

Evaluation of the Electronic Applications Used in the Turkish Education System in the Context of School Administration

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Abstract

Technology increases its impact in every aspect of life. Because technology is a multidimensional concept, it can be defined in different ways. Şimşek & Akın (2013) define the concept as the whole of the techniques that people use in their interaction with their environment. Technology has an impact on education as in other fields. Filho, Manolas & Pace (2008) state that the use of technology in education is necessary for sustainable development. For the desired development in education, school administrators, who are responsible for managing the school, are expected to benefit from technology while performing their duties. School administrators can benefit from technology for various purposes. Among these purposes, administration works, education and training, that is, student-centered works, making plans and programs (Makewa, Meremo, Role & Role, 2013; Page-Jones, 2008; Xiong & Lim, 2015); providing opportunities for teachers to benefit from technological applications (Kızıltepe-Ayhan, 2017); development and evaluation, support, encouragement, planning and supervision, ethics and safety issues (Baykara, 2018; Gökoğlu, 2014).

When the literature on the subject is scanned, it is seen that technology is predominantly evaluated in the context of leadership and student success (Aktaş, 2018; Baykara, 2018; Engür, 2014; Gökoğlu, 2014; Gürkan, 2017; Güven, 2015; Kızıltepe-Ayhan, 2017; Scale, 2014; Prokopiadou, 2011; Ulukaya, 2018; Weng, Tang, 2014; Yılmaz, 2018). It is thought that the current research will contribute to the field by examining the technology-school management relationship in terms of various electronic applications. The aim of this research is to understand the effect of electronic applications on school management and administrators.

The research was conducted in the qualitative research method and case study pattern. 15 school administrators participated in the research. Data were collected through interviews.

In the research, it is seen that electronic applications, which have been used in the Turkish Education System especially after 2007, have contributed a lot to school administrators. Among these, it can be stated that it contributes to the faster and more comfortable work, saves time and documents, facilitates accessing and archiving information, and speeds up communication. It is understood that infrastructure such as the internet, computers, and the ability of managers to use technology are sufficient to achieve the specified benefits. Although electronic applications are used, it is understood that there are situations where previous applications should be used, albeit limited. However, there are also shortcomings of the applications such as not updating the trainings over time and having factors that reduce motivation.

The interaction of electronic applications with the education system makes itself felt both formally and informally. It is understood that it has transformed the bureaucratic structure, which is identified with paperwork, workload and work intensity, in a way that will please the employees. In addition, it is among the positive reflections that it contributes to organizational memory by providing easy access to the desired information at all times. The provision of all these benefits is not only possible with electronic applications determined by the senior management. In addition, school administrators benefit from the applications they use in their daily lives while performing their duties. In this way, time and communication-based gains can be achieved.

Based on the data, the following can be recommended for practitioners: Electronic applications can be updated. Based on the update, periodic trainings can be given to increase the ability of school administrators to use these applications and to increase their knowledge on how to use the system.

For researchers, the following can be suggested: More comprehensive research can be conducted based on new applications that may arise due to the increasingly intense use of electronic applications. Research can be done to include teachers.

Keywords: Turkish Education System, School Management

INTRODUCTION

Technology increases its effect in all areas of life. Technology can be defined in different ways as it is a multidimensional concept. Şimşek & Akın (2013) defines this concept as the whole of the techniques people use in their interaction with their environment. Appelbaum (1997) argues that technological applications should include various social aspects. These are the impact of technological procedures and supporting systems on the organization and people, whether technological changes cause social resistance, the interaction of technological changes with the current structure, the state of readiness for technological changes, and finally the level of strengths and weaknesses of technological changes. It would be more appropriate for the organization to integrate technological (electronical) applications, taking into account both technical and social contributions together (Mariani, 2019). Technology is also considered as one of the five components that make up the structure of the organization (Figure 1).

