

The COVID-19 pandemic outbreak's effect on digital banking habits in Hungary

The 2020 COVID-outbreak has dramatically changed the banking habits. This pandemic effected the at changed the online banking habits as well. The aim of the research is to get an answer to how the digital banking habits of hungarian individuals have changed as a result of the advent of the COVID-19. This quantitative analysis summarizes the changes of the online personal banking habits in Hungary following the COVID-19-outbreak in March 2020. This research presents the most significant shifts from the traditional banking custom to the online banking habits. Furthermore, this analysis and breaks down the results to age groups and different residence of areas i.e.: villages, towns and capital city of Hungary. Additionally, this work delivers the online banking habits trend analysis and forecast. The research was conducted in 2 periods. This work's backbone is the presented quantitative analysis based on 400 returned surveys in the first research and 153 returned surveys in the second research. The first research was carried out between the outbreak and 30.10.2020 and the second research was covering a longer period until 20.11.2021. This research covers the areas of shifting digital banking habits (mobile banking, cash payment, card payment) generation distribution and correlation between the place of residence and the use of the different banking methods. The two survey was conducted in October 2020 and in November 2021 in Hungary among private individuals.

Journal of Economic Literature codes: G20, G29, O33

Keywords: Internet banking, Electronic payments, Fintech, Mobile banking

1. Introduction

The COVID-19-outbreak has led among others to a significant shift in digital banking habits. This shift increased the digital banking share and reduced the traditional banking share. One part of the research was examined that how the digital banking habits of hungarian individuals changed before and after the outbreak of COVID-19 (12 March 2020). Besides that, the change in cash payment and electronic payment market share were examined as well. What are the COVID-19 effects for the payment habits? The survey asked the respondents how many times they visited or were planning to visit the bank in person on average or do they manage their banking finances online instead. They were also asked whether they plan to try and manage their finances digitally in the future if personal administration might not be possible due to COVID-19 pandemic.

Recieved answers to the question whether they plan to manage their banking finances digitally if personal banking is not possible due to the COVID-19 pandemic.

Among other things, the changes in cash payments and contactless payments due to the outbreak of COVID-19 were examined. The changes in Hungary were examend in the cash payment and contactless payment before and after the onset of the COVID-19 pandemic (March 12, 2020). Have the Hungarian population's financial habits changed during the pandemic period - or have they not changed, then in these cases what are the reasons for these factors? The Government tried to obtain a decree in order to reduce the number of the cash payments by increasing the contactless payment's PIN-less amount. As the result of the study it presents that the governments measure affected the individuals payment habits.

The research looked at the generation distribution of the number of digital banking users before and after the outbreak of COVID-19. It was also examined that how many of the respondents used digital banking services before and after the onset of the COVID-19 pandemic and how many of those who have used digital banking services since 12 March 2020 remains in digital administration, and in personal administration. To

prove the results, the following questions were asked in the questionnaire to the individuals participating in the research: Do you use any digital banking applications? There were those who had not yet used online banking services, but were planning to do so, and there were respondents who had not used them yet and do not plan to use them in the future.

The relationship between the place of residence and the people using digital banking services was also examined. The changes can be detected in the distribution by generations. The reason why have they not used digital services before was also examined within the group.

The second research has been extended with additional questions, so the topics mentioned below can only be presented with the results of the data obtained in the second research. In the first survey, the respondents were asked in their opinion were the current regulations sufficient. However, the second survey also asked whether the respondents experienced differences in the regulations applied in different bank branches. In the last 2 years, paying bills digitally has gained more ground. The study provides an answer to the question of how Hungarian individuals pay their bills after the outbreak of COVID-19. How have the bills been paid since the state of emergency was declared in Hungary and before the restrictions were partially lifted (after the 5 millionth vaccinated person), between 12 March 2020 and 22 May 2021?

1.2.Research methodology:

The implementation of the research is structured as follows:

First survey

- 1) Establishment of quantitative survey
- 2) Quantitative survey execution and collection of 400 samples
- 3) Extracting the end results from the quantitative survey
- 4) Deriving the final conclusions from the quantitative survey end result

Second survey

The implementation of the research is structured as follows:

- 1) Establishment of quantitative survey
- 2) Quantitative survey execution and collection of 153 samples
- 3) Extracting the end results from the quantitative survey
- 4) Deriving the final conclusions from the quantitative survey end result

1.3.Research objectives

The following topics were examined in this research:

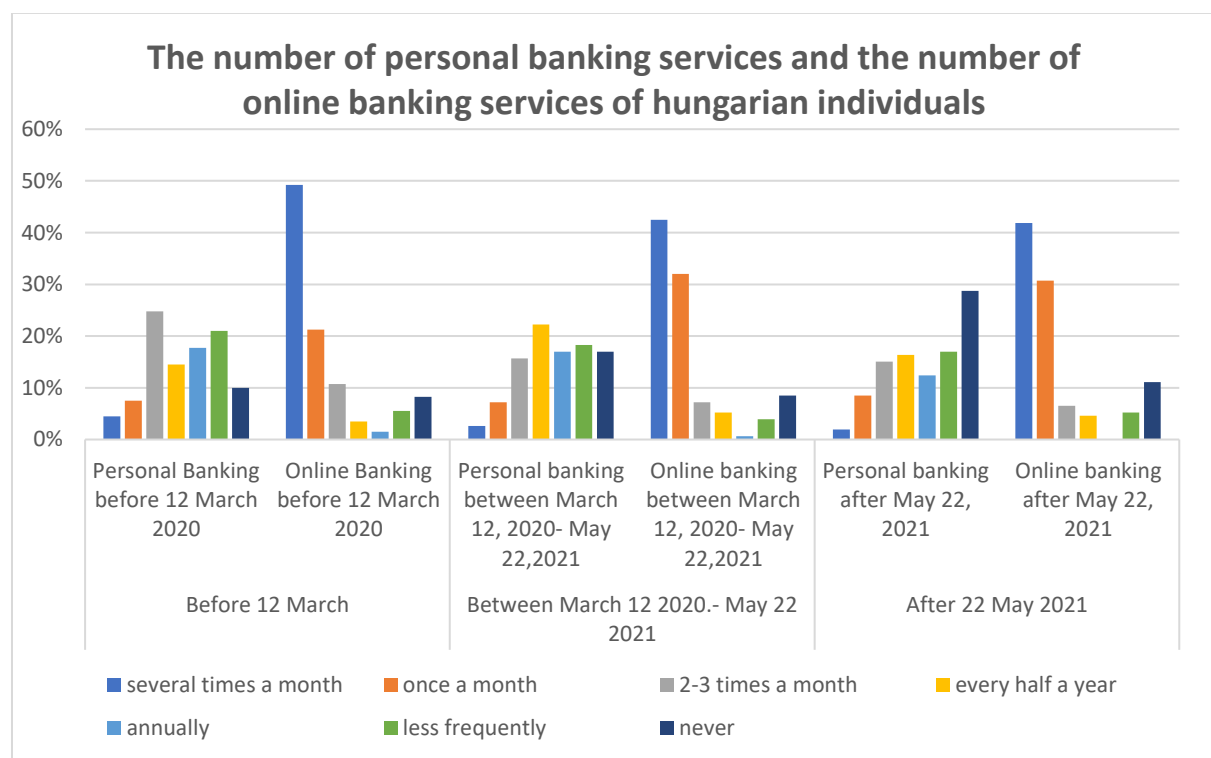
1. Shifting patterns in banking and digital banking following the outbreak of COVID-19 in Hungary in 2020 March;
2. Increase of new users in mobile banking in Hungary;
3. Displacement of cash payments by contactless payments the COVID-19 outbreak;
4. Using digital banking before and after the outbreak of the COVID-19;
5. Between the place of residence and digital banking share;
6. The regulations introduced as a result of the outbreak of COVID-19 and the differences in regulations between the various bank branches.
7. Changes in the bills payment options between the outbreak of COVID-19 and the partial lifting of the restrictions (the 5 millionth person vaccinated)?

2. Changes in personal banking and digital banking following the outbreak of COVID-19 pandemic

The first research was conducted in October 2020 in Hungary among private individuals. 76% of the respondents are female and 24% are male. In the first research, 400 people completed this questionnaire successfully. The second research was conducted in November 2021 in Hungary among private individuals. 70,6% of the respondents are female and 29,4% are male. In the second research, 153 people completed this questionnaire successfully.

Figure 1.

The number of personal banking services and the number of online banking services of hungarian individuals



Source: Own calculations using the data obtained in the questionnaire (2021)

2.1.Results

Research examined how the digital banking habits of Hungarian individuals changed because of the outbreak of the COVID-19 pandemic (March 12, 2020). Furthermore it was also analysed how payments proportion changed between cash and electronic payments. What are the COVID-19 pandemic's effects to the payment habits?

