



# The Covid-19 Pandemic and Digitalization in Financial Markets

## Covid-19 Salgını ve Finansal Piyasalarda Dijitalleşme

Yeşim ŞENDUR<sup>1</sup> 

### ABSTRACT

The COVID-19 pandemic, which began in China at the end of 2019, quickly spread worldwide. Since the emergence of the coronavirus (Covid-19), all countries have faced unprecedented challenges in many areas such as health, the economy, supply chains, and finance. In addition to all these problems caused by the pandemic, it has accelerated digitalization in many areas and has led to new global trends. One of the areas affected by the acceleration of digital transformation is the financial markets. The development of technologies such as Big Data, Cloud Computing, the Internet of Things (IoT), Artificial Intelligence (AI), Super Computing, Blockchain, and Virtual Reality (VR) has a crucial role in increasing digitalization. This article examines how Covid-19, which affects the whole world, accelerates digitalization in financial markets. According to the research results, digitalization, in other words, the dehumanization of work and processes, has become a top priority for companies during the Covid-19 pandemic. The rapid increase in digital payment systems and the increasing investments of businesses in technological infrastructure and cybersecurity are just a few of the changes that Covid-19 has accelerated in the financial markets.

**Keywords:** Financial markets, Covid-19, Digitalization

**JEL Sınıflaması:** D53, G10

### ÖZ

2019 yılının sonunda Çin’de başlayan COVID-19 pandemisi hızla tüm dünyaya yayılmıştır. Covid-19’un ortaya çıkmasıyla birlikte tüm ülkeler sağlık, ekonomi, tedarik zinciri ve finans gibi birçok alanda benzeri görülmemiş zorluklarla karşı karşıya kalmıştır. Salgın yol açtığı tüm bu problemlerin yanı sıra birçok alanda dijitalleşmeyi hızlandırarak yeni küresel trendlere yol açmıştır. Dijital dönüşümdeki ivmeden etkilenen alanlardan biri de finansal piyasalardır. Finansal piyasalarda dijitalleşme pandemiden önce de var olan bir olgudur. Büyük Veri, Bulut Bilişim, Nesnelerin İnterneti (IoT), Yapay Zekâ (AI), Süper Bilgi İşlem, Blok Zinciri ve Sanal Gerçeklik (VR) gibi teknolojilerin gelişmesinin artan dijitalleşmede önemli bir payı vardır. Bu çalışmada, tüm dünyayı etkisi altına alan



DOI: 10.26650/ISTJCON2022-1127590

<sup>1</sup>Dr. Öğr. Üyesi, İzmir Kâtip Çelebi Üniversitesi, İİBF, Uluslararası Ticaret ve İşletmecilik, İzmir, Türkiye

ORCID: Y.Ş. 0000-0003-4695-2181

### Corresponding author:

Yeşim ŞENDUR,  
İzmir Kâtip Çelebi Üniversitesi, İİBF, Uluslararası  
Ticaret ve İşletmecilik, İzmir, Türkiye  
**E-mail:** ysendur@hotmail.com

**Submitted:** 07.06.2022

**Accepted:** 03.10.2022

**Citation:** Sendur, Y. (2022). The covid-19 pandemic and digitalization in financial markets. *Istanbul İktisat Dergisi - Istanbul Journal of Economics*, 72(2), 1025-1038. <https://doi.org/10.26650/ISTJCON2022-1127590>



Covid-19'un finansal piyasalarda dijitalleşmeyi nasıl hızlandırdığı ele alınacaktır. Araştırma sonuçlarına göre dijitalleşme, diğer bir deyişle iş ve süreçlerin insansız hale getirilmesi, Covid-19 salgını sırasında şirketler için en öncelikli konu haline gelmiştir. Dijital ödeme sistemlerinin kullanımında hızlı artış

ve işletmelerin teknolojik altyapı ve siber güvenliğe artan yatırımları, Covid-19'un finansal piyasalarda hızlandırdığı değişikliklerden bazılarıdır.