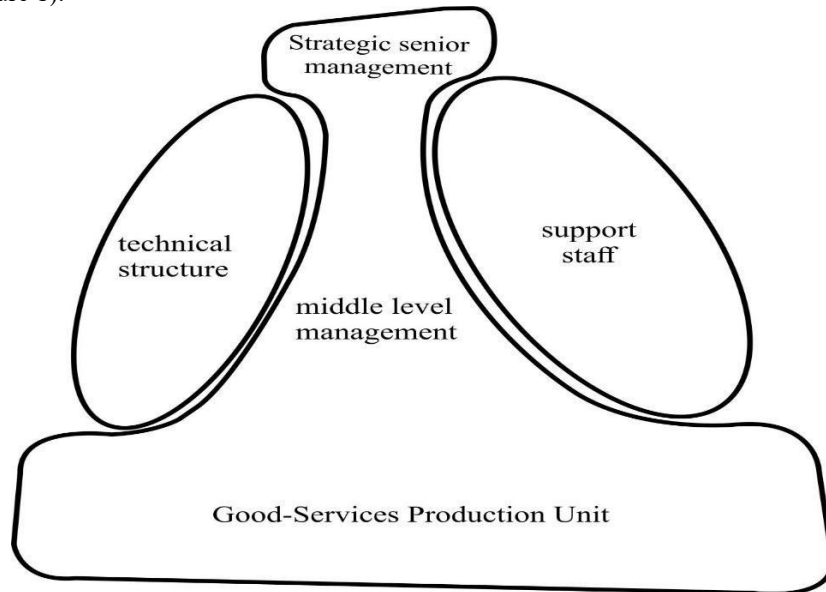


Figure 1: Five components of an organization (Mintzberg, 2014, p. 20)

As is seen in Figure 1, technology has an integral and valued component that forms the organization and contributes to the development of the organization. It contributes to the administration in fulfilling the function of the organization.

As in other fields, technology affects education. Filho, Manolas & Pace (2008) state that the use of technology in education is necessary for sustainable development. To achieve the desired improvement in education, school administrators who are responsible for administrating the school are expected to benefit from technology while performing their duties. School administrators can benefit from technology for various purposes. Some of these purposes are carrying out administrative tasks, education and training works, student-centered works, and preparing plans and programs (Makewa, Meremo, Role & Role, 2013; Page-Jones, 2008; Xiong & Lim, 2015); providing opportunities for teachers to benefit from technological electronic applications (Kızıltepe-Ayhan, 2017), and paying attention to development and evaluation, support, encouragement, planning and supervision, ethics and safety issues (Baykara, 2018; Gökoğlu, 2014). However, the attitudes of school administrators and their attitudes towards teachers are determinative in bringing the technology to the school environment, using it effectively, and making it

a part of life (Aktaş, 2016; Ölçek, 2014). These issues indicate that the use of electronic applications in education will continue to increase (Berry & Marx, 2010; Gürkan, 2017).

School administrators mostly benefit from the use of technology. Some of the advantages are being better perceived and accepted by teachers (Yılmaz, 2018); increasing the speed of works, and having an effect on carrying out the works in line with their purposes (Engür, 2014; Güven, 2015; Ulukaya, 2015), and affecting student success (Morrow, 2010). Factors such as age, type of school, place of residence, and time spent with computers (Çevik & Baloğlu, 2007), and skills and knowledge regarding the electronic applications that may be beneficial to students (Bakioğlu & Şentuna, 2001) can be effective in school administrators' use of technology at the desired level. The findings are indicating that school administrators are sufficient in terms of the specified factors and technological infrastructure in schools and that they can use technology effectively (Eren & Kurt, 2011; Fraillon, Ailley, Schulz, Friedman & Gebhardt, 2013; Görgülü, Küçükali & Ada, 2013).

Using technology at school positively influence the school climate (Baş, 2012); provide teamwork and a learning organizational environment (Banoğlu, Vanderlinde & Çetin, 2016); ensure the development of positive attitudes towards technology (Prokopiadou, 2011); increase the influence of the school administrators in the school (Weng & Tang, 2014); establish a digital archive and contribute to the development of teachers and administrators technologically (Akgün, 2019); provide information administration, communication, problem-solving, and sharing (Fraillon, Ailley, Schulz, Friedman & Gebhardt, 2013); increase the level of communication with the environment (Esposito, 2013); make it easier for the administrators to administrate the school (Puckett, 2014), increase teachers' skills, sense of responsibility, and motivation to use electronic applications (Bulden, Hurt & Richardson, 2017; Kuo, 2015). To realize the mentioned advantages, it is necessary to ensure collaboration in the school and to benefit from experts who will bring out the potential (Bouchard & Stegemoller, 2019).

School administrators can benefit from tools and applications such as E-school, MoNEIS (Ministry of National Education Information System), mobile phones, and social media to use technology beneficially for themselves and the school (Abrego & Jauregui, 2019; Akın, 2016; Garcia; Gökalp, 2018; İbil, 2012). However, such applications also affect the existing structure (bureaucratic structure) in the school. The researcher believes that electronic applications have different reflections on bureaucracy. Electronic applications reduce the effect of bureaucratic practices in the organization and cause change. Electronic applications and bureaucracy can also be determinant in terms of whether the organization has an effective structure or not. At that point, bureaucracy has a negative effect on the change of organizational structure and the effect of technological applications (Kim, Paik & Lee, 2014). Also, electronic applications contribute to the reflection of the bureaucracy's features such as hierarchy, standard business procedure creation and filing, to maintain order in the organization (Dormann, Hinz & Witmann, 2019).