The survey asked the respondents how many times they visited or were planning to visit the bank in person on average or do they manage their banking finances online instead. They were also asked whether they plan to try and manage their finances digitally in the future if personal administration might not be possible due to COVID-19 pandemic.

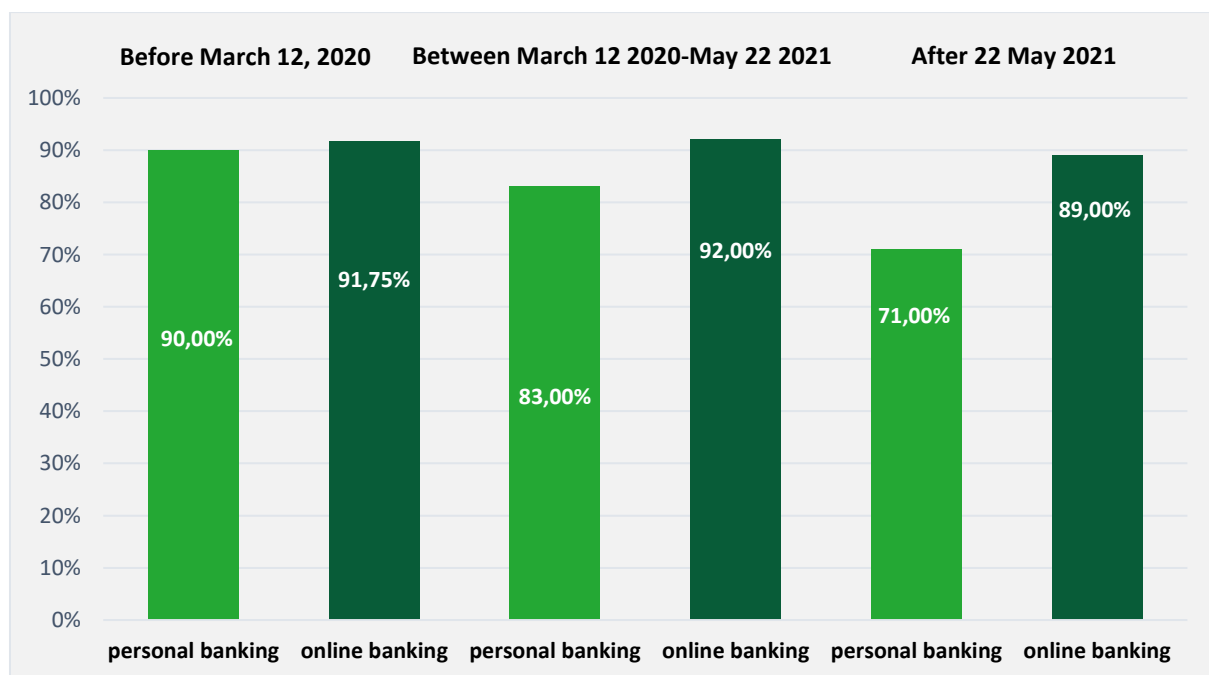
The highest outlier can be observed in people who bank online several times a month. Although there is a slight decrease in the frequency, this can be attributed to the fact that the number of online banking with different frequencies is increasing. For example, the proportion of people who bank online once a month is increasing. At the same time, it can also be observed that the number of those people who manage their

banking finances online less often is decreasing. It can also be concluded from this that those people who banked online less often with time instead of personal visit to branches could save time and effort and switch to full time online banking. From this, it can also be concluded that more of the people who managed their banking finances online less often, and who also managed their finances in person, were able to switch to full online banking. The third outlier can be observed in personal banking. The diagram shows that after May 22, 2021, 29% of respondents never plan to manage their bank finances in person. At the same time, the number of people who never plan to manage their bank finances in person has been steadily increasing since March 12, 2020.

Overall, it can be concluded that the number of users of online banking changed mainly in that, that they used online service more often. It can also be established that the number of people who adamantly do not plan to manage their bank finances personally in the future has increased.

Figure 2.

The number of personal banking and digital banking



Source: Own calculations using the data obtained in the questionnaire 2020-2021

Based on the data obtained, it can be concluded that the results prove that personal banking administration has indeed decreased since the COVID-19 pandemic broke out. Based on the results obtained, it can be validated that the personal banking rate has decrease after the onset of the COVID-19 pandemic. The overall online banking rate is around 90% but this percentage mainly has not really changed. There is only a small change could be observed at each timeperiod. The small change is due to the fact that even before the COVID-19-outbreak, more and more people used online banking services. But there is a little decrease between March 12 2020 - May 22 2022. Thus, the frequency of online administration has changed since March 2020. Those who banking in person their number are even less than before the pandemic began and this number is continously decreasing. After partial lifting of the restrections, although it was in vain to manage bank finances personally without restrictions, after May 22, 2021, nearly 30% of respondents did not manage their bank finances personally at all. Regardless of the partial lifting of the COVID restrections after May 22 2021 still nearly 30% of respondents decided not to return to manage their finances in person anymore. They preferred to carry on with online banking.

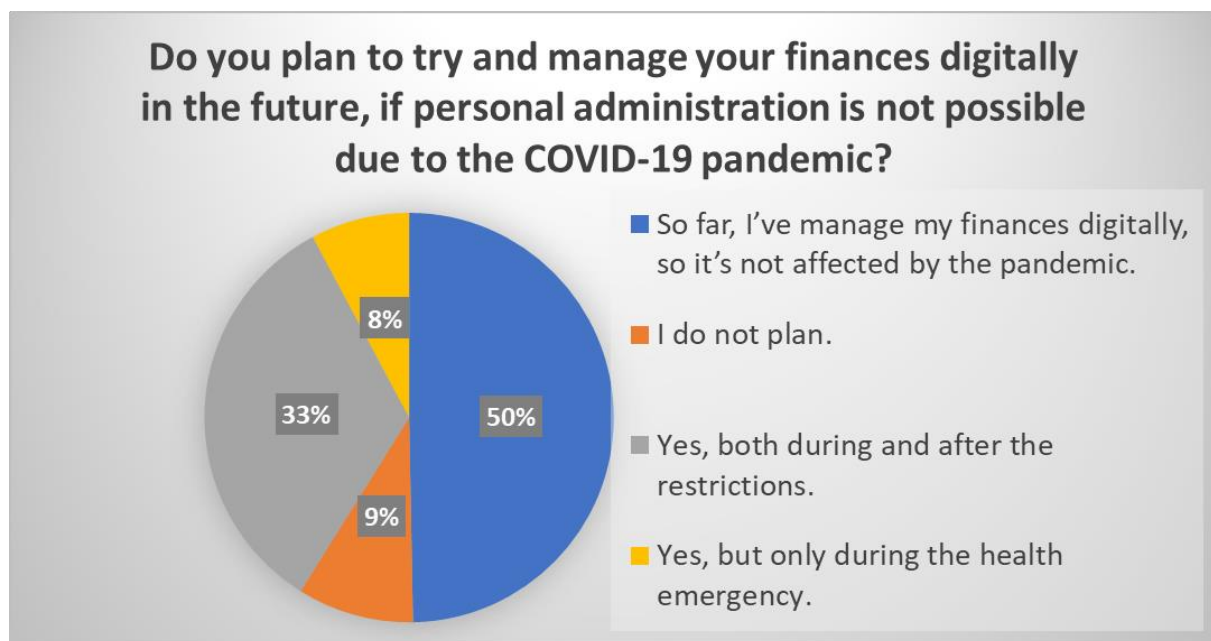
The results found above may also mean that people who require more frequent banking administration will choose online administration. Aspects of those who choose online banking can be more convenient: cost-effectiveness, time saving, less travel time, no need to queue at banks. So, if people need to manage their banking finances either just once month or several times a month, it is easier to opt for online administration instead.

The data shows that people who are less frequently managing banking finances prefer personal administration. So if we have to travel less often to visit our branch to deal with our finances, we prefer personal administration, whereas if they have to visit the bank several times a month for the same reasons, then online banking is the more preferred choice.

The research examined the changes in usage of online banking services. To the question of whether they plan to try and manage their banking finances online in the future, if personal banking was not possible due to COVID-19 pandemic, the following chart shows the answers of the participants:

Figure 3.

Impact of COVID-19 pandemic restrictions on banking habits



Source: Own calculations using the data obtained in the questionnaire (2021)

The figure shows that the majority of the Hungarian adult population, ie 50%, managed their finances digitally even before the onset of the COVID-19, and this was not affected by the outbreak of the pandemic. Among those surveyed, there were those who were significantly affected by the onset of the COVID-19 pandemic, with 8% of respondents managing their finances digitally only during the health emergency.