**Anahtar kelimeler:** Finansal piyasalar, Covid-19, Dijitalleşme

**JEL Classification:** D53, G10

## 1. Introduction

The coronavirus disease (Covid-19) that erupted in Wuhan in China in December 2019 spread rapidly across the world. Globally, as of May 20, 2022, there have been "521,920,560" confirmed cases of Coronavirus Disease (COVID-19), including "6,274,323" deaths, reported to the World Health Organization ([www.covid19.who.int](http://www.covid19.who.int)). As can be seen from the figures, the contagiousness of the coronavirus is relatively high, and the virus is lethal. The Covid-19 crisis has changed the way of doing business all over the world and has led to various risks. Some of the risks that have emerged in the financial markets during the COVID-19 pandemic are as follows ([www.fintechistanbul.org](http://www.fintechistanbul.org)): 1. Rapid digitalization in payment systems, 2. Increasing volume of freely printed currencies, 3. Rapid growth in digital assets (Cryptocurrencies and others), 4. Increasing indebtedness rates of countries, companies, and individuals, 5. Increasing cyber-attacks risk, 6. Data leakage, 7. Interruptions in the operations of some businesses.

The pandemic has also expedited the digitalization trend. According to recent statistics, in the wake of the pandemic, internet traffic grew by 60% from December 2019 to May 2020, with videoconference traffic increasing by 120% over pre-pandemic levels (Soto-Acosta, 2020, p.260). As connecting to the internet becomes more accessible and affordable with each passing day, digitalization is increasing rapidly in all areas of life. The proliferation of public wireless hotspots and high-speed internet networks also plays a critical role. Financial markets are one of the areas that have been impacted by the rapid pace of the digital revolution, but it should be known that the increase of digitalization in the financial industry existed before the pandemic. It has been accepted that the digitalization of financial services started with the arrival of the FinTech era in 1987 (Theiri and Alareeni, 2021, p.3). The acceleration of digitalization in financial markets after Covid-19 has increased the number of FinTech start-ups that offer unique, niche, and personalized services and has made them stand out from the competition with traditional financial institutions. Google, Apple, Facebook, and Amazon (GAFA), also have an essential role in the digital transformation of

financial markets. Traditional banks must restructure themselves to compete with –GAFA– their digital competitors.

FinTech, which is formed by the combination of finance and technology concepts, can be defined as innovative business models that shorten the process of financial services or increase the quality of these services, or which ultimately introduce new financial products or services into our lives (Usta and Doğantekin, 2019, p.55). The financial services industry uses financial technologies (FinTech) to offer new solutions to existing customers and expand its customer base. With the development of these new technologies, new services that have never been offered to people in payment, savings, risk management, and investment advice have begun to be presented (Kahraman, 2020, p.31). In addition, financial institutions such as banks and insurers are affected by the financial solutions of FinTech companies. The break-out of the Covid-10 pandemic has increased the necessity and the use of new technologies in finance. Like all other institutions, financial institutions have had to make technological investments in digital platforms, remote access, alternative communication channels, and security to ensure the continuity of their services. Increasing customer demand for the digital channels of financial institutions, especially banks, required improvements in the capacity of digital platforms. In addition, they had to find alternative digital service channels for customers to promote new products and services (Covid-19's Impact on Technology and Security, 2020). During the pandemic, digital banking via the internet and mobile systems has become increasingly crucial for banks' service marketing, especially as client demand for digital financial services grows. Because of the changing dynamics of banking, their performance is no longer primarily based on branch sales (Mbama, 2018, p.1).

In the remainder of this study, the effect of the Covid-19 pandemic on the digitalization of financial markets will be discussed in different aspects. The structure of this paper is as follows. A literature review on the changes and new trends in the financial sector during the Covid-19 days will be included in Section 2. Section 3 considers the effect of the Covid-19 pandemic on the digitalization of financial markets in different aspects. Finally, the conclusion contains a summary of the impact of the virus on the digitalization of the financial sector.

## 2. Literature Review

Theiri and Alareeni (2021) attempted to investigate the effects of digital transformation on the Tunisian banking system during the pandemic. They used the information acquired from the literature to create a survey. The survey findings administered to the CEOs and operational service managers of Tunisian banks show that the COVID-19 pandemic has become an unstoppable catalyst in the digitization of societies. Therefore, companies should include digitalization in their short and long-term strategic plans because it is necessary for them to be innovative and ensure sustainable development. According to Ba and Bai (2020), the Covid-19 pandemic could catalyse rapid growth in China's digital economy. New business forms, such as online offices, education, medical care, games, and fresh e-commerce, have emerged quickly to compensate for the losses in the traditional economy. The pandemic has expanded the number of Chinese households with access to the internet. Companies were 'forced' to adapt to digital management and implement telecommuting systems. The government should use digital technologies to focus on 'digital governance'. They mentioned that it's not just happening in China but across the world. Moreover, the pandemic has accelerated the digital transformation of traditional tertiary industry enterprises, and the impact on the tertiary industry appears irreversible. The pandemic has increased the share of contactless transactions, becoming a significant test for commercial banks, and further accelerating the digital transition of traditional financial institutions. Moreover, the proliferation of digital finance and supply chain finance was key to a rapid recovery. As a result, the Covid-19 pandemic has accelerated the transition to a digital economy and financial innovation in China. Soto-Acosta (2020) offers specific insights into if and how the COVID-19 pandemic speeds up digital transformation in businesses. In the context of the COVID-19 pandemic, the study also gives information regarding the differences between digital transformation and digital change. Digital transformation is more than just using technology to make a business shift. The term "digital transformation" refers to digital technologies to drive significant changes in a company's business model. Companies do not have to relinquish their existing business models. The COVID-19 pandemic has boosted digital transformation to prevent total economic disaster. Moreover, it is (and will

