



## Digitalized Public Services: The Present Situation In Turkey And The Case Of Denmark

\*

**Lecturer Dr. Aysel ARSLAN**

Ondokuz Mayıs University, Health Services Vocational School, Samsun/Turkey

ORCID: <https://orcid.org/0000-0002-4973-7957>

### ABSTRACT

In today's world, societies are increasingly using online services. Thanks to the proliferation of information and communication technology tools and equipment and the ease of use, transactions can be made online in a short time. Using online services, which provide advantages for both organizations and customers, is rapidly becoming widespread in public institutions and the private sector. Thus, countries are digitizing and developing their strategies to provide better service online. In this study, the ways and methods followed by Denmark, which ranked first according to the UN E-Government Development Index data for 2018 and 2020, in achieving this success were examined. In this framework, Turkey's e-Government applications have been evaluated, and its aspects that are open to improvement have been revealed. As a result, the importance of three key factors has been emphasized to develop the e-Government applications of the countries. These are the use of digital identity that includes a digital signature, the obligation to communicate with public institutions in a digital environment and the relevant legal regulations. In the study, the case study design, which is one of the qualitative research methods, was used, and then the data were obtained through document analysis. The data were analyzed and interpreted. The study is thought to contribute to organizations and researchers studying digitalization.

**Keywords:** Denmark, Digitization, Organization, E-Government.

### INTRODUCTION

In the 21st century, organizations are looking for ways and methods to fulfill the demands of their customers more effectively because of globalization. Today, fast-achievable, easy-to-use, and affordable products come to the fore in customer goods and services demands. These products can be easily provided thanks to information and communication technology tools, equipment, and supplies. Because of the information age, many activities take place online. Those who produce and demand goods and services with information technologies can quickly perform their transactions online. Thanks to the digital channels that bridge the producer and the consumer, shopping can be done without time and space problems. Online services initially provided by a small number of businesses have become widespread in all organizations, including public institutions.

In the developing and changing business world, many public services have also been digitized. People can click on the link of the relevant institution to get public service and do their transactions in a short time without having to wait in line. Besides, they can access the services from anywhere they want. Therefore, these conveniences in service delivery are the reason for preference. In addition, the provision of services is essential to prevent the loss of time for public employees and customers. These services are offered in countries through E-Government channels. The dissemination of e-Government applications provided by countries depends upon the creation and implementation of some basic strategies.

### 1. DIGITAL TRANSFORMATION AND ITS IMPORTANCE

Digitalization is an inevitable technology for today's business world. Making and presenting things with the help of digital technologies bring the producer and the consumer together online. Digitization is the digitization of all work, making it possible to do with digital technologies.

Digitalization is not a simple phenomenon and is one of the prominent trends that can change society and countries in the near and distant future. The literature says digitalization means the usage of digital technologies in all areas of life (Parviainen et al., 2017: 64). The 21st century calls for digitalization, which requires digital transformation, and success can be achieved with the speed of this transformation. We are now moving towards an environment where people can communicate directly with smart everyday objects and, in the meantime, those objects can communicate with each other. Today, thanks to the Internet of Things (IoT) communication network, many objects that do routine work are turned into smart products (Verhoef et al., 2017: 3). Using smart products facilitates human life and ensures that work is done with less time and effort in daily and business life.

Until finding out the significance of digitalization, we often discussed digitalization in terms of E-Commerce. However, digitalization offers a broader perspective, including E-Commerce. Digitalization includes consumer advice on social media and the promotion and acquisition of physical products through digital channels in e-commerce. It also enables online information searches and offline purchases (Hagberg, Sundstrom, and N. Egels-Zandén, 2016: 695). In the modern era, digitalization is not just a phenomenon peculiar to the private sector. It also covers many activities of public institutions. Digital public services are no longer just about exchanging information. Most public services are provided via the digital channel, and online applications for certification are required. In addition, the system also allows video-based meetings with public officials (Lindgren and et al., 2019: 430).

Digitization is the connection supported by all digital technologies, including machines, vehicles, buildings, and the like. Also, it is the grandest force driving today's industrial revolution. Therefore, digitalization is reshaping social life and, accordingly, it entails new ways of organizing and innovating business models. The need for new skills and methods of doing business shows that digitalization creates new varieties and improves business life (Parida, 2018: 3). As a result, we can characterize digitalization as an electronic revolution that emerged in line with the needs of the business world and the age.