In summary: Regarding to online banking, a rate of around 90% remained after the restrictions were lifted. A change can be observed during the restrictions, when 92% of the respondents banked online, this shows a quarter percent increase.

3. Changes in the number of new users of mobile banking among hungarian individuals

Furthermore, the number of new users of mobile banking was examined. In recent years, the use of digital devices and the daily use of smaller electronic devices have been constantly increasing, mobile phones are

being favored. The computer was replaced by the laptop, and the laptops were replaced by tablets and smart phones. Almost in every case that we have the ability to handle on a laptop now can be done on phones. The list of services offered by financial institutions that can be used electronically without personal presence is constantly expanding in the financial market. (www.mnb.hu) The FinTech applications are gaining ground, giving individuals a wider range of options for managing their bank finances, even over the phone. Related to this, the use of digital tools in the management of banking finances was assessed.

Respondents were asked on what type of digital device do they use to manage their digital banking services. Of the responses, the use of two types of digital devices is outstandingly high. The proportion of digital devices on which digital banking services are most used by individuals was mainly mobile phone and computer / laptop.

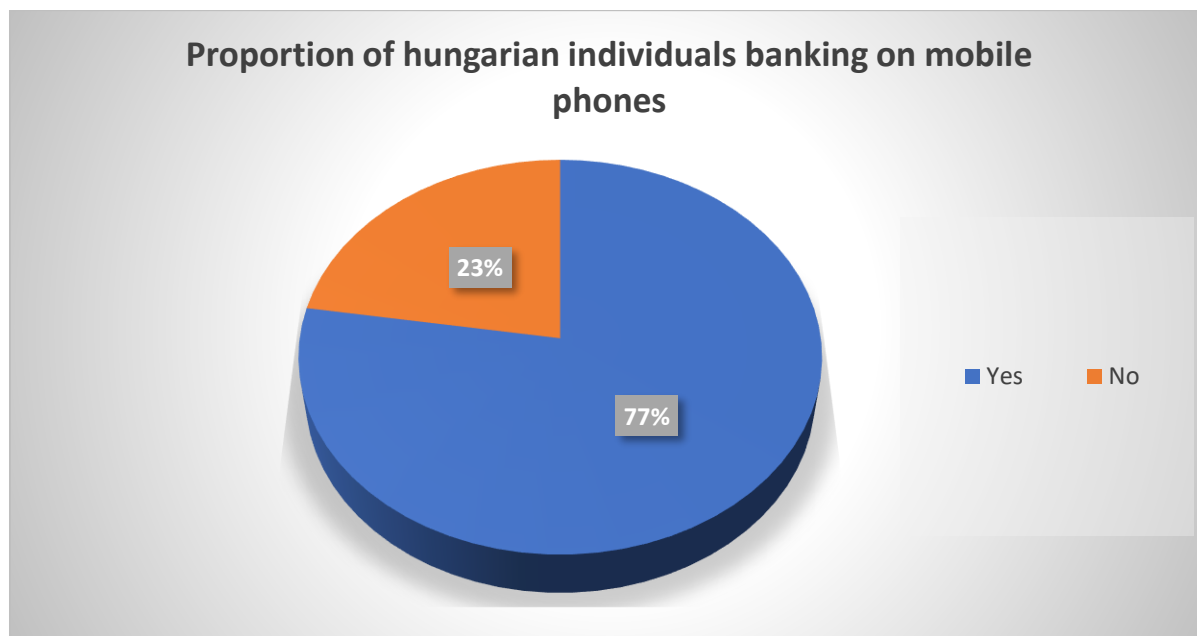
3.1 Results

Based on the data obtained in the first questionnaire, it can be stated that the proportion of people using mobile phones is 72.8% which is about 1% higher than the one's who's using laptops/computers as that is 71.5%, and the third most important device was the tablet, which accounted for 5% of respondents. Based on the data obtained in the second questionnaire, it can be stated that the proportion of people using mobile phones to manage their banking finances online is 71.2% , the Personal Computer users are 38,6%, the laptop users is 46,4% and the 4,6% of the respondents are using tablets. It can be stated that both questionnaires results show nearly the same high percentage for mobile phone users.

To the question of whether have they already banked on their mobile phones or not, the results are shown in the following chart:

Figure 4.

Proportion of hungarian individuals banking on mobile phones



Source: Own calculations using the data obtained in the first questionnaire (2020)

The figure shows the proportions of individuals who have ever done or have not done their banking on their mobile phones. Of the 400 respondents, 310 had already managed their banking finances via mobile phone, which is a percentage of 77.5% of the respondents. This means that less than a quarter of the Hungarian adult population has not yet used banking services on their mobile phones. Of this 77.5%, 20% of people have only become active users since the onset of the COVID-19 pandemic in Hungary.

In Summary: Based on the obtained results, it can be stated that the number of banking operations on mobile phones are the highest, but almost equal to the number of banking operations on laptops and computers. The number of new active users of mobile banking has increased by 20% in Hungary since the beginning of the COVID-19 pandemic.

4. Displacement of cash payments and contactless payments due to the COVID-19 outbreak

Among other things, the changes in cash payments and contactless payments due to the outbreak of COVID-19 were examined. The changes in Hungary were examined in the cash payment and contactless payment before and after the onset of the COVID-19 pandemic (March 12, 2020). Have the Hungarian population's financial habits changed during the pandemic period - or have they not changed, then in these cases what are the reasons for these factors? The Government tried to obtain a decree in order to reduce the number of the cash payments by increasing the contactless payment's PIN-less amount. As the result of the study it presents that the governments measure affected the individuals payment habits.

To test the assumption, it was examined on the basis of the data obtained from the answers to the following questions in the questionnaire:

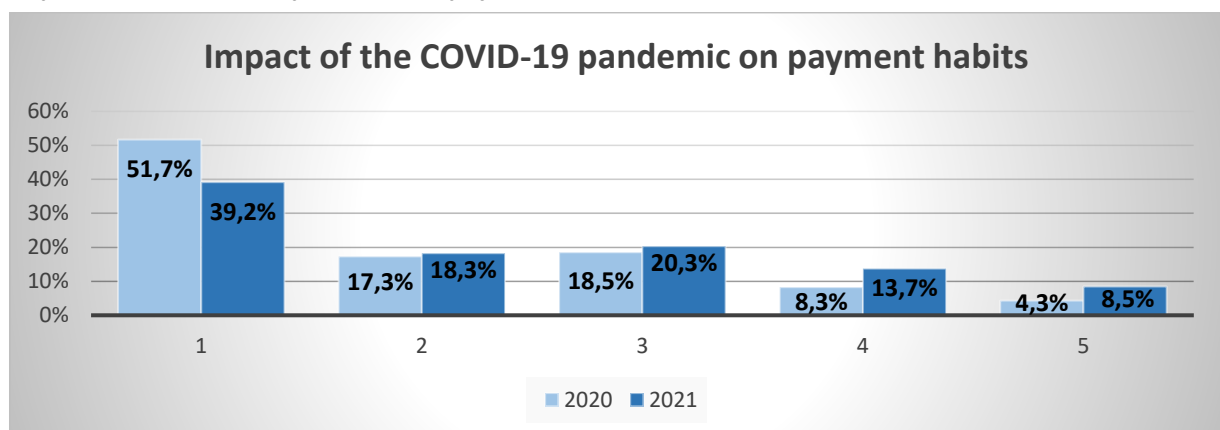
- How much does the outbreak of COVID-19 pandemic affected your payment habits?
- Have you paid more often with a bankcard since the outbreak of COVID-19 pandemic?
- Which payment option do you prefer most when shopping in person?
- How did the 60/2020. (III.23) Government Decree: effect your payment habits during contactless payments does the given payment service provider not require PIN-code authentication for up to HUF 15,000?

4.1.Results

In this case, also, examined the answers to the question prior and after 12 March 2020 ie the period when the first emergency situation was first declared in Hungary due to the COVID-19 pandemic. In the first question, respondents were able to mark their answers on a scale of one to five as to how much the COVID-19 pandemic affected their payment habits. (1 = least affected; 5 = highly affected)

Figure 5.

Impact of the COVID-19 pandemic on payment habits



Source: Own calculations using the data obtained in the questionnaire (2020-2021)

Comparing the 2020 and 2021 surveys the data shows that the proportion of those whose payment habits were not really affected by the outbreak of COVID-19 was lower in 2020. This could also mean that over time payment habits were increasingly affected by COVID-19. As shown in the bar graph, 51.7% of the respondents payment habits were not affected by the pandemic. In 2020, 18.5% of the respondents

payment habits were moderately affected, 13.7% of the respondents payment habits were strongly affected by the COVID-19 pandemic and 8.3% percent said that their payment habits were very strongly affected by the health emergency.

