



Digital Banking During the COVID-19 Era in Türkiye

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ABSTRACT

The COVID-19 pandemic, which began in early 2020 in Wuhan, China, and spread around the world, created a serious impact on the personal and business life for all. While individuals tried to protect themselves from the pandemic and continue their lives, businesses also tried to cope with the change in individual consumer behaviour. This study analyses the digital banking usage trends in Türkiye, focusing on the COVID-19 pandemic period, between January 2020 and June 2022, under the precautions imposed by the government, such as lockdowns, curfews, and public access limitations on businesses, using available quarterly transaction and usage data on virtual credit cards, mail order and phone payments, contactless cards, domestic credit cards, number of credit and bank cards, digital banking, internet banking, and mobile banking. Research findings suggest that while internet and digital banking usage increased, significant changes have been observed in contactless card, virtual credit card transactions, indicating a shift in user preference in banking during the pandemic period, either voluntarily or with the effects of the restrictions and intention to realize their transactions distancing themselves from the crowds.

Keywords: Digital Banking, COVID-19, Pandemic

Covid-19 Döneminde Türkiye’de Dijital Bankacılık

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Öz

2020 yılının başlarında Çin'in Wuhan kentinde ortaya çıkarak tüm dünyaya yayılan Covid-19 pandemisi, herkesin özel ve iş hayatını ciddi şekilde etkiledi. Bireyler kendilerini pandemiden koruyarak yaşamlarına devam etmeye çalışırken, işletmeler bireysel tüketici davranışlarındaki değişime ayak uydurmaya çalıştı. Bu çalışma, Türkiye'deki dijital bankacılık kullanım eğilimlerini, Ocak 2020 ile Haziran 2022 arasındaki Covid-19 pandemisi dönemine odaklanarak, devletin uyguladığı sokağa çıkma kısıtlamaları, sokağa çıkma yasakları ve işletmelere toplu erişim kısıtlamaları gibi önlemler kapsamında sanal kredi kartları, mail order ve telefon ödemeleri, temassız kartlar, yerli kredi ve banka kartı adetleri, dijital bankacılık, internet bankacılığı ve mobil bankacılık ile ilgili üç aylık işlem ve kullanımı için mevcut verileri kullanarak analiz etmektedir. Araştırma bulguları, internet ve dijital bankacılık kullanımı artarken, temassız kart, sanal kredi kartı işlemlerinde önemli değişiklikler gözlemlendiğini ve pandemi döneminde ister gönüllü olarak ister kısıtlamaların etkisiyle ve gerçekleştirme niyetiyle bankacılıkta kullanıcı tercihinde bir kaymaya işaret ettiğini gösteriyor.

Anahtar Kelimeler: Dijital Bankacılık, Covid-19, Pandemi

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Introduction

Illness has been associated with life and humanity has been haunted by disease and endeavoured to fight with it the best way available since the early recorded history. Man considered epidemics as divine punishments on humanity and could be avoided by pleasing the gods (Rosen, 2015).

The COVID-19 pandemic was a turning point for the world, creating a disruptive change in our social, political, and economic lives for good. Non-essential businesses, restaurants, shopping centres, schools were closed. National and international travel restrictions were imposed, borders among countries were closed. All these actions were taken to control the spread of the virus and the pandemic worldwide. Technology, once again, was available for the help of the humankind to ease the burden of restrictions in place. The fear of the pandemic caused people to stay indoors and limit their interaction with other people and change the way of doing business.

Rapid technological advances, especially the Internet, have reshaped all aspects of our lives from the way we communicate to the way we do business, in the past several years. One thing led to another and we were amazed with the new products, concepts and services which not only affected individuals but businesses as well. While businesses could provide an online shopping experience, banks did not stay indifferent to the technological advances and introduced banking services through the Internet such as the internet and telephone banking, which enable the banks to provide continuous service for all banking products and services such as; opening bank accounts, current and saving account transactions, carrying out investments, bill payments, managing loans, making both domestic and international transfers without the need of a visit to a bank branch.

The purpose of this study is to look into the changes in consumer usage of digital banking products during and shortly after the Covid-19 pandemic, focusing on the quarterly change in selective digital banking products.

Literature Review

Digital Banking a Background

The traditional Banking landscape, once dominated by imposing marble halls and rigid schedules, is undergoing a seismic shift. This transformation, aptly described as a “digital disruption” by Vives (2019), stems not from a singular event but a potent confluence of forces. Technological advancements, particularly the rise of smartphones and secure online platforms, have provided the tools for a more accessible and mobile financial experience. Simultaneously, shifting consumer preferences fueled by a relentless desire for convenience and instant gratification have demanded a change. This demand is further amplified by an evolving regulatory landscape and intensifying competition within the Banking industry itself, where players are actively pursuing operational efficiency and a competitive edge (Laukkanen, 2007; Grabner-Krauter & Faullant, 2008)

Technological progress, evolving Customer expectations, and industry pressures has ignited a digital revolution in the

financial sector. The physical constraints of brick-and-mortar branches and restrictive operating hours are dissolving, replaced by a ubiquitous and personalized digital Banking ecosystem. Banking industry went through serious changes since the invention of first Automated Teller Machine (ATM) in mid 1970s by Citibank in United States of America (Sarel & Marmorstein, 2003). From contactless payments and mobile Banking applications to Artificial Intelligence (AI) powered financial assistants, the once opaque world of finance has become instantly responsive, readily accessible, and tailored to individual needs. This digital transformation revolutionized how we interact with money and execute financial transactions (Huang & Rust, 2018).