## 2. DIGITAL TRANSFORMATION PROCESS

In the changing business world, digital transformation initially grew out of concepts such as need, necessity, and obligation. There is a change in digitalization per se in the modern age. Digital transformation is defined as changes in an organization employing digital technologies, the roles in its working environment, and the way to do business. These changes at various levels could be as follows (Parviainen and et al., 2017:64):

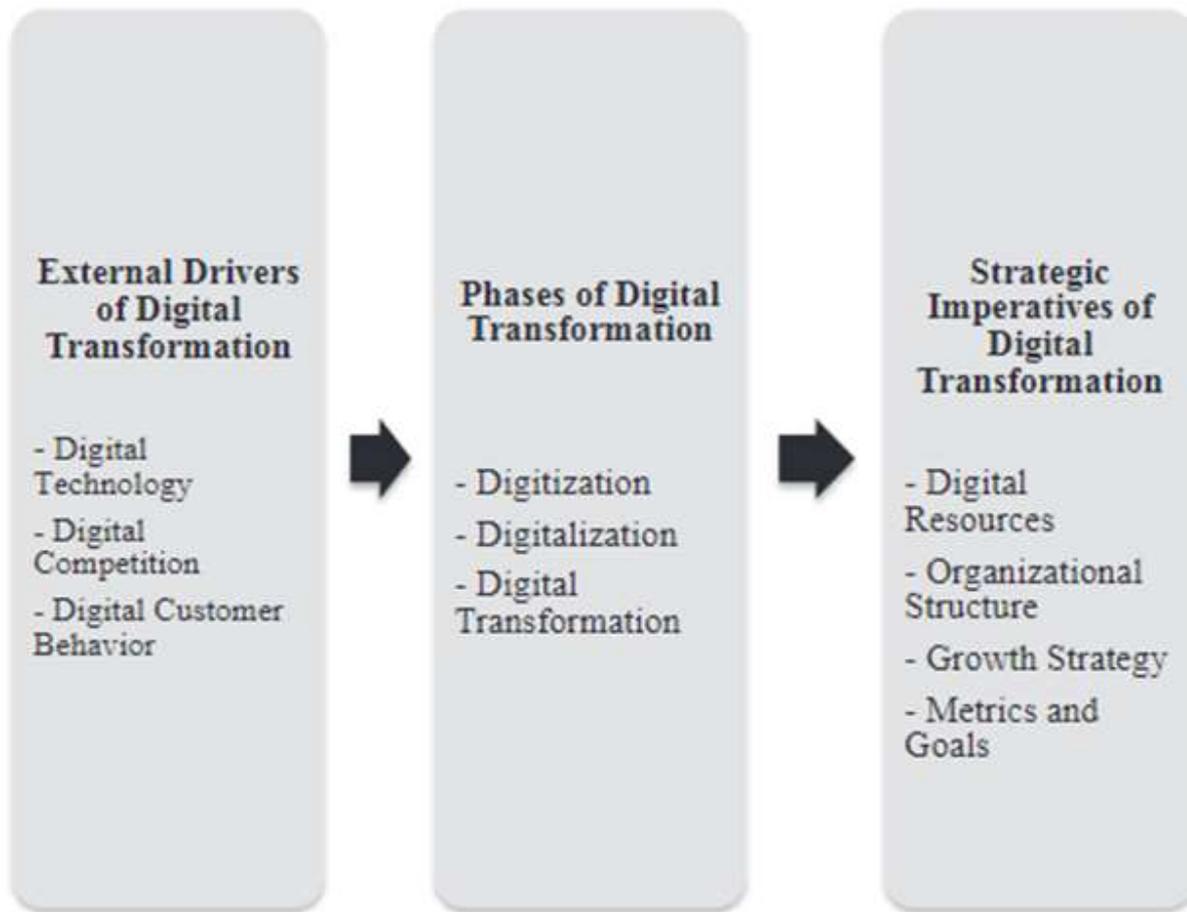
- Process level: At this level, new digital tools are adopted, and processes are streamlined by reducing manual work.

- Organization level: At this level, old practices are abandoned, new products are brought to market, or existing products are introduced in new ways.

- Business area level: At this level, the role of the organization in the ecosystem and the change of value chains come into question.

- Community-level: At this level, new products affect the structure of society.