The Turkish education system reflects the effects of electronic applications. Electronic (technological) applications have been used in the Turkish education system especially since 2007 (Table 1).

Table 1: Electronic applications used in the Turkish education system

The Electronic Application Used	Year of Commencement	The Purpose of the Use
e- school	2007	To be able to follow the students' work and transactions related to the school
e- parent	2007	Parents' access to school information related to the student
KBS (Public Expenditure and Accounting Information System)	2009	Easier processing and archiving of personnel salary transactions in digital environment
MEBBİS (Ministry of National Education Information Systems)	2007	Personnel monitoring their own information and easily accessing the institution's information about the personnel.
TEFBİS (Information Administration System of Education Financing and Education Expenses in Turkey)	2010	Monitoring the income and expenses of the institution.

e-informal education	2010	Monitoring the vocational, sports and exercise activities carried out through public education centers.
School Milk	2012	Encouraging healthy nutrition by providing students with the habit of drinking milk daily.
EBA	2014	Providing distance education opportunities for students to continue their educational activities.
e-course	2016	Supporting students for their lessons.
DYS (Document Management System)	2017	Ensuring that correspondence between institutions is done in digital environment.

(Table was created by benefiting from www.meb.gov.tr)

As is seen in Table 1, school administrators have used electronic applications increasingly and intensely for various purposes in the Turkish education system since 2007. Applications include both educational and administrative affairs.

Research gap and research questions

While searching this issue in the literature, the following points draw the researcher's attention. First, the researcher has noticed that technology is intensely discussed in the context of leadership and student success (Aktaş, 2018; Baykara, 2018; Engür, 2014; Gökoğlu, 2014; Gürkan, 2017; Güven, 2015; Kızıltepe-Ayhan, 2017; Ölçek, 2014; Prokopiadou, 2011; Ulukaya, 2018; Weng & Tang, 2014; Yılmaz, 2018). Second, the researcher has come across studies that include different findings on the reflection of technology on the current school administration structure (Kim, Paik & Lee, 2014; Dormann, Hinz & Witmann, 2019). Third, as the mentioned in Table 1, the researcher hasn't found enough research on the reflection of the applications used in the Turkish Education System on the school administration. Current researches include a few of the 10 applications stated in Table 1 (Akin, 2016; Gökcalp, 2018; İbil, 2012). Finally, technology has a social dimension (Appelbaum, 1997; Mariani, 2019). Therefore, based on the above-mentioned points, the researcher could not access up-to-date, comprehensive and sufficient research on the interaction between school administration and technology. The present study is significant as it examined the relationship between technology and school administration in terms of various electronic applications, taking into account the comprehensive and current situation, revealing the interaction with the existing structure, and displaying the effect of technology in school administration. The researcher believes it can be useful in terms of providing practical data to the field as well as to the policy makers in education. This is because the electronic applications specified in Table 1 are increasingly used by school administrators. This situation shows that electronic applications have serious effects on school administration. In this study, the researcher aimed to reveal the reflections of electronic applications used in the Turkish education system on school administration because electronic applications increasingly have reflections on school administration from different aspects and also there is not enough research on this issue. Thus, the researcher looked for answers to the following questions:

1. According to school administrators, what are the reflections of the electronic applications used in the Turkish education system on the school administration?
2. According to school administrators, how does the electronic applications used in the Turkish education system interact with the current structure?

METHOD

The electronic applications used by school administrators in their daily lives and the opinions of the two academics researching the field provided the opinion that the qualitative research method was suitable for this specific study. Qualitative research aims at revealing how people make sense of their lives through their experiences (Creswell, 2016, p. 44). Electronic applications that have been used in the Ministry of National Education since 2007 were considered. Therefore, a case study design was preferred. A case study is a design aiming to reveal the experiences in real environments in a deep and meaningful way (Yin, 2014, p. 16).

PARTICIPANTS

The study group consisted of fifteen school principals and assistant school principals working in public schools in Istanbul province, Turkey, in the 2019-2020 academic year. The data regarding the participants are shown in Table 2.

