sciendo

Financial Internet Quarterly 2022, vol. 18 / no. 1, p. 31-43

10.2478/fiqf-2022-0003

Financial Internet Quarterly

CASHLESS PAYMENT SYSTEM AND COVID-19 ON THE EXAMPLE OF THE CZECH REPUBLIC

Otakar Schlossberger[1], Marcela Soldánová[2]

Abstract The paper deals with cashless payments during the pandemic situation caused by Covid-19. The aim of the paper will be to use the method of analysis and comparison of selected data to answer the following research question: Has the pandemic caused by Covid-19 contributed to increasing the share of non-cash payments? The authors base their research on the hypothesis that "the pandemic period had a significant impact on the development of cashless payments". From the performed research, the authors came to the conclusion that based on the methods used, the established hypothesis was not confirmed and the answer to the research question had to be given in the negative.

JEL classification: E420, G210, K22

Keywords: payments instruments, noncash payments, transactions, payment services, financial market regulation

Received: 05.01.2022 Accepted: 07.02.2022

Cite this:
Schlossberger O., Soldánová M. (2022) Cashless payment system and Covid-19 on the example of the Czech Republic. Financial Internet Quarterly 18 (1), pp. 31-43.

[1] Otakar Schlossberger, University of Finance and Administration, The Czech Republic, e-mail: otakar.schlossberger@vsfs.cz, ORCID: https://orcid.org/0000-0001-7560-2047.
[2] Marcela Soldanová, The Czech National Bank and University of Finance and Administration, The Czech Republic, e-mail: marcela.soldanova@email.cz, ORCID: 0000-0003-0711-8872.

Introduction

Cashless payments are an important tool in the running of any country's economy. It supports the proper functioning of the economy and mutual supplier -customer ties. At the same time, it is certainly an important factor in economic relations between consumers and traders, where consumers make their purchases of necessary services, which can be, in particular, movable or immovable property or services. However, consumers also still use cash in the form of banknotes and coins. In 2020, the whole world found itself in a historically new situation - the world was hit by a pandemic of a disease that humanity did not know about until then. Covid-19 has affected all areas of life, including the national economy (Czech National Bank [CNB], 2021). As stated by Aleš Michl, a member of the Bank Board of the CNB, "2020 will be a lost year from an economic point of view" (Michl, 2020, p. 30). However, the author team considered this statement as to whether 2020 was really a "lost year" in general, or whether areas could be found actually may have developed more than would be the case under standard conditions.

Because it is common knowledge that at the time of the closure of the economy, people generally began to spend more money shopping online, where they were essentially forced to pay, in most cases, in a cashless manner by means of a payment order via internet or mobile banking, or pay for their purchase with a credit card, namely by contact or contactless route or again using an internet or mobile application. The authors based their research on the issue from the hypothesis, which reads: "The pandemic period had a significant impact on the development of cashless payments." The aim of this article is to answer the research question as follows: "Did the pandemic caused by Covid-19 contribute to increasing the share of non-cash payments?" The issue was examined on available data from the Czech Republic, which was obtained from the CNB, the Czech Banking Association (hereinafter referred to as the "CBA"), the Czech Statistical Office (hereinafter referred to as the "CZSO") or the Bank Card Association (hereinafter referred to as the "SBK").

The impact of the Covid-19 pandemic on various areas of the economy or social life in general has been addressed by a number of foreign or domestic authors who have published their results in various professional or scientific journals. For example, there is a study conducted and published by the research and consulting company Gartner on trends in retail, especially e-commerce with a focus on payment services. Ford and Joliet (2020) study shows that during the pandemic in 2020, the share of e-commerce in the US increased from 16% to 27%, in the UK even from 20% to 33%. The study also mentions the Czech Republic, where it combines the share of e-commerce in retail at the level of 16%. However, the authors of this article focus on examining the whole state of non-cash payments, which may be affected by several factors that are not included in the above study. These are in particular:

1) the declining share of companies that had to close down as a result of the "lockdown", so the share of their payments within payment services decreased,
2) the difference between the numbers and volumes of non-cash transactions carried out by the consumer (retail) and the corporate sphere (corporate).

Another interesting study is an article published in the Swiss Journal of Economics and Statistics in 2020, which analyzed the payments made by payment cards in the retail sector in Switzerland during the COVID-19 crisis (Kraenzlin, Meyer & Nellsen, 2020). However, this technical text deals with the analysis of only a part of the cashless payment system, which is represented by only one payment instrument. However, this study provides a good reflection of the development of the use of payment cards in pandemic times in Switzerland.