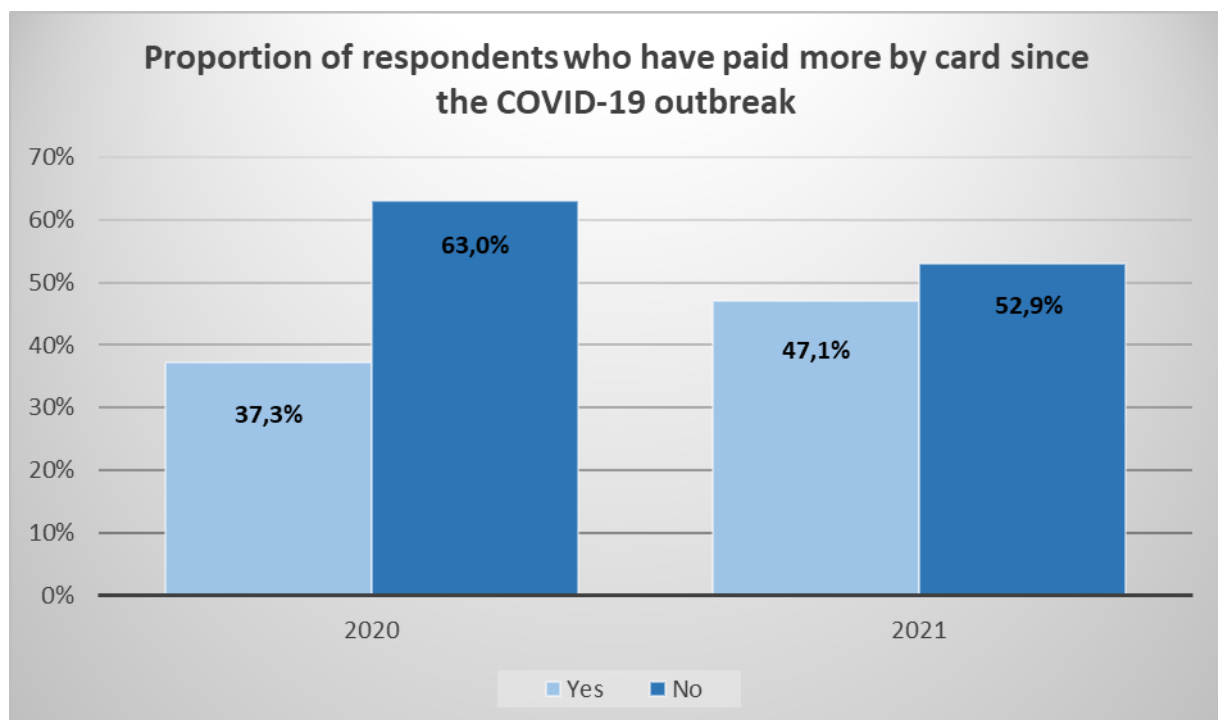
At the same time, the figure also shows that based on the 2021 data, the respondent's payment habits were increasingly affected by COVID-19. In 2021, the proportion of those whose payment habits were not affected at all by the outbreak of the virus was only 39.2%. This rate is 12.5% less than the 2020 results. 20.3% of respondents were moderately influenced, 13.7% were strongly influenced, and 8.5% definitely had a strong impact on their payment habits by the outbreak of the virus. Based on the two surveys, it can be concluded that the outbreak of COVID-19 already had a higher impact on the payment habits of Hungarian individuals in 2021. Compared to 2020, in 2021 the number of Hungarian individuals whose payment habits were definitely strongly affected by the outbreak of the COVID-19 were almost doubled. Based on the data, it can be concluded that the payment habits of the majority of the hungarian individuals did not change straight after the onset of the pandemic, however in 2021 the proportion of those people whose payment habits were affected by COVID-19 increased.

What are the factors and reasons that caused these proportions to develop?

The following responses were received to the question of whether they are using their bankcard more frequently since the outbreak of the COVID-19:

Figure 6.

Proportion of respondents who have paid more often by card since the COVID-19 outbreak



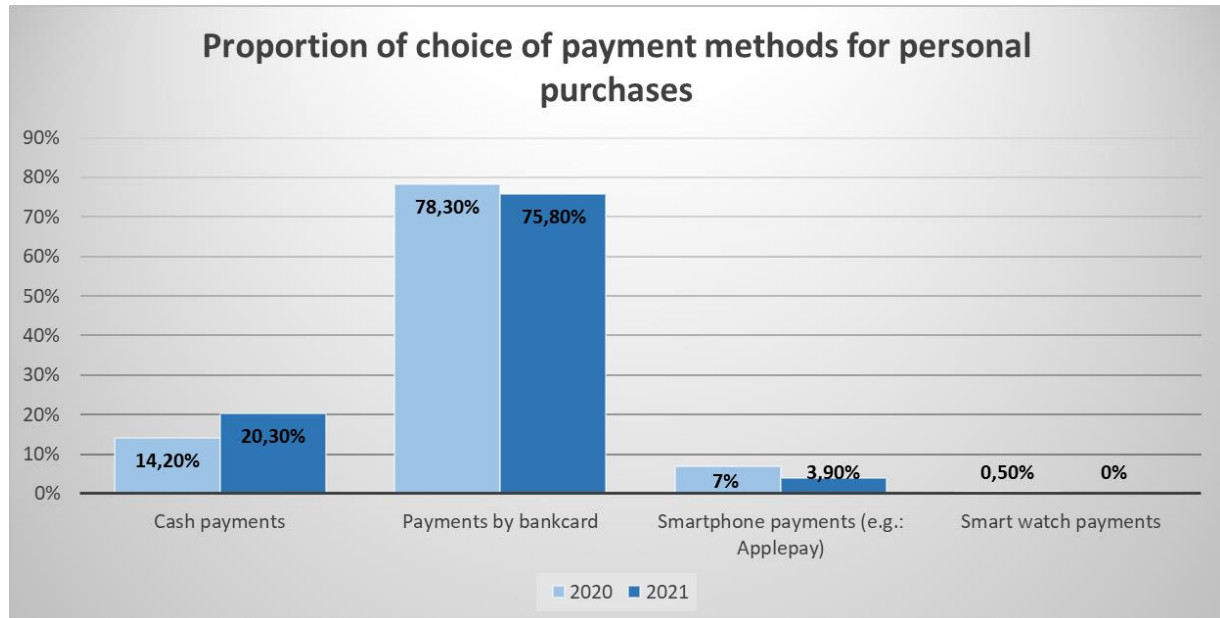
Source: Own calculations using the data obtained in the questionnaire (2020-2021)

Based on the 2021 surveys data, 47.1% of the hungarian population has been paying more often with bankcard since the beginning of the COVID-19 pandemic. The proportion of respondents who answered "No" is 52.9%, this does not mean that these Hungarian individuals made only by cash payments. This proportion also includes people who have paid by card too before the beginning of the COVID-19 pandemic, for example: they continued to make card payments with the same frequency. Card payment is an

alternative option among several payment options, so the result obtained also includes payments made by smart phones and smart watches.

Figure 7.

Proportion of choice of payment methods for personal purchases



Source: Own calculations using the data obtained in the questionnaire (2020-2021)

In the case of personal payment, the majority of respondents, i.e. 78% of the respondents, made payments by credit card in 2020 and this proportion is decreased to 75.8% in 2021, while the use of cash in this case of payment shows a smaller proportion, only 14.2% in 2020 and 20.3% in 2021. The high proportion of credit card usage and low proportion of cash usage even more surprising and also interesting because of the steady increase in cash stock may suggest that the use of cash in every day life is the most common for personal purchases. At this time the results show that the use of digital means of payment is gaining ground during the COVID-19 pandemic. Although the number of the digital smart device users number are decreased after the lifting of the COVID-19 restrictions, it can be stated that the number of payments with smart devices was higher during the health emergency caused by the COVID-19. In the case of personal payment, in addition to credit card and cash, payments by phones shows 7% in 2020 and almost 3.9% in 2021 and although it is a neglectable percentage but the use of smart watch payments has also appeared among the actively used payment alternatives, which represents 0.5% in 2020.

On occasions for personal purchases half of respondents paid in cash because they thought they could more easily distribute their money when paying in cash and more easily can keep track of their finances. 37% of respondents chose the cash payment method because the option to pay by credit card is still not available everywhere. 29% of those surveyed are already used to paying in cash and would not want to pay in any other way. 16% of the respondents consider it too dangerous to carry their bank cards because of the amount of money on it. There were also respondents who did not use their credit card to avoid entering the PIN number wrongly and possibly locking the card or their bankcard was not working properly.