Table 2: Participant information

Branch						
Class	Religious Culture and Moral Knowledge	Science and Technology	Mathematics	Information Technology	Turkish	Social Sciences
5	3	2	1	1	2	1
Role						
School Principal	Assistant School Principal					
10	5					
Professional Seniority						
0-5 years	6-11 years	12-17 years	18-23 years	24 years and over		
1	5	5	3	1		
Administration Seniority						
0-5 years	6-11 years	12-17 years				
8	6	1				

According to Table 2, school administrators with different qualifications in terms of branch, role, and seniority participated in this study. The diversity of the participants is important in terms of including different perspectives and experiences in the study. Thus, the emergence of a one-sided mindset can be prevented by addressing the issue only from the perspective of the school administrators or assistant principals. This situation may also contribute to the reliability-validity of the research. It was determined that school principals participated more. In this study, an easily accessible situation sampling method was used as the school administrators who were observed in various environments and with whom the research subject was shared. In addition to this, the criterion sampling method was used as the opinions and suggestions of the participants were taken into account. Miles & Huberman (2015, p. 28) state that easily accessible sampling is preferred for time, financial reasons, and flexibility while Yıldırım & Şimşek (2011, p. 112) state that criterion sampling is preferred as it is based on the pre-established criteria.

Data collection and analysis process

The data were collected through semi-structured interviews and documents. The interview form was prepared by considering the literature and taking the opinions of two school administrators expected to participate in the study, two academicians working in this field, and language experts. The pilot application of the prepared interview form was applied to two participants and the results were evaluated with the above-mentioned experts. Other interviews (thirteen interviews) were conducted as the questions in the interview form were considered to be suitable for this study. The same approach was followed for the interview data and research report. The data related to the subject were reflected in the research report. The interview form included questions about the electronic applications used by school administrators, their effect on the school administration, and the comparison of before and after the applications. The interview form consisted of two parts. The first part asked for participants' demographic information (Table 2). In the second part, 13 questions were asked to the participants. Two questions were related to the method (the relevance of questions to the subject) and ethics (the use of research permission and data). The contents of the remaining 11 questions were as follows: The thoughts on electronic applications, the effect and reflection of these applications on school administration (in terms of time administration, bureaucracy, archive, infrastructure), comparison of pre and post electronic applications in terms of school administration, evaluation of electronic applications in terms of their use, comparison of electronic applications in terms of formal and informal aspects, and finally, taking the thoughts to be added about the subject. The secondary data source of this study were documents. Eight documents regulating the official acts of school administrators - one Presidential Decree, one regulation and circular, and five directives - were analyzed. According to the literature, official documents can be used in document analysis (Patton, 2014, p. 4). When analyzing the data, the descriptive analysis technique was used as it was aimed to reflect the opinions of the participants to the research. The descriptive analysis technique is important in terms of revealing the opinions of the participants in the research in a meaningful way (Yıldırım &

Şimşek, 2011, p.224). In this study, the content analysis technique was also used to reach new meanings from the data in terms of school administration (Table 3). The purpose of content analysis is to reach new meanings by making systematic inferences from the data (Krippendorff, 2004, p.18). Special attention was paid to obtain individual and institutional permissions. For quotation, the real names of the participants were not used. Another reason for gathering sufficient data during the research process is thought to be the sincere behaviors of the participants. This is due to the voluntary participation of the participants in the study. Finally, it can be stated that the research process was completed smoothly as planned by the researcher.

Validity and reliability

Five of the strategies recommended by Christensen, Johnson & Turner (2015, p. 405) were used to ensure the validity-reliability of this study. These are i) Data diversification: Interviews (15 interviews) and documents (8 official documents) were used in this study. ii) External auditing: The whole process was evaluated by two researchers, one school administrator, and language-expression expert. iii) Quoting: Some of the opinions that could contribute were also included. iv) Peer evaluation: The opinions of two other researchers and one school administrator about this study were obtained. v) Reflective thinking: It is considered that the fact that the researcher worked as a school administrator in the past and used electronic applications would contribute to a better reflection of the situations desired to be explained through the data.

FINDINGS

In this study, the findings were obtained from the interviews and documents.

Findings obtained through the interviews

2 categories, 8 subcategories, and 27 codes emerged in this study (Table 3).