COVID-19 pandemic research is also being conducted in non-European research institutions. The authors Srivastava, Mahendar and Vandana (Srivastava et al., 2021), researched a sample of 387 contactless payment users during the pandemic and their behavior in India. Here, too, the authors focused on the research of only a certain part of non-cash payments with an orientation on the research of consumer behavior when using this form of payment.

It is certainly worth mentioning the research conducted by the CBA in cooperation with IPSOS.

The study was devoted to the research of the use of individual payment instruments of the surveyed users in the number of 1 thousand persons. Data collection was completed in March 2021, i.e. at the time of the beginning of the so-called third wave of the pandemic. It only marginally worked with aggregated secondary data (CBA, 2021). However, the focus and results of the study are closest to that of the authors of this paper.

However, the benefit of the presented article is the fact that the authors analyzed the secondary data from the above sources in terms of summary numbers of non-cash payments, only subsequently monitoring the

development of payments by the selected payment instrument, which was the payment card or the use of so-called instant payment (immediate payment - see below). Based on the analysis of data, the authors proceeded to evaluate the hypothesis and answer the research question. Before proceeding to the analysis of data and their comparison, attention will be paid to the legal definition and position of the payment system and individual basic instruments with a focus on cashless payments. Subsequently, the analysis of the obtained data will be performed and the results will be summarized at the end of this article. The presented article is only a fraction of the whole research, which the authors primarily devote to a longer period of time.

Legal basis of the payment system

The basic legal regulation of the payment system in the Czech Republic is contained in a special legal regulation, which is Act No. 370/2017 Coll., on payment system (hereinafter referred to as "ZPS") and Decree No. 169/2011 Coll. account in the payment system. These national standards were based on European law, namely Directive 98/26 / EC of the European Parliament and of the Council on settlement finality in payment and securities settlement systems, as amended, Directive 2009/110 / EC of the European Parliament and of the Council on access to activities of electronic money institutions, their performance and prudential supervision, amending Directives 2005/60 / EC and 2006/48 / EC and repealing Directive 2000/46 / EC, as amended, and Directive 2014/46 / EC of the European Parliament and of the Council 92 / EU on the comparability of fees related to payment accounts, change of payment account and access to payment accounts with the basic elements, and last but not least in particular Directive (EU) 2015/2366 of the European Parliament and of the Council on payment services in the internal market amending Directive 2002/65 / EC, 2009/110 / EC and 2013/36 / EU and Regulation (EU) No 1093/2010 and repealing Directive 2007/64 / EC (hereinafter "Directive 2366") (Eur-lex, 2015).

In addition to these "transposition" European standards, the area of payments is governed by a number of directly effective standards, such as EU regulations. These are, in particular, Regulation (EC) No 924/2009 of the European Parliament and of the Council on cross-border payments in the Community and repealing Regulation (EC) No 2560/2001, as amended, Regulation (EU) No 260/2012 of the European Parliament and of the Council, laying down technical and commercial requirements for credit transfers and direct debits in euro and amending Regulation (EC) No 924/2009, as amended, or Regulation (EU) 2015/751 of the European Parliament and of the Council on interchange fees for card payment transactions. The enumeration of these European legal standards is important as it determines the legal framework of payment services and regulates them.

Directive 2366 then listed exhaustively which payment products belong to the so-called payment services[3]. These are the following:

1) a service enabling cash to be deposited in a payment account maintained by the provider,
2) a service enabling cash withdrawals from a payment account maintained by the provider,
3) transfer of funds from the payment account to which he gives the payment order:

a) payer,
b) the recipient, or
c) the payer through the payee, if the provider does not provide the user with the transferred funds as a loan,

4) making a transfer of funds from the payment account to which he gives the payment order

a) payer,
b) the recipient, or
c) the payer through the payee, if the provider provides the transferred funds to the user as a loan,

5) issuing and managing means of payment and, if the user is the payee, transmitting a payment order and processing payment transactions,

a) execution of a transfer of funds in which neither the payer nor the payee uses a payment account with the payer's provider (remittance),
b) payment initiation services,
c) account information service. (CZ, 2017, § 3 par. 1).

As part of the analysis, the authors examined only selected payment services, which were transfers of funds from payment accounts to which payers, payees or payers through payees placed orders. These were therefore payment orders and the use of payment cards. These two non-documentary payment instruments are the basic payment instruments used by all financial market participants for the non-cash settlement of their monetary obligations. The authors did not examine the impact of direct debit orders, i.e. orders initiated by payees.