Rapid development of new technologies such as the internet, smartphones, tablets; technology companies increasing their activities for financial services through innovation, competition or collaboration with financial institutions other than banks are forcing banks to evaluate the way they operate. The expectations from customers who are different from the customers 10 years ago and use the internet, heavily rely on smartphones and wearables to make the best use of popular content (Dasho, Meka, Baholli, 2016). Today banks feel the pressure to consider digital banking part of their strategy instead of another distribution channel.

COVID-19 Pandemic around the world and in Türkiye

Severe acute respiratory syndrome coronavirus-2 (SARS-Cov-2 / Covid-19) was discovered in Wuhan city in China on 12, December 2019 (Zhou et al., 2020). World Health Organization (WHO) declared a Public Health Emergency of International Concern on January 30, 2020 and as pandemic on March 11, 2020 (WHO, Coronavirus disease pandemic, 2023). The Covid-19 pandemic spread all over the world infecting 756,581,850 people and causing 6,844,267 deaths globally as of February 21, 2023 (Who Coronavirus Dashboard, 2023).

In Türkiye, Ministry of Health announced the observation of the first Covid-19 case on March 10, 2020 implementing rapid measures for public health such as the temporary closure of schools and providing education through the internet or television as “emergency distance learning, postponing football games. In addition to these Turkish government also limited flights as well as issuing support packages with tax liabilities, financial loan supports to decrease the economic effects of the pandemic, and closure of mosques for daily prayers implementing a “new normal” for the individuals and businesses in the country (Bekçi, Köse and Aksoy, 2020; Yaylak, 2022) as well as putting the hospitality sector on a halt.

The first death from Covid-19 in Türkiye was observed on March 17, 2020 and restrictions for individuals over 65 years old with chronic diseases such as hypertension, diabetes, chronic respiratory diseases and cancer who were considered to be under high risk. The curfew restrictions for 20 years, implemented on April 3, 2020 were extended for individuals below the age of 18 years. Further curfews were imposed in 30 metropolitan municipalities and Zonguldak starting from April 11, 2020 until 5th June 2020 (Soylu, 2020). Initial steps for normalisation were taken at the beginning of June 2020.

Countries have adopted varying strategies to combat the pandemic. Nevertheless, numerous industries, including hotels, restaurants, and travel, have been adversely impacted due to the shifting consumer behavior prompted by global restrictions. Research suggests that individuals changed their consumption habits and an increase in card spending in the early days of Covid-19 has been observed with the stockpiling of priority goods for households and a substantial decrease mainly in travel, entertainment and restaurant spending, however a relative increase in grocery spending (Baker, Bloom and et al., 2020). Chen, Qian and Wen (2020) observed a similar trend in China with a severe decrease in dining, entertainment and travel spending by individuals. In Taiwan, Chang and Meyerhoefer (2020) observed an increase in the number of cases that led to an increase in online shopping services in Taiwan. Chronopoulos, Lukas and Wilson (2020) suggest that a strong increase in grocery spending “consistent with panic buying” was observed in the United Kingdom.

Methodology

Although there are several definitions of digital bankings in the literature such as internet banking, mobile banking etc., for the purpose of this study scope of digital banking covered includes the following:

1. Internet Banking: customers can carry out their banking transactions via the internet (Martins, Oliveira, Popovic, 2014) using computers or tablets.
2. Mobile/phone banking: Mobile banking is a service or product offered by financial institutions that makes use of portable devices (Tam and Oliveira, 2017) such as mobile phones, smart phones or tablets. Telephone banking allows customer transactions to be processed via telephones (Mbama, Ezepeue, Alboul and Beer, 2018) using their phone keypads.
3. Automated Teller Machines (ATM); customers can realize cash withdrawals, deposit cash, balance inquiries, bill payments, and other financial and non-financial transactions without getting in touch with a bank employee (Sardana and Singhanian, 2018).
4. Point of Sale (PoS) machines; businesses use to process credit card & bank card payments made by their customers.
5. Virtual cards; are credit cards without a physical form linked to users' ordinary cards which they can cancel or change their spending limit on anytime through their banking application. The main difference of the virtual cards is the high-level of security provided to the customer, since they can change the number and limit of the card depending on their usage needs or cancel anytime in case they are suspicious of fraud, without affecting the original card.
6. Mail order: customers can make payments for their purchases of goods and/or services without visiting the sellers' premises, with an instruction sent by mail, post, telephone or fax providing the required information to the seller or the service provider (YKB, 2023), using their credit cards.
7. Credit and Bank Cards (plastic cards); they are issued by banks for their customers to simplify the payment processes at PoS providing easy access to credit for the purchase and realizing various pre-defined financial transactions (Sardana and Singhanian, 2018).
8. Contactless cards; contactless cards (tap and go) are actually a feature provided for credit and bank cards enabling them to be used for purchases at PoS by just touching the physical card to the PoS, without the need to enter the user pin and make the payment. They usually have pre-defined limits per transaction for security reasons. They were introduced in Türkiye and Europe as well in 2006 through an agreement made between Garanti BBVA and Mastercard to encourage users to use their Bonus credit cards for small payments, under a feature they named Trink” (Garanti BBVA, 2006). Data are gathered under the following headings:
 - a. Number and amount of Virtual PoS (Point of Sales) – (Virtual credit card) transactions which cover online credit card and mail order transactions without the need for physical POS machines used by Internet retailers or business owners.
 - b. Mail order transactions (Credit Cards, Bank Cards and prepaid cards)
 - c. Number of contactless card transactions and usage amount in Turkish Lira (TL)
 - d. Number of domestic bank cards and amount of transactions (cash withdrawal and spending) in TL
 - e. Number of domestic credit cards and amount of transactions (cash withdrawal and spending)
 - f. Number of credit cards, bank cards, PoS machines and Automated Teller Machines
 - g. Digital banking transactions – Internet, mobile banking users
 - h. Internet banking usage data
 - i. Mobile banking usage data