continue to be) a driver for the emergence of digital start-ups. Established businesses are now undergoing digital transformations to keep up with the new normal and cope with competitors. Petersen and Bluth (2020) investigated significant shifts in the megatrends of globalization and digitalization due to Covid-19. They foresaw two things that would become particularly important in megatrends: economic digitization, which the Covid-19 pandemic has hastened, and a reduction in the span of global value creation chains. The economic impact of the Covid-19 pandemic can motivate businesses to embrace digital technologies more effectively. They also suggest that companies using digital technology can gain a competitive advantage by spending more on robotics, machines, and software. Additionally, countries' innovation capabilities have become a key resilience factor due to the Covid-19 crisis. Native skills in technologies such as artificial intelligence, 5G, and blockchain will become even more vital in rising digitization. In their study, Moşteanu, Faccia, Cavaliere and Bhatia (2020) discussed the changes in the supply and demand of banking services due to the socio-financial devastation caused by the pandemic. Operating online financial services, notably payments, has been frequent during these social distance constraints. As of April 2020, 35% of banking customers used internet banking more frequently than in the pre-coronavirus era, while 30% of customers used their mobile banking app more regularly. The world has understood that digital finance and digital banking is a system that has brought efficiency not only to banks or financial institutions but also to individuals and businesses during the quarantine period. It is anticipated that all banks and financial organizations will soon only provide digital services. According to Farahani, Esfahani, Moghaddam, and Ramezani (2022), FinTech and AI significantly reduce COVID-19's negative consequences. In this period, digitalization has played an important role in limiting the spread of the disease and saving lives in general. Covid-19 has caused various difficulties in payment systems in high-risk industries such as restaurants due to quarantines at the beginning. But after a while, the pandemic led to an explosion in e-commerce. Moreover, Covid-19 has paved the way for the realization of identity verification in financial services in a virtual environment. In addition, the pandemic has led to the spread of hybrid advisory services in asset management companies, and robot advisors have been involved in the process. Digital services that offer virtual home tours in the real estate market have also emerged because of

the pandemic. Virtual assistants and chatbots have also been activated to improve services and maintain social distance, thanks to artificial intelligence. AI has also been used to predict new outbreaks during the pandemic process. Finally, it has also contributed to the emergence of new tools for rapidly diagnosing the disease.

As the number of transactions carried out from bank branches decreased with the increasing financial digitalization after Covid 19, the number of personnel working in the branches also decreased.

### **3. The effect of the Covid-19 Pandemic on the Digitalization of Financial Markets**

The outbreak of Covid-19 has pushed top finance managers and other top managers to reconsider how they do business. Technological developments such as Big Data, Cloud Computing, the Internet of Things (IoT), Artificial Intelligence (AI), Super Computing, Blockchain, and Virtual Reality (VR) led to digital transformation in financial markets. In the Covid-19 process, businesses' first and most crucial agenda has been digitalization, defined as the dehumanization of work and processes. The use of digital platforms for financial services has become widespread at all levels of society. Due to increases in the use of digital channels in financial services, increasing digital competencies has gained strategic importance for all companies and countries. As a result, financial institutions have had to restructure themselves to continue their operations. By developing their digital platforms, facilitating remote access to financial services, and offering new alternative communication channels to their customers, they have tried to provide financial assistance quickly and continuously (www.technologyreview.com, 2020). With the shift of financial services to digital channels, the efficiency and creativity of financial services have increased. Moreover, financial services have become easily accessible to everyone anywhere and anytime (Schmidt and Cohen, 2013, p.8).

