

**THE IMPACT OF COVID-19 PANDEMIC PROCESS
ON DIGITAL PAYMENT SYSTEM: THE CASE OF TURKEY**

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ABSTRACT

Covid-19 pandemic process is the biggest threats to the global economy and financial markets. It has result in an inevitable result in the use of digital technologies due to the nationwide lockdowns and social distancing norms. New ways of work and life have occurred by people and organizations all over the world. Furthermore, the Covid-19 pandemic has showed that increased volume of online-contactless payment and e-commerce in the world. Therefore, this study aims to has handled the impact of Covid-19 pandemic process on financial banking system. In this paper has been focused on analyzing the digital payment system's response to the Covid-19 pandemic process by showing developments of debit and credit card payment amount from 2019 to 2020 and also to find a causality linked between GDP and credit card spending. The findings have showed that the Granger causality test runs one-way from GDP to credit card and no other second way causality among them.

Keywords: Covid-19, Coronavirus, Pandemic, Digital Payment System, Credit-card Spending.

INTRODUCTION

In Covid-19 pandemic process has become a global intervention and its effects on which is being discussed positive and negative conversions to be realized in Turkey. All sectors in the economy were not affected equally from this process. Therefore, several measures have taken with lockdown in all over the world. In this process economic disruption has become inevitable and large or small businesses have lived a fall in activity. On the other hand, financial sector has begun to live some difficulties. The financial view of the digital payments sector is no different for worldwide in economic growth expected. During pandemic process has resulted in unprecedented public concerns with cash payments. Most notably, there are considerable differences cross-country in these concerns. There is a valuable study has been written by Zhang et al (2020). They implied that Covid-19 pandemic has result in rising in global financial market risk.

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Health professionals have warned individuals to stay at home as much as possible and maintain the social distance to prevent the transmission of the disease. That's why, in the course of Covid-19 pandemic most people have started to use the internet and digital-based services to communicate, interact, and provide with their job responsibilities from home because of the lockdown. Due to the declaration of lockdown and isolation of countries, customer preferences have changed, and online shopping applications has increased. E-commerce has recorded an increase in new and active users since the first week of March 2020. In addition, the Covid-19 pandemic significantly leads to change on consumer behavior and reshapes the industry. This will cause to enhance in a new behavioral habit. The changing in usage behavior has been affected to new information systems and networks which is provided for educational mobility and economic mobility.

During and post the pandemic the information technology usage has been improved and provided services in digital payment system. In recent years, digital transformation technologies; digital wallet and digital currencies, contactless payment concepts have emerged as an alternative to traditional currencies. These digital systems have provided that allow anyone to enroll and have a digital wallet or payment system, in order to send and receive payments online. In this process, internet searches have been reached to the highest number about to both "cash" and "virus" terms. Therefore, this period has showed the important development of technology, it called as "Blockchain Technology" which is supplied an opportunity to create secure and trusted information control mechanisms (Upadhyay, 2020).

Covid-19 pandemic has been started to effect economic, financial, social, psychological issues all over the world. Due to this effecting new habits, new lifestyle and new technologies have occurred. In this paper has focused on the importance role of digital payments, digital coins and credit cards during this period. As known that the main objectives of the digital payment systems are; ensuring efficiency in interbank fund transfers, minimizing the risk of payment, ease of fund management and giving the banking system an opportunity to offer new services can be counted. The aim of this study is to describe which digital payment systems have been paid attention in the scientific literature and to investigate credit card spending impact on the struggle with the Covid-19 pandemic. In this purpose, this study has showed that the development of total debit and credit cards number, card payment amount, online card payment amount and also sectoral share of online card payments which are taken from Interbank Card Center (ICC) last one year. On the other side, whether of this pandemic period has any effecting on the decrease in the GDP of Turkey or not. Therefore, this study has used the Granger causality test in analyzing the impact of credit cards spending on the movement of GDP from 2016 to 2020.

1. BACKGROUND OF DIGITAL PAYMENT SYSTEM

During pandemic process, digital technology and digital payment system can solve many challenges, thus improving daily life. Many people have been voluntarily staying at home in Covid-19 pandemic process. At same time they have worked at home, and digital technologies have helped them to cope with social distancing. In Turkey all regions have implemented lockdowns during the pandemic process. The Covid-19 pandemic has result in rising demand for the using digital services by individuals, businesses, and governments. However, speed of digital services depends on their cost and efficiency. Likewise, another important issue is that it depends on a country's digital infrastructure and adaption of it. The pandemic has caused huge impact on real economic activity. This process has been showed many changes in people's food purchasing and consumption behavior due to the lockdown and social isolation (De and et.al, 2020). Therefore, to understand food purchasing behavior is certainly explanatory for consumers' behavior and habits during this period.