[3] The importance of the difference between payment services and payment system and its genesis - see eg Schlossberger, O. (2017). Effect PSD II implementation for the realization of the payment service. In O. Schlossberger, V. Pavlát (Eds), Proceedings of the 8th International Conference on "Financial Markets: Current State & Future Perspectives, (pp.10-20). Praha: VŠFS.

Covid-19 and its expected effects on the economy

The aim of this paper is not to characterize Covid-19 and its stages in the Czech Republic, but only to outline its history and expected impacts.

Covid-19

In the Czech territory, the first three cases of the disease were confirmed on Sunday, March 1, 2020 at 4 o'clock in the afternoon. As of November 3, 2021, a total of 11 875 857 people were tested in the Czech Republic, 1 792 707 people were infected, 81 111 were actively ill, 2 300 were hospitalized, 1 680 718 recovered, and unfortunately a total of 30 878 died on the observed date. (Google.cz, 2021). To prevent the spread of the disease, the government has taken a number of measures, the most drastic of which, in turn, has had the effect of reducing the performance of the economy as a whole:

1) free movement was banned by the government from March 16, 2020, (CZ, 2020),
2) as of 24 April, this restriction was lifted, but when moving in public, the restriction to 10 people in the group remained,
3) on 12 March 2020, the Government of the Czech Republic declared a state of emergency (Resolution No. 69/2020 Coll.). The state of emergency ended on May 17, 2020,
4) from 25 May 2020, mass events were subsequently allowed, from 8 June to up to 500 people. During June, the number of participants allowed increased to 1 000 people, and at trade fairs to 5 000 people.

A similar situation was repeated at the turn of autumn and winter in 2020. Extraordinary measures were first taken by the government within the declared state of emergency, later they were issued by the Ministry of Health in accordance with the Public Health Protection Act. (CZ, 2000, § 69 et seq.).

At present (i.e. November - December 2021) we are witnessing another wave of the Covid-19 pandemic, which caused the government to declare another state of emergency for thirty days with effect from 26 November 2021, i.e. a period almost including the Christmas holidays (CZ, 2021).

General impact on the economy

According to the International Monetary Fund's forecast, the Czech economy should expect an economic downturn of 6.5% in 2020. The Ministry of Finance had a slightly more optimistic view and expected a decline of 5.6%, but it is still the deepest economic downturn since the establishment of the Czech Republic. (Aktuálně.cz, 2020). But as stated by Michl in his monograph Reset economy, in II. In Q20, the fall in GDP was 10.8% (Michl, 2021), in fact, the fall in GDP for the whole of 2020 was 5.6%. According to Eurostat, at the end of 2020 the Czechia sold ten-year bonds with an interest rate of 1.26%, which is the fourth highest in Europe. At the same time, Eurozone countries sold bonds at a negative rate of 0.21%.

On the other hand, according to the analysis of Šafránek, the pandemic had a positive effect on the turnover of supermarkets and hypermarkets, electronics sales increased by up to 32% in 2021 compared to 2019, and health and beauty products by up to 15%. The fashion and footwear sector also grew by up to 21%. Higher turnovers are mainly explained by deferred consumption from 2020 (Šafránek, 2021).

The outbreak of the epidemic in the Czech Republic also had a significant effect on the transfer of most stores to the Internet. For example, the number of people buying food online was about six times higher than in the current period. All large online supermarkets such as Košík.cz, Rohlík.cz or Tesco.cz faced problems of insufficient capacity and had to accelerate expansion plans (BusinessInfo.cz). The biggest on-line stores Alza.cz and MALL.cz introduced platforms for fast entry of brick-and-mortar shops to the internet (MediaGuru.cz, 2020). Fintech companies have come up with express onboarding for secure payment (Seznamzprávy.cz, 2020) and the Shoptet e-shop platform has announced twice as many newly established e-shops (Shoptet, 2020). The possibility of postponing payment by the end consumer for a later period was also supported by the development of new applications during the pandemic (Bílek, 2020).

These facts show the situation in which on the one hand the pandemic caused negative phenomena in the economy, such as the above-mentioned economic downturn, but on the other hand accelerated some processes related to deepening non-contact communication, especially in the area of payments.