As more people join the online economy, extensive and varied amounts of big data accumulate. According to The Economist magazine, data is now the most valuable resource globally, overtaking oil (Dec 4, 2017). If the current pace of

technological development maintains, financial institutions that want to develop successful digital business models should be able to process the data they have in the best way and access new data fast when necessary (Ba and Bai, 2020, p.345). Thanks to big data, it has been easier to provide personalized financial services to customers during the pandemic. In addition, the open data approach, which can be defined as data that can be freely used, changed, and shared by any person for a specific purpose, has become widespread due to Covid-19. Therefore, digital identity solutions developed to popularize the open data approach have also increased during the pandemic. Some institutions are trying to get a share of the rapidly expanding digital identity market. A digital identity solution, which allows individuals to share their verified ID information with third parties, will be used in steps such as opening an account, making payments, or age verification. Open banking, which enables banking transactions to be made with access to the infrastructure of only a particular bank, will further the services offered by internet banking and mobile banking. The Application Programming Interface (API), which is used for open banking, was created to enable us to use the functions of one application in another application. Covid-19 is also expected to increase the need for "open banking" services that allow customers to view their financial data in more than one bank or financial institution on a single screen at the same time (www.pwc.com.tr, 2020).

Payment systems ensure that the money traffic between the buyer and the seller is carried out safely and quickly while at the same time recording these transactions. Credit cards have been the primary tool of payment systems for a long time. However, the real breaking point in card payments was experienced with the introduction of the first electronic POS terminal, which enables online transaction confirmation. In addition, alternative payment service providers have started to take the stage in the last decade, especially on e-commerce sites. The main element shaping the payments ecosystem today is digital transformation. There are many innovations caused by digital transformation in payment systems, such as digital wallets and digital currencies (www.bkm.com.tr, 2020). Non-bank digital money and payment institutions are permanently increasing their access to financial solutions previously used only by banks. Today banks are not the only



participants in payment systems. Payments organizations also serve other organizations such as FinTech and retailers. Covid-19 has accelerated the transition of payment transactions to digital channels. Money transfer over the internet is referred to as a digital payment system. Digital payment systems can be classified as remittance, electronic funds transfer (eft), card payment systems, swift, digital wallets, electronic checks, digital coins, etc. Digital payments can be made with debit or credit cards, crypto money, and online banking. Electronic devices such as mobile phones, tablets, and computers are tools that allow digital payments to be made easily. From grocery shopping to banking transactions, all needs in daily life began to be met with mobile phones because of the pandemic. In addition, consumers are increasingly purchasing from online merchants compared to the pre-pandemic period.

Scientific research has revealed that the coronavirus can spread through cash and coins. In addition, the fact that PIN pads and credit card terminals created a suitable environment for transmission accelerated the transition to digital payment systems in many countries. Digital payments, which are the instruments that use a digital medium, rather than, e.g., cash or cheques, to authorize or receive payment, have reached a substantial volume. As a kind of digital payment, contactless payments are now prevalent in several countries that do not require a PIN for small transactions (Auer, Cornelli, and Frost, 2020, p.1-4). Besides this, authorities, banks, and card networks have recently set higher transaction limits for contactless and mobile payments and have cut the fees for payment services. Additionally, they have tried to provide more user-friendly payment systems for their customers. Digital wallets or other smartphone-based payment interfaces (QR codes) that enable contactless payments are also an excellent way to deal with the recent challenges posed by COVID-19. Moreover, online payment services, which are safe in terms of the spread of the virus, have started to take the stage, especially on e-commerce sites. Besides this, regulators' awareness of the importance of national payment solutions has increased. In addition, domestic payment institutions are developing new QR-based payment solutions (Natarajan and Guirado, 2021, p.4). Covid-19 has also accelerated the efforts of central banks to create a digital currency. For example, after the coronavirus, the Chinese

government decided to accelerate the transition to the DCEP digital currency, which started its work in 2014. In addition, the number of crypto money-based digital debit cards is increasing rapidly due to the pandemic. The importance of blockchain technology, which can be defined as a digitalized decentralized ledger that collects, stores, distributes, and facilitates value exchange between private or public users, has increased even more after Covid-19 (Grima, Spiteri and Romanova,2020, p.2). Bitcoin is the most common and well-known product of blockchain technology. A system that allows instant money transfers to anywhere in the world without any intermediaries created this digital currency.

Bitcoin is used more and more every day as a means of payment. Apart from Bitcoin, other digital currencies have also appeared on the scene and continue to emerge. For example, digital asset custody provider Bakkt, the cryptocurrency trading platform created by the Intercontinental Exchange (ICE), launched its digital wallet mid-this year and tested Bitcoin payments at Starbucks in Denver (Crawley, 2021). Likewise, Amazon started to use new biometric palm print scanners. Customers can pay for goods in some stores by waving their palm prints over one scanner. A contactless scanning of your palm prints to pay for goods during a pandemic seems good. According to the predictions made by Juniper Research, the number of contactless payments, which was \$ 1.7 trillion in 2020, would increase to \$ 2.5 trillion in 2021. This amount's share of card payments would be 79% (<https://www.nfcw.com>).