Data for items 7-9 are derived from the website of The Banks Association of Türkiye, established in 1958 under the Banks Act. Some of the data were available on a monthly basis while some others on a quarterly basis. Data for items 1-6 are compiled from the Interbank Card Center (ICC), which is a partnership of 13 public and private Turkish banks, established in 1990 “for the purpose of providing solutions to the common problems and developing the rules and standards of credit and debit cards in Türkiye, within the card payment system (BKM, 2023).

In order to create unity in the presentation and interpretation, all data is put in a quarterly format. Months representing quarters are as follows:

 - Q1 – January, February, March
 - Q2 – April, May, June
 - Q3 – July, August, September
 - Q4 – October, November, December

Every quarter abbreviation is followed by the year such as “Q1-2019, Q4-2021” representing the year to which the quarter belongs. Quarterly changes with respect to previous quarters and years are calculated and presented in the findings.

Findings

Virtual credit card transactions

The number of transactions realised by virtual credit cards increased from 176,555,913 to 463,580,697 representing a 162.57% increase from Q1-2020 to Q2-2022. During the same period the number of transactions increased from 53,528 million TL to 232,494 with a 342.61% increase.

While the number of transactions presented a continuous increase on a quarterly basis with the highest increases observed in Q4-2021, Q4-2020 and Q3-2020 followed by Q2-2021 as 22.40%, 19.21%, 18.26% and 17.96% respectively. The lowest quarterly changes are observed in Q1-2022, Q3-2022, Q1-2021 and Q2-2020 as 0.36%, 3.04%, 4.53% and 7.97% respectively. Only a decrease on a quarterly basis is observed in Q1-2020 with respect to Q4-2019 (Table 1).

The number of mail order/phone payment transactions realised during the research period

fluctuated significantly. The highest quarterly increase was observed in Q3-2020 (14.80%), while the highest decreases were observed in Q2-2020 (11.96%), Q3-2021 (10.31%) and in Q1-2022 (7.35%). Although the number of transactions fluctuated, the number of transactions increased on a quarterly basis, during the research period except Q2-2020 in which a negative value is observed (-9.85%). The highest quarterly increase observed in Q3-2022 (40.34%), Q4-2021 (25.31%) Q3-2020 (24.96%) and Q3-2021 (18.32%). While the number of transactions of the number of mail order/phone payment transactions increased 3.74% and the amount of transactions 168.61% on annual basis from the end of Q4-2019 until Q2-2022 (Table 2).

The number and amount of mail order/phone payment transactions increased 3.74% and 168.61% respectively, from Q1-2020 and Q2-2022, presenting a significant increase in the transaction amount, although the number of transactions did not increase significantly.

Table 1: Virtual Card Transactions

Period	Quantity	Quarterly Change in quantity %	Amount (million TL)	Quarterly Change in amount %
Q4 - 2019	176,555,913		52,528	
Q1 - 2020	173,999,121	-1.45	51,312	-2.32
Q2 - 2020	187,873,124	7.97	55,297	7.77
Q3 - 2020	222,186,362	18.26	72,277	30.71
Q4 - 2020	264,871,798	19.21	81,465	12.71
Q1 - 2021	276,864,291	4.53	85,838	5.37
Q2 - 2021	326,582,217	17.96	102,367	19.26
Q3 - 2021	336,519,672	3.04	116,597	13.90
Q4 - 2021	411,910,896	22.40	149,526	28.24
Q1 - 2022	413,413,900	0.36	169,014	13.03
Q2 - 2022	463,580,697	12.13	232,494	37.56

Source: Derived from the Banks of Türkiye Association (BTA, 2023) (Q1=January, February, March; Q2=April, May, June; Q3=July, August, September; Q4=October, November, December)