The adaptation on this period has vastly provided for the growth of digital payment system. Most of the store or groceries have closed during the lock-down, and they have started to turn as online shopping. It has provided for widespread online payment in banking sector.

Covid-19 pandemic measures had divided two effects on the economy into two groups. One is effects of restrictions on economic activities and the other is effects of changes in expectations and behavior that are possible to evaluate for all countries. In the second effect has showed that many people lived 'panic buying' on their consumption behavior. Therefore, there has been lived an explosion for online shopping and delivery systems. These systems provided for easy access for payments providers and customers. The demand for digital banking services are likely to increase because of taken precautions in time for pandemic process. This has caused increase to online-credit card spending and digital currencies. Due to adopting digital currencies, it has been into universal payments solutions instead of traditional currency. Clearly, it has forced to transformation from cashes to digital payment systems. In Covid-19 pandemic process, digital payment system has offered new opportunity to ensure business and commerce continuity. This system has an important role of characteristics such as security, reliability, efficiency, convertibility, flexibility, interoperability. Since the beginning of period, using and relying on digital payments, currencies, coins and their services to purchase goods and services has been increasingly in all sectors.

The increasing importance of digital technology has come into prominence with the impact of any changes in consumers' expectations and behavior during the pandemic process. This study focuses on the pandemic process has increased the adoption of digital payment networks notably. Although many economies have at different stages of development across the world, the technological diffusion has forced people to change their shopping habits in favor of online shopping and e-commerce. Therefore, this has provided for development of digital payment networks such as new digital currencies or new using credit cards and widespread online shopping which they have opened to use.

1.1. DIGITAL CURRENCIES

Digital payments networks and digital currencies are possible to have an importance role in the pre and post-pandemic process. As an alternative tool digital currency have several advantages for contact-less. Considering the contactless payment methods that has reduced the risk of spreading viruses; Blockchain-based cryptocurrencies, which are famous for their credit cards, bank transfers, electronic wallets and digital value transfer methods have got importance. It is reported by healthcare professionals that if credit cards, which are the most used payment method after banknotes, are hand-picked and used by entering a password through the panel, the materials have the potential to spread viruses at least as much as banknotes. Technologically another method commonly has used in developed countries is to make purchases through mobile wallet applications such as Venmo, PayPal, Cash App, Android Pay or Apple Pay, which has been used via mobile devices. Therefore, any likely an increasing on digital currencies, have been provided on new insights into traditional currencies. This system needs to be encouraged by governments.

During the pandemic process, two different insights have been developed by. One is advocated that coins and banknotes could be carried the virus. As such, it claimed that digital currencies would be preferred to 'dirty money' (Gardner, 2020: 427; Samantha, 2020). Each service has carried as online. Therefore, this has caused to encouraging households and customers to make digital payment. Second is in this process governments from all countries have enabled to access the payment apps and modes. For instance, Lihui Li, ex-president of the Chinese state bank, has accelerated the launch of the digital currency Electronic DCEP (Digital Currency Electronic Payment), which has been worked on for some time due to the epidemic and is known as a digital version of the national currency of China, Yuan and also they argued that it should be used instead of physical cash. Digital currencies have easy transformation, accessibility and reliability is the most properties of the diffusion of digital payment technology.

1.2. CREDIT CARDS

Credit card is known as the modern system of payment, which has to a large extent alter the traditional forms of payment by cash (Meifang, Y. and et.al. 2018: 200). The spread of the Covid-19 pandemic and expanding social isolation affected the banking sector in economy. As many banks have diverted their customers to digital opportunities due to coronavirus epidemic, the share of transactions from branches in total banking transactions decreased to single digits. While the share of transactions has made from branches decreased with the call of banks to "use digital opportunities" to their customers, the share of digital payment has been increased. Digital payment system which banks have been investing for the years, have been popular in pandemic days. Banks, which prioritize the health of both branch employees and customers, can perform many banking transactions safely and quickly through alternative distribution channels without going to the branch.

The spread of Covid-19 has changed individual's consuming and payment habits. In this process, new financial opportunities have been started to use by customers. Most people adopted an idea that is to choose contactless payment methods by their debit cards. In addition, these payment methods show that the economy of the cashless economy is the most suitable model for health as well as the practicality of a cashless economy. In this context, it is mentioned with a contactless payment by debit cards that it is easy to open an account in a few seconds to customers and a practical payment service that can be carried anywhere by mobile phone.