Nearly 92 percent of the respondents who prefer payment by bank card use the card payment method because it is easier and faster to pay. Almost half of the Hungarian adult population chooses to pay by bank card because physical contact with cash can be avoided, and 35% of the respondents chooses to pay by bank card because the bank do not charge any additional costs. 31% of respondents feel more secure if

they can keep their money with them via bankcard. Some respondents choose to pay by bankcard as they mainly use their card only since the outbreak of COVID-19.

Adopted by the Hungarian Government 60/2020. (III.23), the given payment service provider does not request PIN-code authentication for purchases up to HUF 15,000. Whether did people's payment habits be influenced by a decree introduced by the Hungarian Government?

71.2% of the participants in the survey did not change their payment habits because of the newly introduced card payment regulation. 24.2% answered that they pay by bankcard more often because of the regulation and 4% answered that they do not use bank cards at all. There were also respondents who were affraid to use their bankcards and respondents who still do not have Paypass card, but there were also respondents who although their payment habits did not change as a result of the regulation, believe that the regulation helped to slow down the spreading of the virus.

5. Generational distribution of digital banking users before and after the COVID-19-outbreak

The following examined how many of the respondents used digital banking services before and after the onset of the COVID-19 pandemic and how many of those who used digital banking services since 12 March 2020 how many remains in digital administration, and in how many remains personal administration.

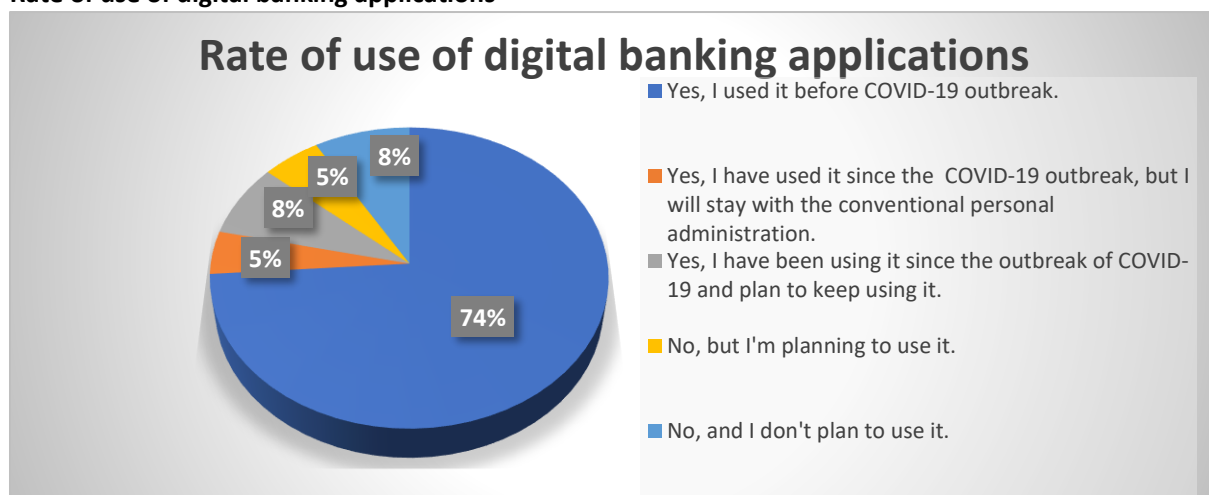
Year of birth:		Name of generations
• 1925-1945	→	„Veteran generation”
• 1946-1964	→	„Baby-boom”
• 1965-1979	→	„Generation X”
• 1980-1995	→	„Generation Y - Millennials generation”
• from 1996	→	„Generation Z – IT generation” (janus.ttk.pte.hu)

5.1.Results

There were those who had not used online banking services yet, but were planning to do so, and there were respondents who had not used online banking services yet and not planning to use them either.

Figure 8.

Rate of use of digital banking applications



Source: Own calculations using the data obtained in the questionnaire 2021

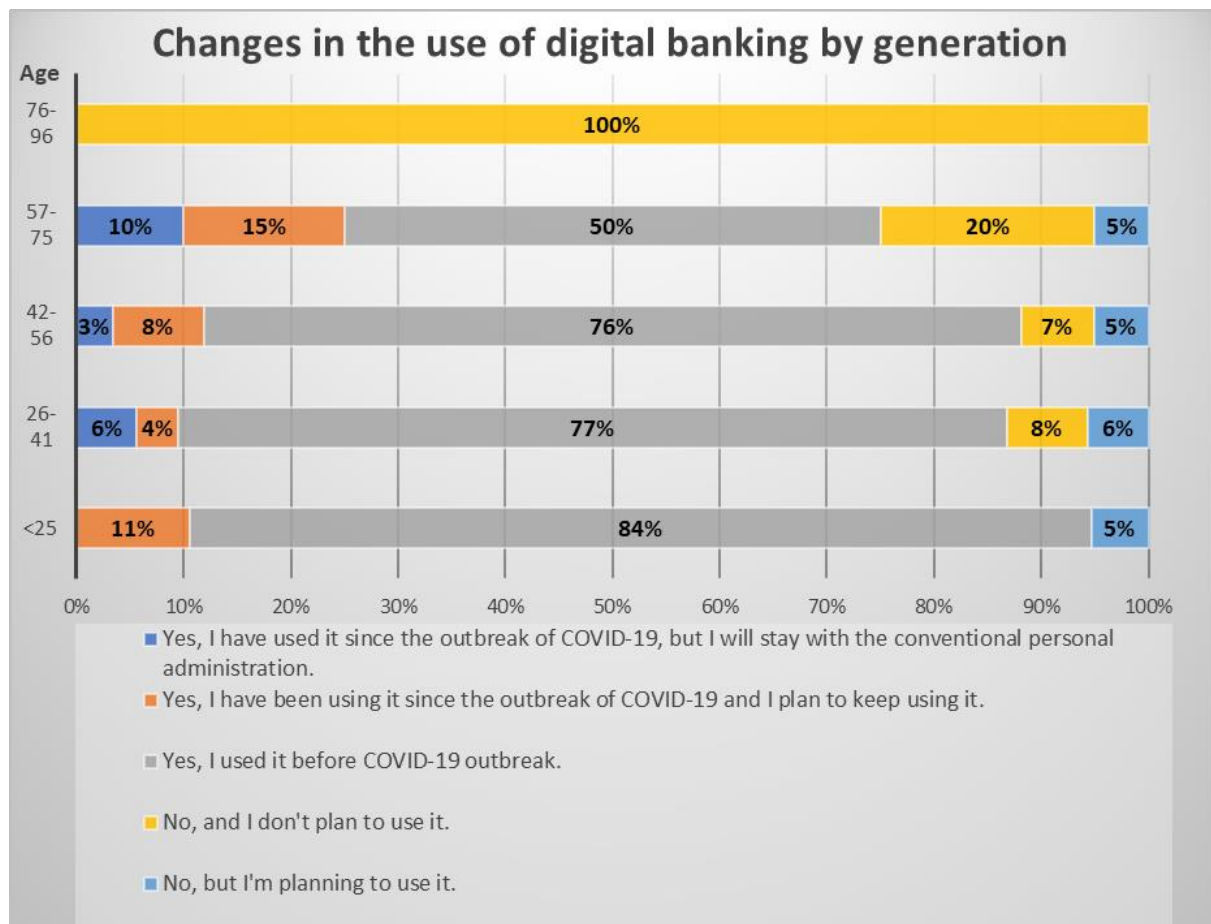
The vast majority of respondents, 74% of them, already used the digital banking applications prior to the COVID-19 pandemic. The outstanding result shows that the online banking platforms required for digital banking could be used before March 12, 2020, so electronic banking services could be used even before the

outbreak. Years ago, banks started introducing and developing applications and platforms in the electronic space that allowed customers to use various online banking services. The result reflects that most banks operate apps that allow individuals to access online banking services without visiting a branch in person. Users who have only used digital banking services since the beginning of COVID-19 pandemic account for only 13% of respondents and out of this, 8% of respondents are still plan to use banking services digitally. There are also individuals who have not yet used digital banking services. This rate is 13%, of which 5% plan to use it, while the remaining 8% still do not plan to use it. There may be a correlation between the number of people who have not heard of digital banking services yet and those who have not used it yet and also do not plan to use digital banking applications. In the questionnaire, Hungarian individuals were also asked if they have heard of the term digital banking. 87% of respondents had already heard of digital banking before the outbreak of COVID-19, 8% of respondents only heard about it after the pandemic started, and 5% of respondents had not heard of the term digital banking at all.