Table 3: Categories, sub-categories and codes emerged in the research

	Categories	Categories
Categories	Evaluation of Electronic Applications Used in the Turkish Education System since 2007	Interaction of Electronic Applications Used in the Turkish Education System with the Current Structure since 2007
Sub-categories	Evaluation in terms of use	Interaction in terms of bureaucracy
	Speeding up the works	Workload
	Unity in electronic applications	Waste of time
	Providing flexibility	Paper works
	Making archive works easier	
	Reducing workload	
Codes	Making works easier	
	Ease of control	
	Requiring various arrangements and updates	
	Reducing motivation	
	Affecting health	
Sub-categories	Evaluation in terms of school administrators	Interaction in terms of organizational memory
Codes	Using technology	Providing convenience in accessing and storing information
	The adequacy of the training provided	Saving time and space
	Learning style	
	Obtaining opinions	
Sub-categories	Evaluation in terms of time administration	Interaction in terms of unofficial electronic applications
Codes	Saving time	Speeding up the communication
	Increasing workload	Making works easier
Sub-categories	Evaluation in terms of infrastructure	
Codes	The technical infrastructure of the school	
	The adequacy of the user infrastructure	
Sub-categories	Evaluation for comparing the applications with the previous ones	
Codes	Improved	
	Maintaining the previous one as it is	

According to Table 3, the emerging categories, sub-categories and codes were the evaluation of electronic applications used in the Turkish education system and their interaction with the existing structure. According to the relevant table, electronic applications had intense and different effects on the education system.

Category 1: Evaluation of electronic applications used in the Turkish education system

Five sub-categories and twenty codes emerged in this category.

Evaluation in terms of use

The participants addressed electronic applications from two perspectives. These perspectives suggested that the applications were useful and some aspects needed to be improved. The participants attached importance to the electronic applications as a solution to the reduction of bureaucracy-based workload, which they considered as a problem the most. In this regard, Hüsametdin stated that *“it reduces the use of documents”* while Muhammet stated that *“there were systems that relieved the school administrators very much in terms of following up the completed works, and reducing the bureaucracy and paperwork”*. The participants also emphasized that one of the advantages was speeding up the works and, thus, making works easier. Hüsametdin clarified his opinions as follows: *“Official electronic applications have functional aspects such as facilitating, accelerating, providing unity in implementation, and providing data for central planning”*. Another advantage of these applications was their contribution to the archive services. Participants considered that an application in which they could use the information they needed later was useful. Ramazan’s opinions were as follows: *“...the positive aspect of these applications is that they are ideal in terms of storing information and accessing ready information...”*. The participants also emphasized that this allowed the applications to be used at the desired time (flexibility) by avoiding confusion through unity in electronic applications and provided ease of control. Some of the opinions of the participants were as follows: Salih: *“...Mistakes are determined instantly. They can be monitored continuously. “As there is no time and place limitation, we can do these procedures when we are not at school”*. Rüştü: *“...As it is gathered under a single-center, it can be used wherever you go in Turkey”*.

The participants expressed that the technological applications were not only beneficial but also they had negative aspects that needed to be improved. Betül clarified supporting the existing electronic applications with various applications as follows: *“It would be appropriate to apply 3 types of more simple and useful (primary, elementary, and high school) fixed themes and provide the opportunity to add information more easily”*. Rüştü provided his opinions on the inclusion of situations that may negatively affect their motivation from time to time as follows: *“I support the use of BİMER (Prime Ministry Communication Center) and ALO 147, but we administrators suffer a lot as these channels are misused sometimes. These situations do not comfort us, but stress us out”*. Tarik expressed administrators’ becoming dependent on the computers as follows: *“It requires a person to always depend on a computer”*.

Evaluation in terms of the effect on school administrators

According to the participants, electronic applications showed an effect in two perspectives. First of them was the effect in terms of the knowledge and skill of the school administrators in using technology. The reasons like the school administrators’ ability to use the technology individually, their interest in technology and their ability to keep up with the time can be the basis for the infrastructural skills of the school administrators in technology. Moreover, school administrators followed technological applications closely and they used these applications when performing their duties. Abdullah: *“We can follow the digital application through mobile phones from wherever we are. We don’t even have to be at the school”*. Muhammet: *“These applications make everything easy for the school administrators who are already good at using technology”*. Ramazan: *“We use it effectively...”* Second, the participants noted that although school administrators receive training for these applications, it becomes inadequate in time because there are no updates for the training. The participants stated that the training is useful, and it needs to continue. Serdar: *“However, this training is inadequate”*. Abdullah: *“This training is insufficient”*. As expressed by the participants, Abdullah and Serdar learned these applications by themselves or asking the others, as Salih and Emin noted too. Salih: *“After the system started to be implemented, we could learn the mistakes or what we didn’t understand from the instructors or the other users over time”*. Emin: *“We got training for 2 days for the last DMS, but it is not possible to learn it only with the training, it has to be acquired by practicing.”* Moreover, the researcher considered that the applications should be updated according to the users’ comments and some precautions should be taken for the unwanted situations. Rüştü: *“Provided that the positive and negative aspects of the applications are compensated by the superior authorities, we can always update the system”*. Abdullah: *“We come across various difficulties or good aspects when applying these systems. Our friends can discover the innovations and they inform us about the deficiencies”*.