During this period, in Turkey the cash withdrawal rate from ATMs fell by 14 percent compared to last year. The interest in contactless payment has increased 3 times. Besides, 5 million credit cards had been opened in new online shopping for the first time, while 2 million new cards were used for the first time (ICC, 2020). In addition, mobile usage has been significantly increased by shopping habits.

2. THE RISING OF ONLINE SHOPPING

A rapid rising of e-commerce and interaction worldwide enabled conversions in consumers' shopping habits. E-commerce volume in Turkey increased to 31.5 billion TL, retail foreign operations (holiday-travel and online legal betting) have announced as 28.4 billion TL. Turkey's growth trend has continued as 42% (Deloitte & Digital TUSIAD, 2019).

During Covid-19 pandemic period, people have turned to online shopping with people staying at their homes and shopping malls being closed, and many products have consumed in traditional markets. According to the Interbank Card Center (ICC) data, online card payments reached to 6.4 billion TL in the first 11 days of March (ICC, 2020). When this period has compared with March 2019, it has been observed that the panic situation during the Covid-19 process has also increased in the contactless payments, while the total payment on a monthly basis had around 28 million TL. Due to the Covid-19 pandemic, some fears have been occurred such as staying foodless. Therefore, many people have turned to contactless payment and these situations have increased to individual's demand of shopping.

Online shopping has several advantages and disadvantages. Especially it brings to customers easy communication and access to products and information. If they do not have enough information, they will search through online channels such as online catalogs, websites, or search engines (Laudon and Traver, 2009: 11). On the other hand, when customers have enough information, they want to match alternatively chosen some products or services. In this point, they have prefer looking for the product reviews or customer comments. Therefore, some applications have been helpful for online shopping websites that can be focused onto easier and safer for the customers (Bashir and et.al, 2015: 3). According to Wang et al, (2005: 330) customers looks for convenience which is one of the major factors for online shopping willingness.

E-commerce websites have announced that brands' discounts and campaigns to their customers much more comfortably. For instance, many mails are sent to their e-mail addresses as an advertisement service. In addition, these advertisements have made on social media, and more, attract attention of online shopping lovers during the day. An application method from USA by installing a new version on its largest retailer application right away, it has enabled its customers to pay in the store without touching a screen or password reader. Afterwards, it had stated that the customer could be sent by e-mail so that the customer does not receive a paper receipt. Another application method has been coming from the Central Bank in some countries. They announced that they have been working on digital currencies. First example from in China has started to see a visual of a wallet of digital currency. South Korea has started a similar study as a pilot application. Therefore, with the rising of online-contactless payment and digital currencies, the aim of this paper to understand the effects of Covid-19 process on consumer's demand, behaviors and habits, have been evaluated the availability using for debit and credit cards in case of Turkey.

3. THE IMPACT OF COVID-19 PANDEMIC PROCESS ON DIGITAL PAYMENT SYSTEM: THE CASE OF TURKEY

The major effect of pandemic process has concluded a falling in the GDP of Turkey. But the banking services have declared as an essential service therefore, it has exempted from the lockdown process. Banking services in Turkey has allowed working in the duration of lockdown with keep in mind rules of it. The social distance is another important issue for this process therefore, banking sector has also committed with the rule. However, in banking sector had started to give services with online and tele-banking methods. So, finally in this paper has been examined the impact of Covid-19 pandemic on financial banking by showing developments of debit and credit card numbers, developments of card payment amount from 2019 to 2020 in May, development of online card payment amount and sectoral share of online card payments.

3.1. DATA AND METHODOLOGY

According to the data announced by the Interbank Card Center (ICC), have broken a record in the number of debit card payments and contactless payments. While online payments have become an indispensable part of our lives, they have been preferred more in the electronics and apparel industries. The number of sectors with online card payments has increased 1.5 times of last year. This study aims to show statistically bank card and credit card payments by comparing with last two years. In addition, given some information on online payment and its share among sectors which have provided in tables.

The methodological objective of the study is to analyses the impact of the credit card spending on economic growth. In this study has been used the Granger causality test in analyzing the impact of credit cards spending on the movement of GDP. The data for the study has collected for the period of Jan. 2016 - April 2020 from the World bank website as monthly.

After taking data, causality hypothesis had established between dependent and independent variables by using E-Views 10. The Granger causality test determines whether changes in a variable will have an impact on changes other variables. For this purpose, the Granger (1969) has modified with linear Granger causality tests had employed.