Today, customers do not want to enter bank branches or other financial institutions for fear of catching the coronavirus. The pandemic forced banks to accelerate using FinTech to improve relevant processes, move more businesses online, and reduce the frequency of users going to branches (Ba and Bai,2020, p.345). According to Juniper Research, it is predicted that the number of people using digital banking services in 2021 will be 2.5 billion, and which will increase to 4.2 billion in 5 years. Thus, 53% of the world's population will access digital banking services by 2026 ([www.juniperresearch.com](http://www.juniperresearch.com)). The rapidly increasing digitalization resulting from the pandemic has also changed the priorities and strategies of banks. Individual attitudes and opinions towards new financial trends

after Covid-19 also need to be carefully analyzed and understood by financial institutions. For example, banks should diversify their service areas according to changing customer behavior and offer unique opportunities by segmenting their customers according to new criteria. As a result of COVID-19, the change in risk perceptions and investment preferences of individual/corporate customers and financial institutions will cause changes in funding structure and cost. To help alleviate the supply shortage, digital solutions can be used to combat worker absences due to illness. Digital technologies significantly increase productivity while also lowering costs (Petersen and Bluth, 2020, p.3).

In this period, there are actions that banks need to take to manage their balance sheets more efficiently. Moreover, increasing robotization and automation due to the pandemic will cause more job losses in banking than in the past. Robo-advisors are defined as financial advisors who provide financial advice or investment management online with moderate to minimal human intervention. Robo-advisors will become widespread soon with the impact of the pandemic. Furthermore, investment advice and virtual assistants will become more commonplace through ChatBot, Artificial Intelligence, and Natural Language Processors (NLP). In addition, buying/selling transactions with machines will become widespread. All these are expected to have a reducing effect on the costs of financial institutions and businesses.

#### **4. Conclusion**

In the past ten years, technological developments in Big Data, Cloud Computing, the Internet of Things (IoT), Artificial Intelligence (AI), Super Computing, Blockchain, and Virtual Reality (VR) have fundamentally transformed how people conduct business. As a result, existing traditional business models are being supported by more and more new digital business models. Digital transformation can be defined as the incorporation of modern technologies into an organization's processes and strategies to achieve business goals, such as improving productivity or increasing operational flexibility. For example, financial technologies have become widespread during the Covid-19 outbreak. Financial

technologies make financial services more accessible by connecting customers to a digital world. Due to the pandemic, traditional working methods were adjusted to fast digitalization, and automating manual processes has become a top priority for companies. Thus, the way financial transactions are carried out has also changed significantly, and new business models have emerged in the financial sector. Additionally, existing traditional business models have been supplemented by new digital ones.

Increasing investments in information technologies and digitalization in the last ten years of businesses in some countries have made it easier for them to adapt to the new working models imposed by the pandemic. Furthermore, the pandemic brought anti-globalization and increased the importance of countries' self-sufficiency. The old working and learning techniques have changed to reflect rapid digitization. With the onset of the pandemic, automating manual processes has become a top priority for companies. In the aftermath of Covid-19, there are even more reasons to step into the era of intelligent automation as soon as possible. The share and importance of digital payments in national economies have increased during the pandemic. People's payment behaviors have changed, and digital payment systems have become widespread. The possibility of cash spreading the virus has driven people to use contactless payment. The financial sector has increasingly adopted location-independent operations and automated business processes. Financial companies that want to make remote working easier have launched many digital transformation projects, like in other industries. Businesses are seeking solutions that will keep their employees motivated while working remotely these days. Although teleworking-enabling digital technologies were previously available, the pandemic accelerated their adoption and usage in the financial sector. The number of virtual meetings has increased rapidly. The outbreak of Covid-19 has pushed top finance managers and senior managers to reconsider how they do business. Nowadays, many financial institution services are offered remotely online rather than in person. Financial institutions are adapting to the needs of new consumers by rethinking their operational structure, including digital technology. Finally, the existence of a very detailed business continuity plan has become mandatory or all companies to cope with such crises that erupt suddenly.

**Peer-review:** Externally peer-reviewed.

**Conflict of Interest:** The author has no conflict of interest to declare.

**Grant Support:** The author declared that this study has received no financial support.

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