Evaluation in terms of time administration

The participants agreed that electronic applications were time-saving. These applications can be quite useful in making time for different works simultaneously. Mustafa: *"We can make more time for school"*. Hasan: *"These applications save time for us. We use the time more productively thanks to these applications"*. However, the participants also expressed that there were negative aspects of the applications along with the positive ones. The researcher saw that these applications brought about new workloads, and this would compromise their advantages although they make it easier to perform the works. Ahmet: *"Although it saves time for us, we cannot use its advantages as the workload increases over time."*

Evaluation in terms of the infrastructure

The participants evaluated the infrastructure in two perspectives: The technical infrastructure of the school and the infrastructure of the users. The participants, except for three (Emine, Rüstü, Zeynep), expressed that schools have adequate infrastructure to be able to use the applications despite the deficiencies. This situation indicates that there have been improvements in schools in terms of infrastructure over time. Hüsamettin: *"The infrastructure at schools is good in general but the systems have to be improved for busy periods"*. Abdullah: *"We experience some slowdown in the network compared to past but it is fine in general"*. The participants agreed on the fact that the users didn't have any difficulties in keeping up with the infrastructure and that they could use the applications smoothly. However, opinions were reflecting that some school administrators experienced difficulties using these applications. Tarık: *"The school administrators adapted to the system, too. Those who didn't adapt themselves got retired and took themselves out of the case"*. Hasan: *Our friends, who had been school administrators for a long time, stayed inactive because they were not willing to learn this kind of application. On the contrary, others, who had been administrators for 5-10 years, were very eager and successful in this regard"*.

Evaluation of the applications for comparing with the past

The participants compared the situation before and after they used electronic applications when expressing their opinions. The participants stated that they experienced positive aspects after they started to use these electronic applications. These positive aspects were the acceleration of the processes by finishing the work easily, using the time productively and efficiently, and easy access to information. Some of the opinions were as follows: Tarık: *"The current situation is more comfortable and practical. Any information is there for the taking: there is no need to look for information about the students or staff from the archive"*. Ramazan: *"Let me give an example: Our school is old and our graduate students demand their diplomas. In past, we had to search for their documents year by year and rewrite them on the computer. Finally, we were getting the hard-copy and signing it. But now we just need their ID number to find the needed information immediately. Later, we just get it printed and sign it to deliver"*. However, it may be necessary to use the previous methods by necessity even if electronic applications are preferred more. Previous methods are still useful when there are some problems with the network or computer infrastructure (especially for the procedures before 2007). Emine: *"I use it in case there is a problem with the computer"*. Muhammet: *"For example, we go downstairs for the diploma records of our students graduated before 2007. We look at the promotion records in the archive"*.

In this category, the researcher determined that the participants were pleased with the electronic applications as they contributed to the work by making it fast, easy, effective, and productive. Electronic applications had negative aspects and they needed to be improved along with their advantages. Although electronic applications were generally used in the system, previous applications were also used from time to time to perform the work.

Category 2: The interaction of the digital applications in the Turkish education system with the current structure

In this category, there were three sub-categories and seven codes.

Interaction in terms of bureaucracy

The participants considered that digital applications brought along the characteristic alterations and improvements within the current structure. The participants also considered that bureaucracy was drastically reduced with the help of digital applications, which they especially identified with the workload, waste of time, and paperwork. The participants were satisfied with this alteration. The researcher understood from the opinions that electronic applications led to transformation and advancement in the current structure. Some of the opinions were as follows: Salih *"Actually, all applications reduce our workload because they provide us with the chance to work independently of setting, warn us immediately about the mistakes, and delivering the information instantly to the other side without wasting time"*. Serdar: *"These applications have countless positive aspects. They speed up the bureaucracy..."* However, some opinions reflected that different kinds of work emerged and the workload increased because of the ease and speed of communication. Abdullah: *"Of course, the applications make things easier but sometimes they make it harder, too"*. Zeynep: *"It's like bureaucracy is increasing with the ease of work"*.