In the digitalization process, first, information is digitized. Roles and functions in an organization are then digitized. Most importantly, the strategy of the organization is digitized. Each is necessary but not satisfactory because digital transformation requires a broader look (Bloomberg, 2018: 5). Digitization is a comprehensive phenomenon that forces the organization's external environment to change and its internal environment. Digital transformation is a process shown in Figure 1.1 below.

**Figure 1.** Digital Transformation Process

Source: Verhoef and et al., 2021: 890.

External forces, such as competition, technology, and consumer behaviour, influence digital transformation in organizations. Digital transformation starts with digitization. Digitization is the presentation of products presented in physical environments in digital environments. For this, information and communication tools, equipment, and supplies are needed. In addition, the organizational structure and strategy should be geared toward digital transformation, which should focus on the transformation of products, processes, and, ultimately, the organization via new technologies. Digital transformation strategies briefly include changes and effects on products, services, and business models as a whole (Matt, Hess, and Benlian, 2015: 340). Today's business world is influenced by four forces: social networks, mobile devices, cloud computing, and data analytics. These forces are in themselves innovative, and together they are radically transforming business and society. They destroy old business models and create new leaders. The intersection of these forces forms the basis for digital transformation platforms (Schwertner, 2017: 392). Thanks to social networks, information about the organization spreads amongst wide circles. Mobile devices provide fast access to products from anywhere. Thanks to cloud communication, data as stacks are organized and stored. Data analytics help transform data into knowledge.

### **3. DIGITALIZED PUBLIC SERVICES RESEARCH**

#### **3.1. Purpose of the research**

In the research, Denmark's e-government system was analyzed and compared with e-government applications in Turkey. The study shows the importance of the studies conducted in public services where digitalization is underway through the case of Denmark.

This study mainly aims to examine the methods followed by Denmark in achieving success in this field and reveal the aspects that are open to improvement in Turkey's e-Government applications. Another aim of the study is to investigate Denmark's efforts in e-Government applications and to determine the key factors necessary for public institutions on the path of digitalization.

### 3.2. Scope of the research

Within the scope of the research, the applications of Denmark, which was successful in the digitalization process with e-Government applications, were examined. The essential factor in choosing Denmark in the study is that the United Nations (UN) E-Government Development Index ranked this country as the 1st in 2018 and 2020.

Denmark ranked the 1st among 193 countries in the UN E-Government Development Index for two consecutive years. In this context, the steps taken by the country during the digitalization process of public services will be followed. Meanwhile, comparisons will be made with e-Government applications in Turkey. In this way, it will be tried to set an example for the countries making an effort of digitalization. Digitization is a process that supports the fast and easy execution of private and public sector activities that start with digital transformation. In this context, it provides contributions to all stakeholders. In this study, the strategies in Denmark will be evaluated.

### 3.3. Research Method

Case study research design, one of the qualitative research methods, was used in the research. The case study is effective in answering the "why" and "how" questions because these questions reveal the functional connections to be followed over time about the subject being analyzed (Benbasat, Goldstein, and Mead, 1987: 371). In the research, the data on the e-Government applications of Denmark were used. The document analysis method was employed in data collection. Printed and electronic documents were analyzed and reported.

### 3.4. Findings of the Research

Digitization is the most crucial issue of our age. In this study, the UN E-Government Development Index ranking, which shows the success of countries in the digitalization of public services, has been considered. According to this index, Denmark ranked first for two consecutive years in 2018 and 2020. For this reason, the methods, followed by Denmark in e-Government applications, were examined in this study. The study compares the findings with the E-Government application samples in Turkey.