The age distribution of digital banking users was also examined. The figure below shows the change in digital banking usage by generation.

Figure 9.

Changes in the use of digital banking by generation



Source: Own calculations using the data obtained in the questionnaire 2021

The diagram shows the distribution of responses to each response option by age group. Based on the results shown in the diagram, it can be concluded that the number of people who managed their banking online before the beginning of the COVID-19 pandemic shows an exceptionally high percentage per generation. Along with this finding, it can also be stated that the proportion of adult Hungarian individuals who used it

even before the outbreak of COVID-19 decreases with older generations. (moving from the younger generation to the older generations)

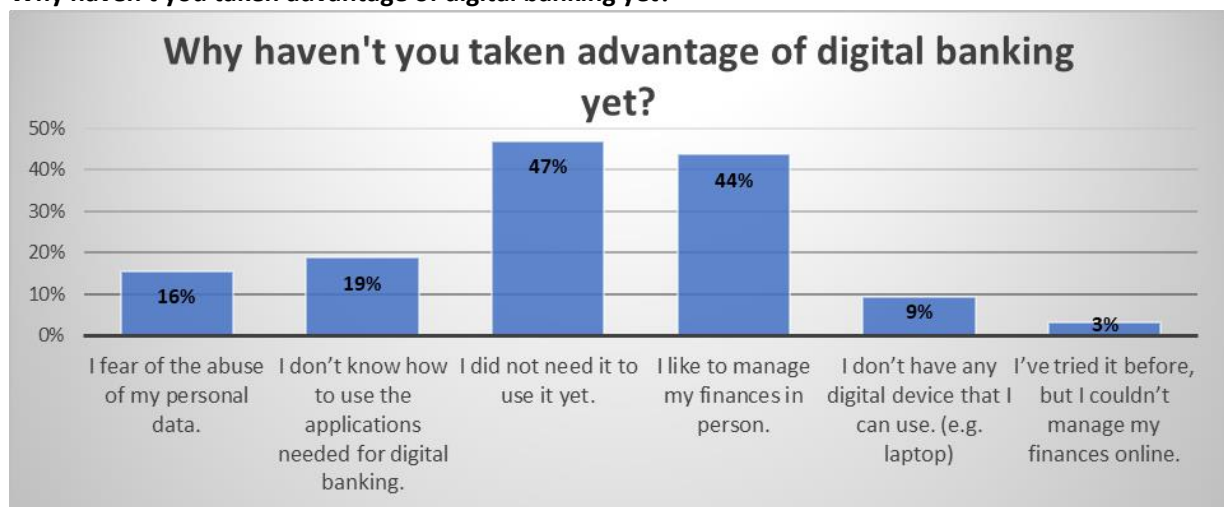
After the COVID-19 pandemic, the largest share of digital banking service users, 25% of the respondents belong to the "Baby-boom" generation. The other generations are not far behind, because 11% of the respondents belong to "Generation X" and in the same proportion can be observed „Generation Z“, and the lowest 10% characterizes "Generation Y". Most of the new users of electronic banking services belong to the "Baby-boom" generation. It is important to present two data, as not all new users plan to continue their banking administration electronically in the future. Most of the new users who plan to continue using banking services online belong to the baby-boomers and the second largest proportion is the „Generation Z“. On the other hand, people who have started using digital banking services as a result of the COVID-19 pandemic, but want to return to personal administration in future, the largest proportion can be observed at the “Baby-Boom” generation, the second largest is Generation Y and the third proportion can be observed as Generation X. It is interesting that there is a generation in which no one wants to stay at the conventional banking, this generation is the Generation Z, other name IT-generation. There is a correlation between the name of generation and the results.

From the results, it can be also observed that among Hungarian private individuals belonging to the Baby-Boom generation, they are the smallest group of people who bank online. At the same time, it can also be observed that they are the most receptive to change, because they were the majority who became digital banking users from traditional banking users after the outbreak of the COVID-19. The proportion of people who did not use digital banking can also be observed. The highest number is observed in the Baby-boom generation. 25% of Hungarian individuals belonging to this generation have not yet banked digitally. Of these, 20% do not even plan to do so, and 5% plan to bank digitally. The second highest rate is observed among people belonging to „Generation Y“. 14% of respondents have not yet banked digitally. Of these, 6% plan and 8% do not even plan to bank digitally. An even lower proportion is observed in „Generation X“. 12% of people have not yet banked digitally, of which 7% do not even plan to try it, and 5% plan to bank digitally. In „Generation Z“, 5% of the respondents have not yet banked digitally, but plan to use digital banking services, but there were no respondents who did not use digital banking and did not plan to use it in the future.

These people who did not use the services provided by digital banking were asked to explore the reason why they have not used digital banking services so far. When they were asked why they did not use digital banking services, 6 possible answers were given. The results of the answers are shown in the following diagram:

Figure 11.

Why haven't you taken advantage of digital banking yet?



Source: Own calculations using the data obtained in the questionnaire 2021

The chart shows that 44% of respondents have not yet banked digitally because they prefer manage their banking finances in person. 47% of respondents did not needed it yet and 19% of the Hungarian adults still do not know how to use the applications for digital banking. There are some Hungarian individuals, who fear abuse of their data related to digital banking and that proportion is 16%. 9% of those surveyed do not have a digital device which they could use to use the services provided by digital banking and 3% of individuals have already tried to manage their finances online, but have not been successful. Based on the results of the answers to this question, it can be concluded that individuals who have not yet managed their banking finances digitally, most of them like to do their finances in person or they did not have to use it yet.

9% of the respondents do not know how to use digital banking applications and also been asked what tools or education would they need to be able to use them. 69% of the respondents answered that they would need a smartphone, 58% indicated the Computer/Laptop and 4% of the respondents said the tablet.

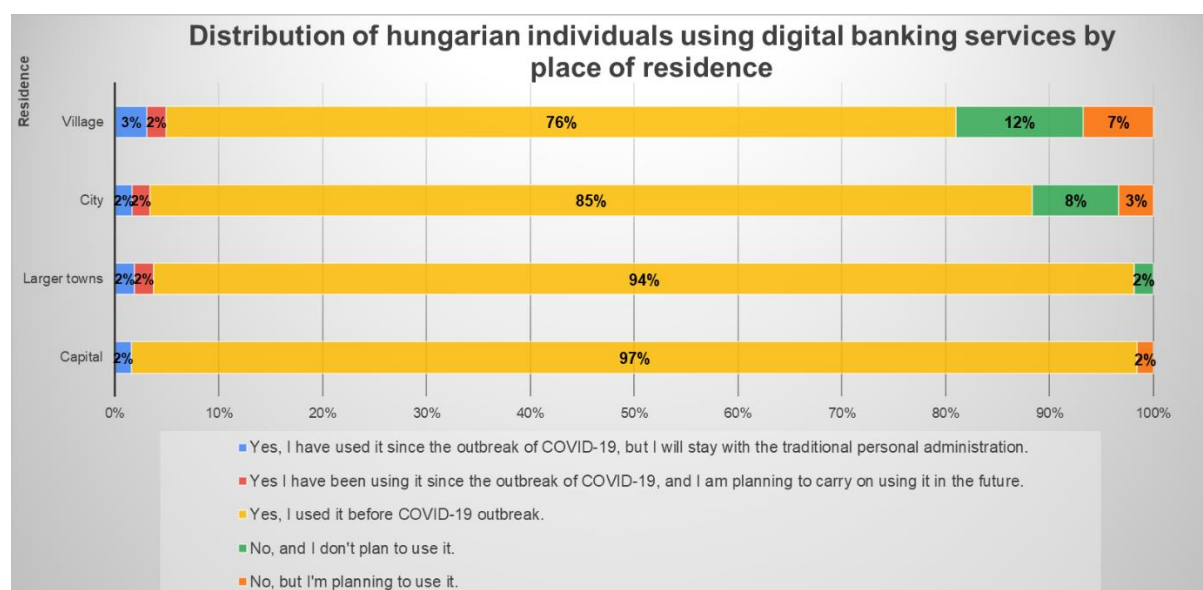
6. Examination of the relationship between the place of residence and individuals using digital banking services

6.1.Results

In the following, the relationship by place of residence and the number of people who have not used the services provided by digital banking and also do not plan to use them in the future will be presented.

Figure 12.