Interaction in terms of organizational memory

The participants attached importance to the archive studies which can be seen as the most significant element of the organizational memory at the school. School administrators expressed that electronic applications contributed positively to archive studies, too. Along with bringing up a novel approach to archive studies, its positive contributions were as follows: Preventing information loss, facilitating the access to information, saving from time and space. Some of the opinions in this regard were as follows: Hüsamettin: *“I think that it affects the organizational memory positively without doubt as it records the activities.”* Rüştü: *“It reduced the archive studies. Now it comes from the DMS and we put it into the folder after adding the appendix. We don’t print it if it has nothing to do with us. We don’t file them anymore. Moreover, the document record book is no longer used either. The incoming or outgoing document record book is not used anymore, too”.*

Interaction in terms of informal applications

The participants didn’t only use formal applications with a perspective to running the work faster and easier but they also used informal applications when handling the formal works. According to the participants, these applications contributed to the work being done relevantly as much as the formal ones. Therefore, these applications help the work to progress faster and provide both formal and informal communication between employees. In short, this aspect of electronic applications can be useful both individually and organizationally. Some of the opinions were as follows: Tarik: *“We use them. Our school has a WhatsApp group, a Twitter account, a Facebook profile, a Gmail account, and an SMS group. We use them all”.* Muhammet: *“We don’t only use the formal systems. Why? Because they are faster in terms of communication. For example, we use WhatsApp the most”.* Emin: *“We also use informal applications such as WhatsApp, mail, Twitter, Facebook. We use these informal applications especially to share the activities and communicate quickly.”*

In this category, the participants stated that electronic applications had interaction with the current structure in both formal and informal ways. The participants especially emphasized its contribution in terms of performing the works faster and easier, easy access to information, and archiving the available information. The researcher made an inference that the most important contribution of the electronic applications to school administration was that they enabled the bureaucratic structure to be managed in a better, faster and flexible way.

The findings obtained through the documents

The following points attracted attention in eight documents (one Presidential Decree, one apiece regulation and circular letter and five directives) included in this study:

1. Being included in the 10th chapter of the Presidential Decree and being one of the articles regulating the Ministry of National Education, Article 322, Directorate for Information Technologies is the unit managing and leading the electronic applications within the scope of Turkish Education System.
2. The applications that should be used most by the school administrators were E-School (Electronic School), MoNEIS (Ministry of National Education Information Systems), EIN (Education and Information Network), IMSFEEET (Information Management System of Financing of Education and Education Expenses in Turkey), PEAI (Public Expenditures and Accounting Informatics), and DMS (Document Management System).
3. There were items regulating the infrastructure for giving and receiving education, network connection, and Internet usage.
4. It was requested to include the electronic applications in the plans to be applied in schools.
5. It was requested that the internal and external stakeholders of the school benefit from these electronic applications.
6. It was aimed to get the desired efficiency from applications through terms like education media and e-content. The data obtained through the opinions and documents showed that school administrators used electronic applications increasingly day by day. This was because that these applications were accessible and practical, they have the alternatives (formal and informal applications), they enable access and preservation of information, the infrastructure was improved day by day, and bureaucracy was implemented more flexibly at school as a natural result of these. In this regard, it can be concluded that the information obtained through the interviews and the documents were in parallel with each other.

RESULTS AND DISCUSSION

In this study, which was conducted with the qualitative research method, it was seen that electronic applications started to be used in the Turkish Education System especially after 2007 had many contributions to the school administrators. Some of these were contributing to making works faster and more comfortable, saving time and documents, facilitating the process of accessing and archiving information, and speeding up the communication. It was understood that infrastructure such as the internet, computer and the ability of administrators to use technology was sufficient to achieve the above-mentioned advantages. Although electronic applications were used, it was understood that there were cases where previous applications should be used, even if they were limited.

However, these electronic applications also had deficiencies such as not updating the training over time and having factors that reduce motivation. In the literature, it was expressed that technology-based electronic applications facilitate access to data, unity in electronic applications, and access to information (Gökalp, 2018), increase communication, collaboration, and, therefore, performance (Stephenson, 2007), provide practicality and suitable opportunities for the works, facilitate access to the resources, and allow easy and flexible work (Unger & Tracey, 2013). It is seen that it is important to follow and pioneer innovations to benefit from the technology-based electronic applications as desired (Huber & Hiltman, 2010), providing the tools to be used and providing the appropriate environment (Gürfidan & Koç, 2016; Sugar & Holloman, 2009), provide resources, increase motivation, and consider subordinates' opinions in administration (Armağan, Öz & Sever, 2020). On the other hand, in related studies, the school administrators stated that they were sufficient for these infrastructure services expected from them. In addition to this, they also expressed that they used applications such as e-school and MoNE DPS, but sometimes it was necessary to benefit from the previous applications (Akdemir, 2015; Baycan, 2018; Yörük, 2017). It is considered that the above-mentioned studies support the current study; however there is not enough data for electronic applications. The reason for this is considered to be because electronic applications were started to be used in the Turkish education system since 2007 and the studies generally focused on technology-leadership and technology-student success.