Mail order and phone payments

Table 2: Mail Order/Phone Payments

Period	Quantity	Quarterly Change in quantity %	Amount (Million TL)	Quarterly Change in amount %
Q4 - 2019	40,636,528		24,020	
Q1 - 2020	40,078,662	-1.37	24,004	-0.07
Q2 - 2020	35,287,102	-11.96	21,640	-9.85
Q3 - 2020	40,508,994	14.80	27,042	24.96
Q4 - 2020	40,438,013	-0.18	28,088	3.87
Q1 - 2021	41,311,759	2.16	28,502	1.47
Q2 - 2021	40,950,163	-0.88	30,423	6.74
Q3 - 2021	45,172,823	-10.31	35,997	18.32
Q4 - 2021	46,796,520	3.59	45,108	25.31
Q1 - 2022	43,355,439	-7.35	45,974	1.92
Q2 - 2022	42,155,978	-2.77	64,520	40.34

Source: Derived from the Banks of Türkiye Association (BTA, 2023). (Q1=January, February, March; Q2=April, May, June; Q3=July, August, September; Q4=October, November, December)

Contactless Card Transactions

Contactless card users realize payments of their purchases with the touch of their cards to the PoS machines thus they do not need to enter their PIN (Personal Identification Number) minimizing physical contact. The total number of contactless credit cards, bank cards, number of contactless card transactions and Turkish Lira amount of total contactless card usage increased 66.59%, 196.77%, 809.74 and 3,322.60% respectively from Q4-2019 to Q2-2022. The increase in the number of contactless card transactions (809.74%) and Turkish Lira amount processed (3,322.60%) are significant indicators for the usage preference shift towards contactless card usage (Table 3).

The number of domestic shopping transactions with bank cards decreased in the first two quarters of the research period as -3.44% (Q1-2020) and -16.12% (Q2-2020), may be due to the pandemic restrictions such as working from home and curfews executed. The amount of transactions showed limited increases during this time. It can be argued that the reason for the decrease in the number of transactions and a minor

increase in the amount of bank card usage for shopping can be linked to the pandemic restrictions such as working from home, curfews, the closure of shopping malls etc. Following the decreases in Q4-2020 (5.52%) and Q1-2021 (1.77%) in shopping transactions and -2.32% and -1.03% in the number of shopping transactions, respectively, quarterly increases are observed in both variables, in line with the easing of the pandemic restrictions. The number of cash withdrawals decreased by 10.67% (Q1-2020) and 23.79% (Q2-2020) while the withdrawal amount increased 1.63% in Q1-2020 and decreased by 0.13% in Q2-2020. For the rest of the research period, quarterly changes in the number of cash withdrawals generally presented a parallel tendency. Between Q4-2019 and Q2-2022, the number of shopping transactions and the amount increased 113.40% and 336.27% respectively. During the same period, the number of cash withdrawal transactions decreased by 1.85% while the amount of transactions increased by 68.01%. It can be argued that this was due to the tendency to avoid repeated visits to ATM locations and increase the amount of withdrawal per visit (Table 4).

Table 3: Number of contactless cards (Credit Cards, Bank Cards and prepaid card) and contactless PoS machines

Period	Total Contactless Credit Cards	Quarterly Change %	Total Contactless Bank Cards	Quarterly Change %	Number of contactless card transactions	Quarterly Change %	Contactless cards usage amount (million TL)	Quarterly Change %
Q4 - 2019	109,520,553		52,680,515		185,640,018		6,496	
Q1 - 2020	117,162,603	6.98	57,702,065	9.53	230,058,564	23.93	9,181	41.33
Q2 - 2020	120,570,542	2.91	63,676,225	10.35	332,797,881	44.66	20,860	127.21
Q3 - 2020	125,890,257	4.41	71,169,685	11.77	554,900,448	66.74	34,483	65.31
Q4 - 2020	134,342,964	6.71	83,990,870	18.01	608,813,726	9.72	40,358	17.04
Q1 - 2021	140,875,026	4.86	94,057,107	11.98	663,159,584	8.93	45,926	13.80
Q2 - 2021	148,075,911	5.11	102,819,700	9.32	805,964,336	21.53	59,912	30.45
Q3 - 2021	154,284,864	4.19	114,523,174	11.38	1,087,584,582	34.94	85,520	42.74
Q4 - 2021	160,716,504	4.17	130,440,593	13.90	1,177,028,494	8.22	98,270	14.91
Q1 - 2022	170,043,277	5.80	143,901,928	10.32	1,267,413,205	7.68	129,196	31.47
Q2 - 2022	182,446,632	7.29	156,342,134	8.64	1,688,848,162	33.25	222,332	72.09

Source: Derived from the Banks of Türkiye Association (BTA, 2023) (Q1=January, February, March; Q2=April, May, June; Q3=July, August, September; Q4=October, November, December)

Domestic bank card transactions

Table 4: Number of domestic bank cards and amount of transactions (shopping and cash withdrawal)