Distribution of hungarian individuals using digital banking services by place of residence



Source: Own calculations using the data obtained in the questionnaire 2020

Based on the diagram, it can be stated that a positive correlation can be established between the areas population and the number of digital banking services users. Most digital banking users live in the capital city. The second highest proportion is observed in people live in larger towns, followed by those live in, who live in towns and the lowest proportion can be observed in people living in villages. The number of those who have started using the digital banking since the beginning of the COVID-19 pandemic shows 2% and it shows almost the same proportion for each type of area. The number of people who plan to continue manage their banking finances digitally and the number of people who plan to return to personal administration after the pandemic over shows almost the same percentage. Most new digital banking users, who only started managing their banking finances digitally after March 12, 2020, live in villages. A

correlation can be observed here, as the number of users banking digitally live in cities was already higher than the number of people live in villages prior to the pandemic. The most people who live in small areas manage their banking finances in person so there are more people here who could become is potentially a new digital banking user. At the same time, the hungarian individuals who have not managed yet and do not plan to manage their banking finances online are also the most people live in villages, but the number of people live in smaller towns are not far ahead. In other words, it can be stated that the smaller the an areas is, the more people are present who have not used and do not plan to use digital banking. At the same time, it can also be established that the smaller the area is, the more people are present who have not used it yet, but are planning to use digital banking. Among the people live in larger towns, there was no respondent who, although did not use digital banking were planned to do so. At the same time, it can also be observed that among the respondents living in the capital, there was no one who had not tried or planned to use it yet. In other words, those who ever used digital banking services are planning to continue to use them in the future as well.

7. The regulations introduced as the result of the outbreak of COVID-19 and the differences in regulations between the various bank branches

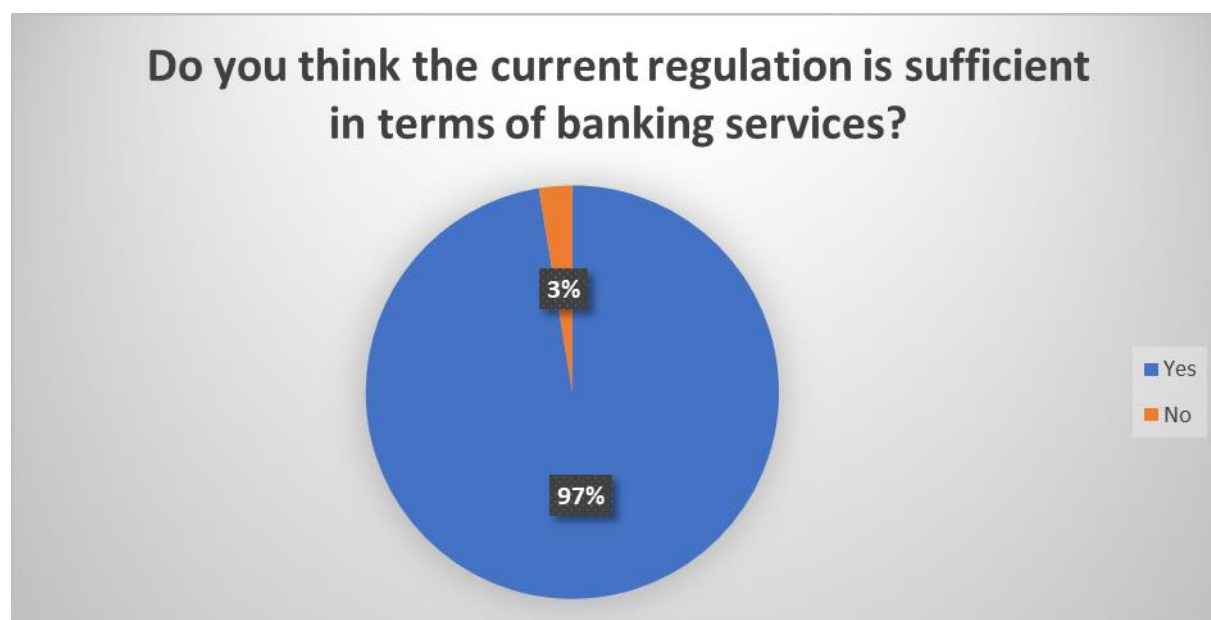
In the following, it's been investigated whether among Hungarian private individuals the restrictions regarding health regulations for bank branches are considered sufficient during COVID-19.

7.1.Results

Participants been asked in the research whether they consider the current regulations sufficient for banking services.

Figure 13.

Do you think the current regulation is sufficient in terms of banking services?



Source: Own calculations using the data obtained in the questionnaire 2021

97.4% considered the current health regulations for bank branches to be sufficient. Only 2.6% of the respondents said that they think the current regulations are insufficient. Some people said that easier transparency should be available in terms of contracts conducted with customers. Based on this, it can be concluded that there are customers for whom the contracts are opaque, and therefore spend less time

among people in bank branches. However, if the transparency of contracts were made simpler and more understandable, there would be no need to spend so much time in the bank branches. At the same time, it is likely that if the customer feels that he can manage his banking finances in one bank in less time than in another, he will probably choose the bank where the administration is simpler and faster. Among the respondents, however, there were those who emphasized the use of masks, saying that they consider it necessary to use masks in bank branches. Furthermore, they were also asked whether they had experienced a discrepancy in the regulations applied in individual bank branches. 83% of the respondents did not experience, and 17% experienced a difference between the regulations used for cash registers.

8. Changes in the bills payment options between the outbreak of COVID-19 and the partial lifting of the restrictions (the 5 millionth person vaccinated)?

In the 2021 survey, it's been investigated that the proportion of Hungarian private individuals who pay their utilities via check. Payment methods by check have been appearing continuously for years in Hungary, and in addition to the traditional postal method, their also appeared more innovative alternatives. Participants were then asked how they pay their bills.

8.1 Results

Based on the answers received, it can be concluded that most people pay their bills via postal check and individual bank transfers. 44% of the respondents always paid their bills via bank transfer, 41% via postal check, 34% by direct debit and 33% by mobile phone. Although the percentage of people using innovative postal check solution is low, it can be established that as of March 12, 2020, 6% of people pay their bills with via mobile phone, and the same percentage of people pay by direct debit since the outbreak of the COVID-19 pandemic, and only 5% pay their bills by individual transfer. The data also shows that the number of people paying at the Post Office decreased to a greater extent after the outbreak of COVID-19. As a result of COVID-19, the number of people who switched from postal bill payment to another alternative increase by 11%. After May 22, 2021, a greater change can be observed among those who have paid their bills via mobile phones, their share is 6%, and the second largest share is 3%, which shows the share of those who have paid by individual bank transfers.

Overall, it can be concluded that most people pay their bills in the Post Office and individual bank transfers. A greater change can be observed in the number of people paying their bills at the Post Office. That is, after the outbreak of COVID-19, the number of in-person postal check payers decreased and the number of people choosing innovative solutions are increased.

9. Summary

The primary aim of the research was to explore how the proportion of individuals using digital banking services changed before and after the onset of the COVID-19 pandemic in Hungary, and one of the main objectives was to examine the changes in electronic payment and cash payment among individuals in Hungary. The following is a summary of the results obtained.

In the first part, changes in personal banking and electronic banking services were examined before and after March 12, 2020, and before and after May 22, 2021. Research examined how the digital banking habits of Hungarian individuals changed because of the outbreak of the COVID-19 pandemic (March 12, 2020). The highest outlier can be observed in people who bank online several times a month. Although there is a slight decrease in the frequency, this can be attributed to the fact that the number of online banking with different frequencies is increasing. For example, the proportion of people who bank online once a month is increasing. At the same time, it can also be observed that the number of those people who manage their banking finances online less often is decreasing. It can also be concluded from this that those people who banked online less often with time instead of personal visit to branches could save time and effort and

switch to full time online banking. People who require more frequent banking administration will choose online administration. Aspects of those who choose online banking can be more convenient: cost-effectiveness, time saving, less travel time and no need to queue at banks. So, if people need to manage their banking finances either just once month or several times a month, it is easier to opt for online administration instead. The data shows that people who are less frequently managing banking finances prefer personal administration. So if we have to travel less often to visit our branch to deal with our finances, we prefer personal administration, whereas if they have to visit the bank several times a month for the same reasons, then online banking is the more preferred choice.

The data from the first questionnaire shows, it can be stated that the proportion of people using mobile phones is 72.8% which is about 1% higher than the one's who's using laptops/computers as that is 71.5%, and the third most important device was the tablet, which accounted for 5% of respondents. Based on the data obtained in the second questionnaire, it can be stated that the proportion of people using mobile phones to manage their banking finances online is 71.2% , the Personal Computer users are 38.6%, the laptop users is 46.4% and the 4.6% of the respondents are using tablets. It can be stated that both questionnaires results show nearly the same high percentage for mobile phone users. However, less than a quarter of the Hungarian adult population has not yet used banking services on their mobile phones. Of this 77.5%, 20% of people have only become active users since the onset of the COVID-19 pandemic in Hungary. It can be stated that the number of banking operations on mobile phones are the highest, but almost equal to the number of banking operations on laptops and computers. The number of new active users of mobile banking has increased by 20% in Hungary since the beginning of the COVID-19 pandemic.