Table 1: Developments of Cards Number

Number of Cards	2019 May	2020 May	Percentage
Debit Card	154,6	171,3	%11
Credit Card	67,8	71,4	%5
Total	222,4	242,7	%9

Source: Interbank Card Center (ICC), 2020 May.

Table 1 shows that developments of debit card and credit card numbers between two years. The Interbank Card Center (ICC) has released on May 2020 data. According to ICC data, at the end of May, a total of 242.7 million cards have found in Turkey, of which 71.4 million credit card and debit card consists of the 171.3 million units. Compared to May 2019, the number of credit cards increased by 5 percent annually and the number of debit cards increased by 11 percent annually.

Table 2: Developments of Card Payment Amount

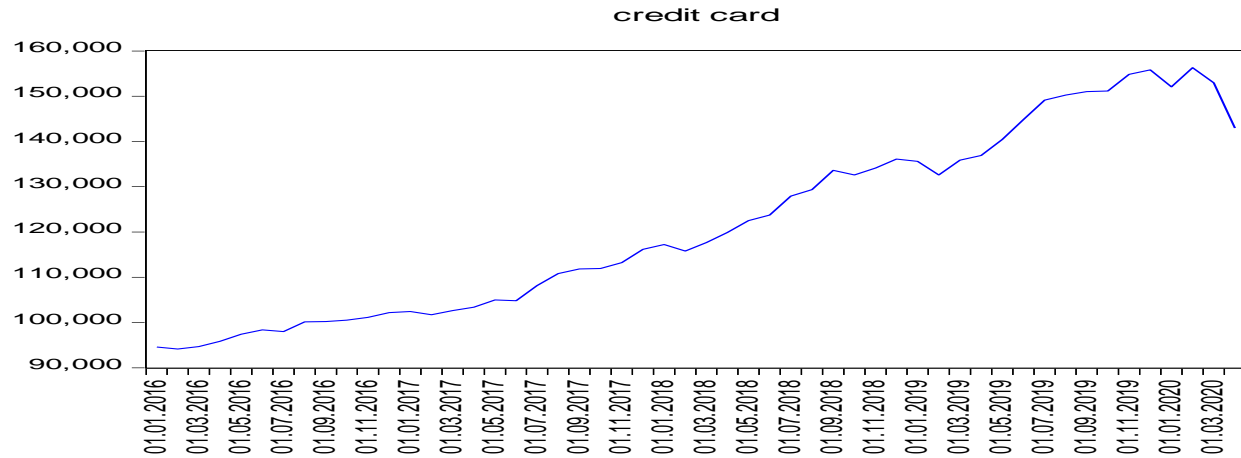
Cards Payment Amount	2019 May	2020 May	Percentage
Debit Card	10,9	12,9	%19
Credit Card	73,2	63,3	-%13
Total	84,1	76,2	-%9

Source: Interbank Card Center (ICC), 2020 May.

Table 2 shows that developments of debit card and credit card payment amount between two years. According to ICC data, a total of 76.2 billion TL card payments have made in May. Also, 63.3 billion TL of this amount consisted of payments made with credit cards, and 12.9 billion TL consisted of payments have made with debit cards. Accordingly, the amount of payments has made with credit cards decreased by 13 percent compared to the same month of the previous year, while the amount of payments has made with debit cards grew by 19 percent annually.

In Figure 1 has showed that credit card spending in monthly data between 2016 and 2020. Credit card spending, which has continuously increased since 2016, decreased in the first three months of 2020. This situation has put forward that individuals switch their choices towards to online-contactless debit card payment options during this pandemic process.

Figure 1: Credit Card Spending



Source: Author's compilation from E-views

Table 3 shows that development of online card payment amount and its share of total card payments between May 2019 and May 2020.

Table 3: Development of Online Card Payment Amount

Internet-Cards Payment Amount	2019 May	2020 May	Percentage
Card Payment Amount from Internet	16,8	19,1	% 14
Share of Total Card Payments	%18,9	%25,2	

Source: Interbank Card Center (ICC), 2020 May.

In recent years, information technology has started providing from online platforms. This has occurred to accessibility and availability issue an in-country issue. In the pandemic process, consumption habits and spending methods have changed due to lockdown to home. The rising online card payments have become more widespread and more important in this period as payment tool.

In May, the amount of online card payments has increased by 14 percent compared to the same period of last year and have reached 19 billion TL. Thus, in May, a record level has reached in online card payments. The share of online card payments in total card payments have also broken a record and exceeded 25 percent.