Period	Shopping				Cash Withdrawals			
	Number of transactions	Quarterly Change %	Amount of transactions (TL milyon)	Quarterly Change %	Number of transactions	Quarterly Change %	Amount of transactions (TL milyon)	Quarterly Change %
Q4 - 2019	605,541,425		37,729		377,057,599		217,945	
Q1 - 2020	584,703,890	-3.44	38,001	0.72	336,838,689	-10.67	214,388	1.63
Q2 - 2020	490,427,641	-16.12	39,172	3.08	256,694,478	-23.79	214,110	-0.13
Q3 - 2020	680,443,429	38.74	54,552	39.26	324,851,887	26.55	255,165	19.17
Q4 - 2020	642,879,778	-5.52	53,287	-2.32	294,880,204	-9.23	234,408	-8.13
Q1 - 2021	631,530,094	-1.77	52,740	-1.03	274,448,392	-6.93	226,841	-3.23
Q2 - 2021	740,396,582	17.24	64,497	22.29	291,735,947	6.30	247,314	9.03
Q3 - 2021	936,174,210	26.44	84,760	31.42	332,593,010	14.00	286,013	15.65
Q4 - 2021	1,027,259,465	9.73	95,619	12.81	333,908,729	0.40	279,520	-2.27
Q1 - 2022	1,061,021,715	3.29	114,984	20.25	321,512,031	-3.71	297,780	6.53
Q2 - 2022	1,292,246,995	21.79	164,601	43.15	370,085,204	15.11	366,172	22.97

Source: Derived from the Banks of Türkiye Association (BTA, 2023) (Q1=January, February, March; Q2=April, May, June; Q3=July, August, September; Q4=October, November, December)

Domestic credit card transactions

Shopping transactions with credit cards decreased both in number and amount in Q1-2020 and Q2-2020. While the number of transactions decreased by 3.01% (Q1-2020) and 19.12% (Q2-2020). A decrease in the amount of transactions was also observed as -2.69% and -8.46%. For the rest of the research period both variables generally presented an increase on a quarterly basis. Cash withdrawal numbers decreased by 2.14% and 29.65% while change in the amount was observed as 1.60% and 23.18% in the same period. For the rest of the research period, both number and amount of cash withdrawals increased on a quarterly basis. The number and amount of shopping transactions increased by 48.63% and 191.72% in Q1-2019. Similarly number and amount of cash withdrawals increased by 68.41% and 178.11, respectively. Both shopping and cash withdrawal values

presented negative or very low increase figures for the first two quarters of the pandemic, which can be caused by the pandemic restrictions (Table 5).

Number of credit cards, bank cards, PoS machines and automated teller machines (ATM)

The number of credit cards and bank cards presented steady, though small, quarterly increases during the research period. The only quarterly negative change observed in Q1-2021 in bank cards was -1.45%. Slight quarterly decreases have been observed in the number of PoS machines in Q1-2020 (1.32%), Q4-2020 (0.78%) and Q1-2022 (0.93%). During the research period, the number of credit cards, ATM cards and PoS machines increased 29.84%, 18.87% and 10.02% respectively, while the number of ATMs decreased by 1.41% (Table 6).

Table 5: Number of domestic credit card transaction and amount of transactions (cash withdrawal and spending)

Period	Shopping				Cash withdrawal			
	Number of transactions	Quarterly Change %	Amount of transactions (TL milyon)	Quarterly Change %	Number of transactions	Quarterly Change %	Amount of transactions (TRL million)	Quarterly Change %
Q4 - 2019	1,107,724,879		220,785		27,218,291		23,758	
Q1 - 2020	1,074,369,726	-3.01	214,849	-2.69	26,636,609	-2.14	24,139	1.60
Q2 - 2020	868,998,414	-19.12	196,676	-8.46	18,739,536	-29.65	18,543	-23.18
Q3 - 2020	1,138,515,778	31.01	260,085	32.24	26,523,600	41.54	25,089	35.30
Q4 - 2020	1,129,386,103	-0.80	267,311	2.78	30,238,620	14.01	28,731	14.52
Q1 - 2021	1,116,234,801	-1.16	272,356	1.89	32,569,852	7.71	32,118	11.79
Q2 - 2021	1,206,353,946	8.07	303,272	11.35	32,652,198	0.25	32,949	2.59
Q3 - 2021	1,430,261,948	18.56	368,690	21.57	36,916,311	13.06	38,162	15.82
Q4 - 2021	1,456,813,050	1.86	427,665	16.00	39,552,719	7.14	47,165	23.59
Q1 - 2022	1,447,714,938	-0.62	479,203	12.05	41,317,185	4.46	50,663	7.42
Q2 - 2022	1,646,376,488	13.72	644,065	34.40	45,839,569	10.95	66,074	30.42

Source: Derived from The Banks of Türkiye Association (BTA, 2023) (Q1=January, February, March; Q2=April, May, June; Q3=July, August, September; Q4=October, November, December)

Table 6: Number of total credit cards, bank cards, PoS machines and automated teller machines