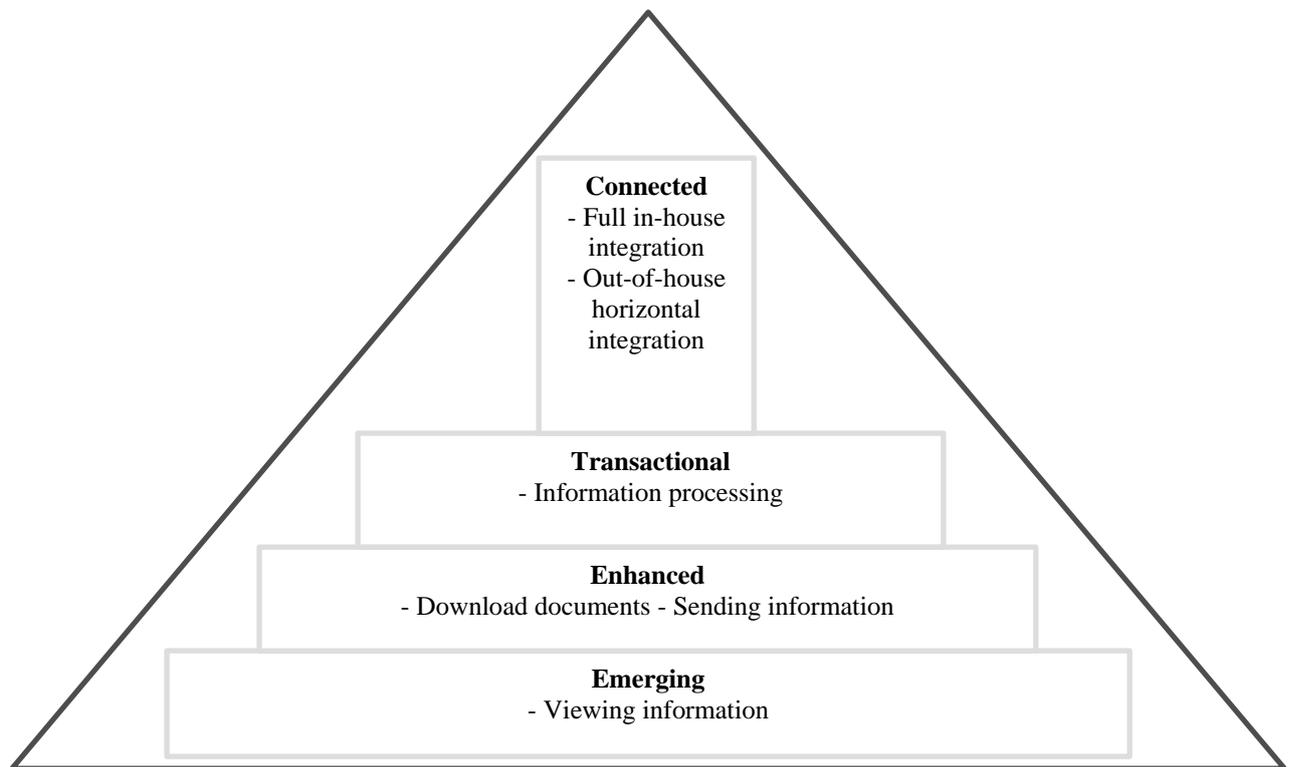
UN E-Government Development Index has been measuring every two years since 2003 to determine the e-Government development level of member countries. The report evaluates the changing trends and success factors of countries in e-Government. In this context, the willingness and capacity to use information and communication technologies in the service delivery of public institutions are measured. The following formula is used in the calculation. The equally-weighted average of these three headings calculates the measurement score. Countries score a total score of 0–1 (<https://dijitalakademi.bilgem.tubitak.gov.tr/bm-e-devlet-gelismislik-endeksi>).

(E-Government Development Index)

EGDI = ( $\frac{1}{3}$  \* Online Service Index)

+ ( $\frac{1}{3}$  \* Telecommunication Infrastructure Index)

+ ( $\frac{1}{3}$  \* Human Resources Index)

**Figure 2.** UN E-Government Maturity Levels

Source: <https://dijitalakademi.bilgem.tubitak.gov.tr/bm-e-devlet-gelismislik-endeksi>.

The first level of UN E-Government maturity level starts with information display in the digital environment. After many stages, it could establish in-house integration and horizontal integration.

Denmark's digitalization effort comprises five stages. The first one is the "Electronic Signature" stage. The first studies on this started with registering everyone living in the country in a central database in 1968, which means citizens could use their digital identities. In this way, they could log into E-Government applications (<https://digitaldenmark>). In Turkey, it is observed that the efforts to realize the E-Government transformation have started since the 1990s (Karasoy and Babaoğlu, 2020: 115). In this regard, the 'Tax Office Full Automation Project' (VEDOP) of the Ministry of Finance in 1998 and the 'Central Population Management System' (MERNIS) projects of the General Directorate of Population and Citizenship Affairs affiliated to the Ministry of Internal Affairs can be considered as starting points (Saylan, 2009: 149). E-Government services, previously granted by government institutions through their corporate web pages, were offered via the "www.turkiye.gov.tr" application as of 18 December 2008 (Şahnagil 2017: 83).