Among other things, the changes in cash payments and contactless payments due to the outbreak of COVID-19 were examined. Comparing the 2020 and 2021 surveys the data shows that the proportion of those whose payment habits were not really affected by the outbreak of COVID-19 was lower in 2020. This could also mean that over time payment habits were increasingly affected by COVID-19. The respondent's payment habits were increasingly affected by COVID-19. In 2021, the proportion of those whose payment habits were not affected at all by the outbreak of the virus was only 39.2%. This rate is 12.5% less than the 2020 results. Based on the two surveys, it can be concluded that the outbreak of COVID-19 already had a higher impact on the payment habits of Hungarian individuals in 2021. Compared to 2020, in 2021 the number of Hungarian individuals whose payment habits were definitely strongly affected by the outbreak of the COVID-19 were almost doubled. Based on the data, it can be concluded that the payment habits of the majority of the Hungarian individuals did not change straight after the onset of the pandemic, however in 2021 the proportion of those people whose payment habits were affected by COVID-19 increased. Based on the 2021 surveys data, 47.1% of the Hungarian population has been paying more often with bankcard since the beginning of the COVID-19 pandemic. In the case of personal payment, the majority of respondents, i.e. 78% of the respondents , made payments by credit card in 2020 and this proportion is decreased to 75.8% in 2021, while the use of cash in this case of payment shows a smaller proportion, only 14.2% in 2020 and 20.3% in 2021. The use of digital means of payment is gaining ground during the COVID-19 pandemic. Although the number of the digital smart device users number are decreased after the lifting of the COVID-19 restrictions, it can be stated that the number of payments with smart devices was higher during the health emergency caused by the COVID-19. In the case of personal payment, in addition to credit card and cash, payments by phones shows 7% in 2020 and almost 3.9% in 2021 and although it is a neglectable percentage but the use of smart watch payments has also appeared among the actively used payment alternatives, which represents 0.5% in 2020.

The vast majority of respondents, 74% of them, already used the digital banking applications prior to the COVID-19 pandemic. The outstanding result shows that the online banking platforms required for digital banking could be used before March 12, 2020, so electronic banking services could be used even before the outbreak. Years ago, banks started introducing and developing applications and platforms in the electronic space that allowed customers to use various online banking services.

The age distribution of digital banking users was also examined. After the COVID-19 pandemic, the largest share of digital banking service users, 25% of the respondents belong to the "Baby-boom" generation. The other generations are not far behind, because 11% of the respondents belong to "Generation X" and in the same proportion can be observed „Generation Z”, and the lowest 10% characterizes "Generation Y". Most of the new users of electronic banking services belong to the "Baby-boom" generation. It is important to present two data, as not all new users plan to continue their banking administration electronically in the future. There is a generation in which no one wants to stay at the conventional banking, this generation is the „Generation Z”, other name IT-generation. There is a correlation between the name of generation and the results. From the results, it can be also observed that among Hungarian private individuals belonging to the Baby-Boom generation, they are the smallest group of people who bank online. At the same time, it can also be observed that they are the most receptive to change, because they were the majority who became digital banking users from traditional banking users after the outbreak of the COVID-19. Positive correlation can be established between the area population and the number of digital banking services users. Most digital banking users live in the capital city. The second highest proportion is observed in people living in larger towns, followed by those living in towns and the lowest proportion can be observed in people living in villages. The number of those who have started using the digital banking since the beginning of the COVID-19 pandemic shows 2% and it shows almost the same proportion for each type of area. The number of people who plan to continue managing their banking finances digitally and the number of people who plan to return to personal administration after the pandemic over shows almost the same percentage. Most new digital banking users, who only started managing their banking finances digitally after March 12, 2020, live in villages. A correlation can be observed here, as the number of users banking digitally living in cities was already higher than the number of people living in villages prior to the pandemic. The most people who live in small areas manage their banking finances in person so there are more people here who could become a potentially new digital banking user.

Participants were asked in the research whether they consider the current regulations sufficient for banking services. 97.4% considered the current health regulations for bank branches to be sufficient. Only 2.6% of the respondents said that they think the current regulations are insufficient. They were also asked whether they had experienced a discrepancy in the regulations applied in individual bank branches. 83% of the respondents did not experience, and 17% experienced a difference between the regulations used for cash registers.

In the 2021 survey, it's been investigated that the proportion of Hungarian private individuals who pay their utilities via check. Payment methods by check have been appearing continuously for years in Hungary, and in addition to the traditional postal method, there also appeared more innovative alternatives. Participants were then asked how they pay their bills. It can be concluded that most people pay their bills via postal check and individual bank transfers. 44% of the respondents always paid their bills via bank transfer, 41% via postal check, 34% by direct debit and 33% by mobile phone. Although the percentage of people using innovative postal check solution is low, it can be established that as of March 12, 2020, 6% of people pay their bills with via mobile phone, and the same percentage of people pay by direct debit since the outbreak of the COVID-19 pandemic, and only 5% pay their bills by individual transfer. The data also shows that the number of people paying at the Post Office decreased to a greater extent after the outbreak of COVID-19. As a result of COVID-19, the number of people who switched from postal bill payment to another alternative increase by 11%. After May 22, 2021, a greater change can be observed among those who have paid their bills via mobile phones, their share is 6%, and the second largest share is 3%, which shows the share of those who have paid by individual bank transfers.

References

- A Magyar Nemzeti Bank 2020. évi sajtóközleménye (2020): Rendkívül népszerű az azonnali fizetés: több mint 9 millió azonnali átutalás egy hónap alatt <https://www.mnb.hu/sajtoszoba/sajtokozlemenyek/2020-evisajtokozlemenyek/rendkivul-nepszeru-az-azonnali-fizetes-tobb-mint-9-millio-azonnaliatutalas-egy-honap-alatt> Downloaded: 2020.11.27
- A Kormány 60/2020. (III.23.) Kormány rendelete a veszélyhelyzetre tekintettel az érintéses fizetések egészségügyi biztonsága növelése érdekében szükséges intézkedésekről 2020 https://magyarkozlony.hu/dokumentumok/9ede64f74b967131f6e0b99bf4e092775ce663_3c/letoltes Downloaded: 2020.05.29.
- Deák, V. – Takács, K. – Varga, L. (2020): A koronavírus-járvány hatása a hazai fizetési szokásokra – 2. rész 2020 <https://www.mnb.hu/letoltes/a-koronavirus-jarvany-hatasa-azelektronikus-penzforgalom-valtozasara-2020-januar-junius-folyaman.pdf> Downloaded: 2020.10.18.
- European Central Bank (2017) The use of cash: <https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op201.en.pdf> Downloaded: 2020.05.29.
- Finance & economics, (2021)
- Filep D.: University submission 2021.
- Generációs elméletek http://janus.ttk.pte.hu/tamop/tananyagok/digitalis_nemzedek/genercis_elmletek.html Downloaded: 2020.10.02.
- Merchant Savvy (2020). Amazing Stats Demonstrating The Unstoppable Rise of Mobile Payments Globally. <https://www.merchantsavvy.co.uk/mobile-payment-stats-trends/> Downloaded: 2020.10.25.
- MNB Fintech és Digitalizációs Jelentés (2020 április):<https://www.mnb.hu/kiadvanyok/jelentesek/fintech-es-digitalizacios-jelentes/fintech-esdigitalizacios-jelentes-2020-aprilis> Downloaded: 2020.05.28.
- Sound Practices Implications of fintech developments for banks and bank supervisors February 2018: (2018) <https://www.bis.org/bcbs/publ/d431.htm> Downloaded: 2020.05.28.
- Végső, T. – Belházné, I. – Bódi-Schubert, A. (2018): Kézpénz vagy kártya? : <https://www.mnb.hu/letoltes/vegso-2018-4-pdf.pdf> Downloaded: 2020.05.29.
- Végső, T. – Bódi-Schubert, A. (2020): A koronavírus-járvány hatása a hazai fizetési szokásokra – 1. rész 2020 <https://www.mnb.hu/letoltes/a-koronavirus-jarvany-hatasa-akeszpenzallomany-valtozasara-2020-januar-augusztus-folyaman.pdf> Downloaded: 2020.11.28.
- World Bank (2018). The Global Findex Database 2017. <https://globalfindex.worldbank.org/> Downloaded: 2020.05.27.