Period	Number of credit cards	Quarterly Change %	Number of bank cards	Quarterly Change %	Number of PoS machines	Quarterly Change %	Number of ATM machines	Quarterly Change %
Q4 - 2019	208,265,484		394,109,564		4,903,640		158,495	
Q1 - 2020	211,460,175	1.53	400,895,038	1.72	4,839,084	-1.32	159,760	0.80
Q2 - 2020	214,461,883	1.42	411,321,919	2.60	4,890,546	1.06	159,487	-0.17
Q3 - 2020	218,802,518	2.02	419,645,779	2.02	4,999,074	2.22	159,258	-0.14
Q4 - 2020	225,754,586	3.18	430,244,065	2.53	5,038,436	0.79	158,803	-0.29
Q1 - 2021	231,758,088	2.66	424,000,303	-1.45	5,114,037	1.50	157,334	-0.93
Q2 - 2021	237,511,653	2.48	424,140,991	0.03	5,207,218	1.82	156,512	-0.52
Q3 - 2021	243,586,054	2.56	432,193,263	1.90	5,342,157	2.59	156,334	-0.11
Q4 - 2021	249,956,511	2.62	446,161,115	3.23	5,300,341	-0.78	156,668	0.21
Q1 - 2022	261,224,698	4.51	456,668,892	2.36	5,251,142	-0.93	156,374	-0.19
Q2 - 2022	270,414,543	3.52	468,461,538	2.58	5,394,784	2.74	156,264	-0.07

Source: Derived from the Banks of Türkiye Association (BTA, 2023) (Q1=January, February, March; Q2=April, May, June; Q3=July, August, September; Q4=October, November, December)

Digital banking usage - Internet, mobile banking users*Table 7: Number of active customers in digital banking. All figures are in 000s.*

Period	Number of Internet banking users only	Quarterly change (%)	Number of mobile banking users only	Quarterly change (%)	Both Internet and mobile banking users	Quarterly change (%)	Total	Quarterly change (%)
Q4 - 2019	3,215		40,300		7,499		51,014	
Q1 - 2020	3,154	-1.90	43,061	6.85	7,766	3.56	53,981	5.82
Q2 - 2020	2,898	-8.12	47,145	9.48	9,032	16.30	59,076	9.44
Q3 - 2020	2,686	-7.32	49,281	4.53	8,072	-10.63	60,038	1.63
Q4 - 2020	2,493	-7.19	51,753	5.02	8,581	6.31	62,827	4.65
Q1 - 2021	2,455	-1.52	54,395	5.11	8,637	0.65	65,487	4.23
Q2 - 2021	2,300	-6.31	57,235	5.22	8,177	-5.33	67,712	3.40
Q3 - 2021	2,143	-6.83	60,235	5.24	7,952	-2.75	70,330	3.87
Q4 - 2021	2,116	-1.26	63,995	6.24	8,409	5.75	74,520	5.96
Q1 - 2022	2,008	-5.10	67,425	5.36	7,929	-5.71	77,362	3.81
Q2 - 2022	1,885	-6.13	71,638	6.25	7,811	-1.49	81,334	5.13
Q3 - 2022	2,219	17.72	75,929	5.99	8,568	9.69	86,716	6.62

Source: Derived from the Banks Association of Türkiye (BAT, 2023) (Q1=January, February, March; Q2=April, May, June; Q3=July, August, September; Q4=October, November, December)

Table 8: Number of retail internet banking users, financial and non-financial transactions realised on Internet banking. All figures are in 000s

Period	Retail Internet banking users	Quarterly change (%)	Financial Transactions	Quarterly change (%)	Non-financial transactions	Quarterly change (%)
Q4 - 2019	10,714		74,188		3288	
Q1 - 2020	10,920	1.92	68,424	-7.77	2989	-9.09
Q2 - 2020	11,930	9.25	67,265	-1.69	4058	35.76
Q3 - 2020	10,758	-9.82	69,268	2.98	3490	-14.00
Q4 - 2020	11,074	2.94	73,988	6.81	2644	-24.24
Q1 - 2021	11,092	0.16	72,924	-1.44	2656	0.45
Q2 - 2021	10,476	-5.55	63,495	-12.93	2565	-3.43
Q3 - 2021	10,095	-3.64	58,391	-8.04	2529	-1.40
Q4 - 2021	10,525	4.26	66,391	13.70	2647	4.67
Q1 - 2022	9,937	-5.59	60,475	-8.91	2350	-11.22
Q2 - 2022	9,696	-2.43	62,317	3.05	2283	-2.85
Q3 - 2022	10,787	11.25	64,763	3.93	2164	-5.21

Source: Derived from the Banks Association of Türkiye (BAT, 2023) (Q1=January, February, March; Q2=April, May, June; Q3=July, August, September; Q4=October, November, December)

The number of individuals who were using Internet banking only, presented continuous quarterly decreases from Q1-2020 to Q3-2022 reaching 30.98% for the entire research period. While individuals who prefer using only mobile banking presented a continuous steady quarterly increase with an 88.41% change, the number of individuals using both the Internet and mobile banking increased by 14.26%. total number of individuals using digital banking increased 69.98% during the research period. Research findings strongly suggest that individual digital banking usage significantly increased also confirming a preference for Internet banking to mobile banking usage (Table 7).