Two approaches form the basis of the Danish government's incorporation of digital concepts into its strategy. First, the digital transformation goals are aligned with the government's overall priorities. That digitalization leads to cost reductions has supported this approach. The second is to assess whether digital programs are performing well regularly and renovate them as conditions change. The dynamic and success of the application also supported this approach (Corydon, Ganesan, and Lundqvist 2016: 3). E-Government applications in Turkey seek to adopt a strategy to eliminate the problems and deficiencies in public administration. Thanks to e-Government

applications, communication problems between citizens and the state are desired to be solved (Çeliksoy, 2020: 720).

In Denmark, it is obligatory to establish communication with the public sector through a service that is called "Digital Mail." Citizens and public institutions interact with each other electronically using secure e-mail rather than sending letters or issuing documents. According to statistics, 91.1% of the Danish population uses Digital Post, and 84% of users are satisfied with the Digital Post service. A digital signature was devised in 2001, and all the public institutions were required to accept incoming e-mails. Besides public institutions, the private sector, like insurance companies and financial institutions, uses Digital Post. Digital Signature established a stepping stone for digital identity in Denmark. In the second stage, "Easy Account" was created in 2004. In this way, an e-Invoice was prepared between public institutions and their suppliers. Many public sectors, especially the health sector, benefit from the e-Invoice service. In the third stage, the cornerstone of the digital infrastructure, the authentication "NemID (Easy ID)," was created in 2007. NemID has replaced the digital signature since 2010. NemID is a widely used secure login on the Internet. Anyone over the age of 15 with a CPR Number in Denmark is eligible for NemID, which can be employed in banks and public institutions. NemID contains a user ID, password, and codes. NemID is mandatory for all people and businesses in Denmark. In the fourth stage, the portal "Borger.dk" (citizen. DK) was started in Denmark in 2007. Through this portal, citizens can access over 2000 self-services. They log on to "Borger.dk" with NemID. According to statistics, 85% of Danes use this service, and 93% of users are fulfilled (<https://digitaldenmark>). Along with this service, we can list other service portals provided by NemID as follows (<https://www.norden.org/en/info-norden/electronic-id-denmark-nemid>):

Digital post from the public sector (e-boks.dk)

- Filling in online forms etc. (borger.dk)
- Applications for study programs (optagelse.dk)
- Tax information (skat.dk)
- Pension information (pensionsinfo.dk)
- Health information (sundhed.dk)

In the fifth stage, laws supported digitalization studies. On November 1, 2014, the Danish Parliament passed a law requiring digital mail for all businesses and citizens over 15, meaning they must get services by Digital Mail from public authorities (<https://digitaldenmark>). However, citizens were exempted from using digital self-service solutions if it was determined that they did not have access to or could not use digital technologies. These laws have been implemented along with several new technological infrastructures. E-Government Technology of the country is based upon the idea that citizens should solve their administrative problems using self-service platforms (Schou and Hjelholt, 2018: 516).

The first e-Government studies conducted in Turkey are "e-Turkey" and "e-transformation Turkey" carried out by the State Planning Organization. With these projects, Turkey determined information technology strategies in the public sector for the first time and tried to provide coordination between institutions (Koç, 2010: 14). In Turkey, e-Government applications essentially took place in four stages. The first stage is to include the information on the institutions' web pages and then introduce them to the customers. The second stage is the provision of several services online, the third stage is the provision of a single government portal, providing all services from a single source therein. The fourth stage is the emergence of new services, supported online, which provide convenience to customers (Çelen, Çelik, and Seferoğlu, 2011: 60). First, the Law on protecting Personal Data was enacted concerning e-Government applications in Turkey. Second, the

Law on the Regulation of Electronic Commerce was enacted. Third, with an article added to the Electronic Communications Law, additional duties regarding cyber security were given to the Information Technologies and Communications Authority, and a Cyber Security Board was organized (On Birinci Kalkınma Planı (2019- 2023), 2018: 18). There is no law mandating digital public services.