Table 4: Sectoral Share of Online Card Payments

Sectoral Share of Online Card Payments	2019 May	2020 May
Electronic Stuff	%43	%70
Clothing and Accessories	%14	%42
Education / Stationery	%14	%30
Furniture and Decoration	%11	%24
Food Sector	%4	%12

Source: Interbank Card Center (ICC), 2020 May.

Table 4 shows that sectoral share of online card payments between May 2019 and May 2020. The share of sectors has announced that the share of online card payments in total card payments in May has occurred in the sectors which with the most intense online shopping transformation had “electronic goods” and “clothing” sectors. In the same period of last year, the share of card payments from the internet, which was 43 percent in the "electronic goods" sector, increased to 70 percent in May 2020, from 14 percent to 42 percent in the "clothing and accessories" sector, and in the "education / stationery" sector. It has increased from 14 percent to 30 percent, from 11 percent to 24 percent in the "furniture and decoration" industry, and from 4 percent to 12 percent in the "food" industry. It has among the sectors in which has preferred the most by year.

3.2. FINDINGS

Have been used the Granger causality test in analyzing the impact of credit cards spending on the movement of GDP. Therefore, credit card spending data and GDP data has been collected for the period of Jan. 2016 - April 2020 from the World bank website as monthly. The results of the augmented Dickey-Fuller (ADF) test are shown in the table below.

Table 5: Unit Root Tests of Model Variables at Level and First Difference

	Null Hypothesis: CREDIT_CARD has a unit root	Null Hypothesis: D(CREDIT_CARD) has a unit root	Null Hypothesis: GDP has a unit root	Null Hypothesis: D(GDP) has a unit root
Augmented Dickey-Fuller test statistic	-1.438115	-4.418368	-2.951701	-3.074613
Prob.*	0.5559	0.0009	0.4366	0.0001
Test critical values				
1% level	-3.574446	-3.568308	-3.568308	-3.568308
5% level	-2.923780	-2.921175	-2.921175	-2.921175
10% level	-2.599925	-2.598551	-2.598551	-2.598551

* ADF test with intercept and trend for respectively 1%, 5% and 10% significance level.

The results of ADF unit root tests have reported in Table 5 indicates that all the series are not stationary in level. However, all these series have stationary in first difference with intercept and trend. This validates the application of Granger causality testing in the present context. The results of the Ganger causality test for credit cards spending on the movement of GDP and vice versa are shown in following table.

Table 6: Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.*
CREDIT_CARD does not Granger Cause GDP	34	-14.3102	1.0000
GDP does not Granger Cause CREDIT_CARD		5.68352	0.0083

*Probability values compared at 1%, 5% and 10% significance level.

Table 6 shows it cannot reject the hypothesis that credit card does not Granger cause to GDP, however it does reject the hypothesis that GDP does not Granger cause Credit card. Therefore, this has appeared that the Granger causality test runs one-way from GDP to Credit card and not the other way.

RESULTS

The ongoing development of internet technology and the rapid spread of this development in the global world have affected the consumer habits and cultures of consumers. When this process has been compared with the previous year, all figures are taken as basis in Turkey and it is seen that increased volume of online-contactless payment and e-commerce in the world. Likewise, transactions have become important all bank accounts and credit or debit cards for users during the pandemic process. In lockdown period, many people have showed panic buying in daily life.

From early evidence collected various findings. In addition, historical comparisons have done with prior epidemics. They have used some simulations techniques and surveys of businesses and households. At the end, these studies have been decided that the spread of pandemic is having an unprecedented negative impact on the current and future prospects of individuals, households and businesses.

In this study has handled advancing digital payment systems and credit card spending in Turkey. There is a rise in online shopping in the Turkey in pandemic period, however, need to be searched for spending patterns per person. In order to continue rising of the buying products online, customer satisfaction should be ensured for all the products and services. While important rising on digital currencies, at the same time spending of online payments has increased, especially for debit cards and contactless payments. Taken from Interbank Card Center some figures about individuals' perception and choices are related to use debit or credit card spending based on sector. In this period, they have been preferred more in the electronics and apparel industries. The number of sectors with online card payments has increased 1.5 times of last year. In May, the amount of online card payments increased by 14 percent compared to the same period of last year. On the other side, generally the major effect of pandemic process is the decrease in the GDP of Turkey. Another effect, the panic buying in the food sector has been caused the spending to increase. In this lockdown period, all banking sector has given services as online or tele-banking. Therefore, this study has come up with the impact of credit cards spending on the movement of GDP. At the end, handled findings showed that the Granger causality test runs one-way from GDP to Credit card and no other second way causality among them. GDP is an effective factor on credit card spending. As the per capita income increases, the demand power and spending of individuals have increased.

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