Internet banking usage data

The number of individual Internet banking users increased only 0.60% presenting a fluctuating trend throughout the research period. The number of financial and non-financial transactions also varied between negative and positive figures on a quarterly basis, showing a 12.70% and 34.18% decrease, respectively, for the research period. Although there is a slight increase in the number of users, a substantial decrease can be observed between Q1-2020 and Q3-2022 (Table 8).

Table 9: Number of active mobile banking customers, financial and non-financial transactions realised through mobile banking.

Period	Number of active mobile banking users	Quarterly change (%)	Non-financial transactions	Quarterly change (%)	Financial Transactions	Quarterly change (%)
Q4 -2019	47,799		27,787		531,244	
Q1 - 2020	50,827	6.33	30,900	11.20	551,908	3.89
Q2 - 2020	56,177	10.53	46,380	50.10	596,530	8.09
Q3 - 2020	57,353	2.09	41,904	-9.65	713,741	19.65
Q4 - 2020	60,334	5.20	46,445	10.84	822,402	15.22
Q1 - 2021	63,032	4.47	43,339	-6.69	921,461	12.05
Q2 - 2021	65,411	3.77	44,192	1.97	952,343	3.35
Q3 - 2021	68,187	4.24	45,039	1.92	1,003,185	5.34
Q4 - 2021	72,405	6.19	53,328	18.40	1,223,081	21.92
Q1 - 2022	75,354	4.07	52,091	-2.32	1,244,112	1.72
Q2 - 2022	79,449	5.43	56,384	8.24	1,376,944	10.68
Q3 - 2022	84,498	6.36	62,496	10.84	1,540,197	11.86

Source: Derived from Interbank Card Centre (ICC) (ICC, 2023) (Q1=January, February, March; Q2=April, May, June; Q3=July, August, September; Q4=October, November, December)

Mobile banking usage data

A steady and continuous quarterly increase has been observed in the number of mobile banking customers between Q1-2020 and Q3-2022, highest in Q2-2020 during the second quarter of the pandemic with 10.53% and reaching 76.78% for the research period. The highest quarterly increase in the number of non-financial transactions was observed in Q2-2020 with 50.10%. Although several quarterly small decreases were observed, (Q3-2020, Q1-2021, Q1-2022) non-financial transactions increased 124.91%. There have been no quarterly negative changes observed in the financial transactions showing a total increase of 189.92% for the research period (Table 9).

Conclusion

The COVID-19 pandemic affected not only individuals and businesses in countries but the global economy as a whole. Countries imposed restrictions on individuals and countries to control the spread of the virus in the local and global population, with social and financial burdens that were partially eased with the help of technology such as digital banking services provided by the banks.

While the number (162.57%) and amount (342.61%) of virtual PoS transactions increased, mail order transactions did not present a high increase in the number of transactions, but a significant increase in the number of transactions was observed during the research period. The number of contactless credit cards and bank cards increased by 66.59% and 196.77% respectively, while the number of contactless card transactions increased by 809.74%, amount of transactions presented a very high change of 3,322.60%. suggesting a preference of consumers for making payments online from the comfort and safety of their homes, or with contactless cards to minimize their physical contact with retailers, businesses or PoS machines, although it can be argued that

contactless cards are a relatively new product for the Turkish market.

During the research period number of shopping transactions with bank cards increased by 113.40% while the amount processed increased by 336.27%. while the number of cash withdrawals decreased by 1.85% amount increased by 68.01%, suggesting that individuals withdrew higher cash amounts in their ATM usage and used their bank cards for shopping increasingly. Since inflation was not taken into consideration in this study it can be argued that with inflation the cash withdrawals might be lower in value compared to the beginning of the research period.

Changes in the number of credit cards, bank cards and PoS machines presented a small incremental increase during the research period, while the number of ATMs decreased 1.41%. Although it is a small decrease, one can argue that it can be associated with a decrease in the demand for cash. Further research on the usage of ATMs and reasons of changes in their number can be carried out.

Although the total number of digital banking users increased 69.98% individuals using mobile banking only increased 88.41% while internet banking only users decreased by 30.98%. number of financial and non-financial transactions also decreased by 12.70% and 34.18% respectively, while a slight increase of 0.68% has been observed during the research period. The number of active e-mobile banking users increased by 76.78% while the number of non-financial (124.91% and financial (189.92) transactions increased significantly, suggesting a significant decrease suggesting a shift towards mobile banking usage. This can be associated with the increased usage of smart phones creating a preference which should be further studied for the reasons creating this shift.

Research findings suggest that the usage of contactless cards, virtual credit cards and mail order usage increased substantially during the research period as individuals tried to protect themselves from the pandemic.

The restrictions to fight the pandemic changed consumption preferences. Further detailed studies

covering the post-COVID era should be conducted to identify whether these changes in these preferences will be permanent. Also to have a better understanding of the data and to look for the existence of a possible trend in the research items past data can be further analysed.