We can discuss today's Turkey e-Government applications in twelve categories. These are as follows (<https://www.turkiye.gov.tr>):

- General Information (services used to verify the documents of institutions without logging into the system)
- Justice
- Health
- Traffic and Transportation
- Environment, Agriculture and Livestock
- Security
- Social Security and Insurance
- Taxes, Fees, and Penalties
- State and Legislation
- Business and Career
- Complaint and information acquisition
- Education
- Personal Information
- Telecommunications

The rate of internet access from home in Turkey is 92.0%, according to 2021 data. The usage rate of e-Government services (in the twelve months covering April 2020 and March 2021) is 58.9%. In using e-government services, obtaining information from websites belonging to public institutions or organizations took the first place at a rate of 55.8% (<https://data.tuik.gov.tr>).

Denmark is far ahead in digitalization, making it a remarkable and unusual case considering this transformation (Krøtel, 2021: 133). 94% of Danish people have internet access at home, and 89% use the Internet every day. The participation rate in e-Government applications is 60%, even for people having no digital education or low education. In Denmark, 88% of citizens interact digitally with public authorities at least once a year (<https://digitaldenmark>). The Danish government encourages the public to use e-Government applications. For instance, internet banking is widely used in Denmark because of a clear economic incentive, such as no interbank fees. The Danish government provides four kinds of incentives to businesses and individuals using E-Government services: convenience, speed, accuracy, and economic efficiency (Igari, 2014: 118).

In Denmark, the national digitalization strategy that supports e-Government applications was established in 1996. It is one of the first national digitalization strategies globally and has been revised several times over the years. In addition, the laws of the country promote these strategies. We can list the main gains of Denmark thanks to digitalization as follows (<https://digitaldenmark>):

1. The digitization in Denmark saves 296 million euros every year.
2. It reduced the processing time of ministries in Denmark by 30%.

3. Transparency in bureaus and organizations has increased by 96% with digitalization.

To sum up, we can say that digitalization in countries has such benefits as speed, time, space, transparency, and its contribution to the economy.

## CONCLUSION AND RECOMMENDATIONS

In the 21st century world, information technologies allow many businesses to be conducted easily. This situation requiring digital transformation has attracted the attention of the public sector and the private sector. In this way, bureaucratic tasks that used to take a long time can be fulfilled in a short time with less effort. Long queues in public institutions are avoided, and customers can access the service from anywhere they want. Thus, many negative factors such as traffic density, air pollution, environmental pollution, and the transmission of infectious diseases are prevented. Products can be presented safely in the digital environment by public institutions, and their usage rate in digital environments is an indicator of digitalization. The digital transformation of societies and organizations achieves the digitization of countries. In this context, the laws of a country should support digital transformation, along with the strategy, technological infrastructure, and equipment.

In the study, the applications of Denmark and Turkey explain what is necessary to do for digital transformation in public institutions. In this context, we can list the requirements for the development of E-Government applications of countries in three main headings:

1. A digital identity, including the use of digital signatures, should be created for the citizens and organizations of the country.
2. It should be compulsory to maintain communication with public institutions in an electronic environment and support citizens in this regard (providing training, placing electronic devices in specific centers and accessing the E-Government from there, etc.).
3. Laws must support E-Government applications.

E-Government applications, which are very important in digitalization, are sought to be developed in every country. Many factors affect the success of countries in this area. First, a knowledge-based infrastructure should be established in this regard. After that, the services offered should be constantly updated within the framework of needs. All citizens should have easy access to the system, and if necessary, access centers like bank ATMs should be installed. The benefits of digital transformation should be considered, and laws should support digitalization.

## REFERENCES

- Benbasat, I., Goldstein, D. K., & Mead, M. (1987). The case research strategy in studies of information systems. *MIS Quarterly*, 369-386.
- Bloomberg, J. (2018). Digitization, digitalization, and digital transformation: confuse them at your peril. *Forbes*. Retrieved on August 28, 2019.
- Corydon, B., V. Ganesan, and M. Lundqvist. (2016). *Transforming Government through Digitization*. McKinsey & Company.
- Çelen, F. K., Çelik, A., & Seferoğlu, S. S. (2011). Türkiye'deki e-devlet uygulamalarının değerlendirilmesi. *Akademik Bilişim Dergisi, İnönü Üniversitesi, Malatya, Türkiye (9-1):(2011)*.

