar to KurumNet in order to respond to institutions' demands. Referred to as DMS (Document Management System), this program is planned to be offered to institutions over Mebbis. Time will show whether or not DMS will equal KurumNet in performance so as to be a viable replacement for it.

Since technology is not static and is instead in a process of constant development, researchers are observed to behave hesitantly when technology is involved. This study was conducted in spite of technological developments and continuously updated programs. One of the reasons for this was our intention to demonstrate that one may work in technological areas without fearing change, knowing that changes are experienced every subsequent day. Researchers should act courageously and produce more products related to educational technologies and e-government applications in education. This way, a larger corpus of literature would be created concerning e-government applications used in education.



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