References

- Alalwan, A.A., Dwivedi, Y.K., Rana, N.P. and Simintiras, A.C. (2016), Jordanian consumers' adoption of telebanking: Influence of perceived usefulness, trust and self-efficacy, *International Journal of Bank Marketing*, Vol. 34 No. 5, pp. 690-709.
- Baker, S. R., Farrokhnia, R. A., Meyer, S., Pagel, M., & Yannelis, C. (2020). How does household spending respond to an epidemic? Consumption during the 2020 COVID-19 pandemic. *The Review of Asset Pricing Studies*, 10(4), 834-862.
- Bekçi, İ., Eda, K. Ö. S. E., & Aksoy, E. (2020). COVID-19'un Türkiye'de bankalar üzerindeki ekonomik etkisine dair bir tahmin. *Ekonomi Politika ve Finans Araştırmaları Dergisi*, 5(Özel Sayı), 185-205.
- Chang, Hung-Hao, and Chad D. Meyerhoefer. COVID-19 and the demand for online food shopping services: Empirical Evidence from Taiwan. *American Journal of Agricultural Economics* 103.2 (2021): 448-465.
- Chen, H., Qian, W., & Wen, Q. (2021). The impact of the COVID-19 pandemic on consumption: Learning from high-frequency transaction data. In *AEA Papers and Proceedings* (Vol. 111, pp. 307-11).
- Chronopoulos, D. K., Lukas, M., & Wilson, J. O. (2020). Consumer spending responses to the COVID-19 pandemic: An assessment of Great Britain. Available at SSRN 3586723.
- Dasho, A., Meka, E., Sharko, G., & Baholli, I. (2016). Digital banking the wave of the future. *Proceedings of ISTI*, 1, 1-6.
- Garanti BBVA. (2006). *Garanti BBVA'dan ilkler*. Retrieved from: <https://www.garantiyemmesistemleri.com/tr/bizkimiz/garanti-bbvadin-urunleri/garanti-bbvadan-ilkler> Accessed:17.02.2023.
- Grabner-Krauter, S., & Faullant, R. (2008). Consumer acceptance of internet banking: The influence of internet trust. *International Journal of Bank Marketing*, 26(7), 483-504.
- Hu, Y. C., & Liao, P. C. (2011). Finding critical criteria of evaluating electronic service quality of Internet banking using fuzzy multiple-criteria decision making. *Applied Soft Computing*, 11(4), 3764-3770.
- Huang, M. H., ' Rust, R.T. (2018). Artificial intelligence in service. *Journal of Service Research*, 21(2), 155-172.
- Interbank Card Center (ICC), 2023. <https://bkm.com.tr/en/about-bkm/bkm/history/> Accessed: 17.02.2023.
- Laukkanen, T. (2007). Internet vs mobile banking: Comparing customer value perceptions. *Business Process Management Journal*, 13(6), 788-797.
- Martins, C., Oliveira, T., & Popovič, A. (2014). Understanding the Internet banking adoption: A unified theory of acceptance and use of technology and perceived risk application. *International journal of information management*, 34(1), 1-13.
- Mbama, C. I., Ezepue, P., Alboul, L., & Beer, M. (2018). Digital banking, customer experience and financial performance: UK bank managers' perceptions. *Journal of Research in Interactive Marketing*, 12(4), 432-451.
- Rosen, G. (1958). *A history of public health* (2015 ed.). Baltimore, Maryland, USA: JHU Press.
- Sardana, V., & Singhania, S. (2018). Digital technology in the realm of banking: A review of literature. *International Journal of Research in Finance and Management*, 1(2), 28-32.
- Sarel, D., & Marmorstein, H. (2003). Marketing online banking services: The voice of the customer. *Journal of Financial Services Marketing*, 8, 106-118.
- Soylu, Ö. B. (2020). Türkiye ekonomisinde COVID-19'un sektörel etkileri. *Avrasya Sosyal ve Ekonomi Araştırmaları Dergisi*, 7(6), 169-185.
- Tam, C., & Oliveira, T. (2017). Literature review of mobile banking and individual performance. *International Journal of Bank Marketing*, 35(7), 10 44-1067.
- The Banks of Türkiye Association, (2023). *İstatistiki Raporlar*. Retrieved from: <https://www.tbb.org.tr/tr/bankacilik/banka-ve-sektor-bilgileri/istatistiki-raporlar/59>.
- Vives, X., (2019). Digital disruption in banking. *Annual Review of Financial Economics*, 11, 243-272.
- WHO, (2023). *Coronavirus (Covid-19) Dashboard*. Retrieved from: <https://covid19.who.int/> Accessed: 30.03.2023.
- WHO, (2023). *Coronavirus Disease*. Retrieved from: <https://www.who.int/europe/emergencies/situations/covid-19> Accessed: 30.03.2023.
- YKB, (2023). *Ödeme Çözümlerimiz*. Retrieved from: <https://www.yapikredipos.com.tr/odeme-cozumlerimiz/mail-order> Accessed: 12.04.2023.
- Yaylak, E. (2022). Distance education in Türkiye during the Covid-19 pandemic: What do stakeholders think? *Turkish Online Journal of Distance Education*, 23(4), 65-92.
- Zhou, P., Yang, X. L., Wang, X. G., Hu, B., Zhang, L., Zhang, W., & Shi, Z. L. (2020). A pneumonia outbreak associated with a new coronavirus of probable bat origin. *Nature*, 579 (7798), 270-273.