- Çeliksoy, E. Türkiye’de Kamu Yönetiminde Halkla İlişkiler ve E-Devlet. *21. Yüzyılda Eğitim Ve Toplum Eğitim Bilimleri Ve Sosyal Araştırmalar Dergisi*, 9(27), 709-728.
- Digital Denmark. Erişim adresi: <https://digitaldenmark> (02.09.2021)
- Dijital Akademi. Erişim adresi: <https://dijitalakademi.bilgem.tubitak.gov.tr/bm-e-devlet-gelismislik-endeksi> (03.09.2021).
- E- Devlet Kapısı Devletin Kısayolu, Erişim adresi: <https://www.turkiye.gov.tr> (07.10.2021).
- Electronic ID in Denmark – NemID. Erişim adresi: <https://www.norden.org/en/info-norden/electronic-id-denmark-nemid>.
- Hagberg, J., Sundstrom, M., & Egels-Zandén, N. (2016). The digitalization of retailing: an exploratory framework. *International Journal of Retail & Distribution Management*, 44 (7), 694-712.
- Igari, N. (2014). How to successfully promote ICT usage: A comparative analysis of Denmark and Japan. *Telematics and Informatics*, 31(1), 115-125.
- Karasoy, H., & Babaoğlu, P. Türkiye’de Elektronik Devletten Dijital Devlete Doğru. *Karadeniz Sosyal Bilimler Dergisi*, 12(23), 397-416.
- Koç, F. (2010). Türkiye’de E- Devlet Uygulamaları: Sağlık Bakanlığı Örneği. İnönü Üniversitesi SOSYAL BİLİMLER ENSTİTÜSÜ Yüksek Lisans Tezi
- Krøtel, S. M. (2021). Digital Communication of Public Service Information and its Effect on Citizens’ Perception of Received Information. *International Journal of Public Administration*, 44(2), 132-145.
- Lindgren, I., Madsen, C. Ø. Hofmann, S., Melin, U. (2019). Close encounters of the digital kind: A research agenda for the digitalization of public services. *Government Information Quarterly*, 36(3), 427-436.
- Matt, C., Hess, T., & Benlian, A. (2015). Digital transformation strategies. *Business & information systems engineering*, 57(5), 339-343.
- On Birinci Kalkınma Planı (2019- 2023) E- Devlet Hizmetlerinin Geliştirilmesi. (2018): 18
- Parida V. (2018) Digitalization. In: Addressing Social Challenges, eds. Frishammar, J., Ericsson A., 23-38
- Parviainen, P., Tihinen, M., Kääriäinen, J., Teppola, S. (2017). We are tackling the Digitalization Challenge: How to Benefit from Digitalization in Practice. *International Journal of Information Systems and Project Management*, 5(1), 63-77, doi: 10.12821/ijispm.
- Saylan, İ. (2009). İnternet: Demokrasiye Açılan Kapı? Türkiye ve İtalya Örnekleri Çerçevesinde E-devlet Uygulamaları. *Amme İdaresi Dergisi*, 42 (3), 141-162.
- Schou, J., & Hjelholt, M. (2018). Digital citizenship and neo-liberalization: governing digital citizens in Denmark. *Citizenship Studies*, 22(5), 507-522.
- Schwertner, K. (2017). Digital transformation of business. *Trakia Journal of Sciences*, 15(1), 388-393.
- Şahnagil, Sinem, (2017), “Kamu Politikası Oluşturma Sürecinde Bilgi ve İletişim Teknolojileri: E-Devlet Uygulamaları”, *Mersin Üniversitesi Sosyal Bilimler Enstitüsü e-Dergi*, I(1): 77-89.
- T.C. Cumhurbaşkanlığı Strateji ve Bütçe Başkanlığı. On Birinci Kalkınma Planı (2019-2023). Ankara. 2018. (<https://www.sbb.gov.tr/wp-content/uploads/2020/04/e-DevletCalismaGrubuRaporu.pdf>). p.18. Erişim Tarihi: 07.10.2021.

Türkiye İstatistik Kurumu, Erişim adresi: <https://data.tuik.gov.tr> (07.10.2021).

Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Dong, J. Q., Fabian, N., & Haenlein, M. (2021). Digital transformation: A multidisciplinary reflection and research agenda. *Journal of Business Research*, 122, 889-901.

Verhoef, P. C., Stephen, A. T., Kannan, P. K., Luo, X., Abhishek, V., Andrews, M., ... Zhang, Y. (2017). Consumer connectivity in a complex, technology-enabled, and mobile-oriented world with smart products. *Journal of Interactive Marketing*, 40, 1-8. <https://doi.org/10.1016/j.intmar.2017.06.001>.