The interaction of electronic applications with the education system is felt formally and informally. It is understood that it transforms the bureaucratic structure, which is generally identified with especially paperwork, workload, and work intensity, in a way that satisfies the employees. In addition to this, one of the positive reflections was that it contributed to the organizational memory by providing easy access to the desired information. Achieving all these advantages is not only through electronic applications determined by senior administration. The school administrators also benefit from some applications they use in their daily lives when performing their duties. In this way, they can achieve gains in terms of time and communication. In literature, Şeker & Şeker (2009) define bureaucracy as reducing the workload and making things easier -changing the bureaucratic structure- while Balıkcı & Aypay (2018) define it as a combination of workload, paperwork, and time-consuming work. Yıldırım, Yılmaz & Balıkcı (2018) emphasize that Document Administration System (DMS), one of the systems used in the Turkish education system, is beneficial in terms of speeding up the work by recording and storing information and documents, but it needs to be updated and developed over time, and Chen (2013), Claudet (2002), Rikkerink, Verbeeten, Simons & Ritzen (2016) emphasize that making innovations will lead to new opportunities and developments for both professional and personal development of school administrators and teachers. It is seen that the school administrators use applications such as social media, e-portfolio, e-textbook by not only using computers, official applications, but also mobile phones, tablets, etc. (Bayram, 2017; Berry & Marx, 2010; Duran & Bayar, 2020; Mashaqbeh & Shurman, 2015) and, therefore, the use of technology provides benefits for teachers and students in terms of educational activities and the general works are sustained more effectively and efficiently (İra, Çolak & Geçer, 2019). It is seen that the results of the above-mentioned studies are generally in parallel with this study. However, it is considered that unofficial electronic applications are not partially in parallel with the results of this study due to insufficient reflection in the literature. This is because electronic applications have both social and technical contributions to the organization (Appelbaum, 1997; Mariani, 2019). For example, social media can make it easier for administrators to get enough information and access new information (Cao, Ali, Pitafi, Khan & Wagas, 2020). Also, it enables sustainable and quality administration programs to be organized. Therefore, it can pave the way for administrators to perform more effectively (Chaudhuria & Jayaram, 2019; Tofur, 2017). The aforementioned studies emphasize that the social dimension of technology should be considered with informal applications. However, the present study found that research did not focus on the social dimension (motivation, health, communication, etc.) of school administrators' interest in technology sufficiently. This shows that the current research confirms the relevant literature in terms of technology use such as speed, convenience, and decreasing workload. However, the findings of the current research did not coincide with the social dimension. The current research is considered to contribute to the literature in terms of emphasizing the social dimension of technology.

LIMITATIONS AND IMPLICATIONS FOR RESEARCH AND PRACTICE

The present study has two limitations. First, inferences were made by taking into account the opinions of 15 school administrators. Second, electronic applications that were put into practice between 2007 and 2017 were considered.

Based on the data, the following recommendations can be made for the practitioners: Although the advantages of electronic applications are generally listed, some unwanted aspects (the presence of applications that can reduce motivation, adverse effects on the health, the need to update applications) are also encountered. The applications can be updated based on the opinions of the school administrators. Based on these updates, periodic training can be provided to increase the skills of school administrators for using these applications and increasing their knowledge on how to use the system. Based on some electronic applications, applications that increase and occupy school administrators' workload and reduce motivation can be reviewed and improved. The use of these

applications can be monitored to include more frequently used and concrete data. Irregularities that may occur can be prevented by introducing regulations for unofficial but frequently used electronic applications by school administrators. The following recommendations can be made for the researchers: Studies can be conducted based on new applications that may emerge due to the increasing use of electronic applications. Teachers can be included in such studies. Different methods can be used when conducting these studies. New theories can be put forward in the field of school administration by comparing the existing study results with the results of the studies conducted with different methods. It can be ensured that both theorists and practitioners are aware of the results by presenting the research results on different platforms. Thus, new research fields can be created for the theorists and a starting point can be established in the arrangements to be made for the practitioners.

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