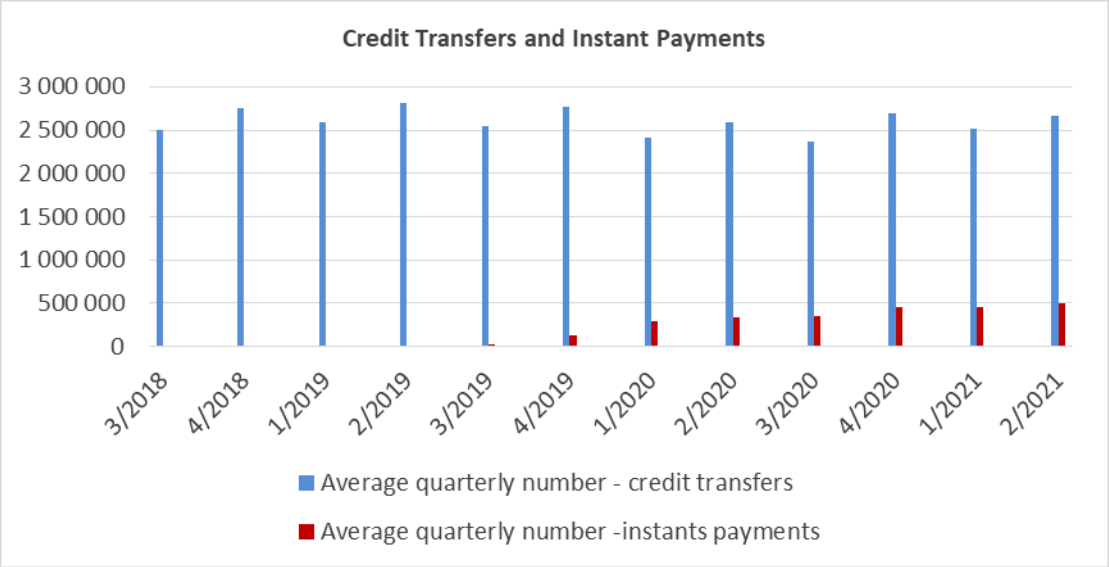
Analysis of selected payment transaction data

As mentioned above, the authors therefore questioned whether the Covid-19 pandemic had a positive effect on increasing cashless payments. The authors based their reasoning on secondary data obtained from the ARAD system of the CNB (CNB, 2021a).

Credit transfer and instant payments

Chart 1 graphically shows the average number of payment orders and so-called instant payments[4] after individual quarters, in the period between the 3rd quarters of 2018, i.e. the period without the Covid-19 pandemic for the second quarter of 2021 inclusive. The data shown in the chart do not take into account the form of transmission of payment orders, i.e. whether they are transmitted electronically via Internet applications or paper based.

Chart 1: Average quarterly number – CT and IP



Source: CNB, 2021a, own processing of authors.

Immediate payments have been introduced into the Czech payment system in CZK since the first quarter of 2019, and for subsequent comparison, it is appropriate to add standard transfers to instant transfers. This will give a comparable numerical basis so that we can compare the number of total non-cash payments before and after the pandemic. This is especially the second and third quarters of 2020. The "y" axis expresses the number of transactions in units.

[4] Instant or immediate payment is a one-time online payment made via the internet or mobile application of a bank or other payment service provider. Instant or immediate payment is a one-time online payment made via the internet or mobile application of a bank or other payment service provider.

Table 1: Average quarterly number - input data

	3/ 2018	4/ 2018	1/ 2019	2/ 2019	3/ 2019	4/ 2019	1/ 2020	2/ 2020	3/ 2020	4/ 2020	1/ 2021	2/ 2021
CT	2 508	2 758	2 595	2 812	2 538	2 763	2 413	2 596	2 364	2 689	2 509	2 668
IP	0	0	3	9	18	129	284	328	350	453	456	504
Σ	2 508	2 758	2 598	2 821	2 556	2 892	2 697	2 924	2 714	3 142	2 965	3 172

Source: CNB, 2021a, own processing of authors.

For comparison, we will always monitor the same quarters from 2018 to 2020-2021, when the basis for monitoring the increase/decrease in the number of repetitions in % will always be the first and then the next quarter being compared. From the given values of Table 1 we get the following shares:

Table 2: Index of selected quarters

3/2019 : 3/2018	1.019
3/2020 : 3/2018	1.082
3/2020 : 3/2019	1.062
4/2019 : 4/2018	1.048
4/2020 : 4/2018	1.139
4/2020 : 4/2019	1.086
1/2020 : 1/2019	1.038
1/2021 : 1/2019	1.137
1/2021 : 1/2020	1.099
2/2020 : 2/2019	1.036
2/2021 : 2/2019	1.124
2/2021 : 2/2020	1.085

Source: CNB, 2021a, own processing of authors.

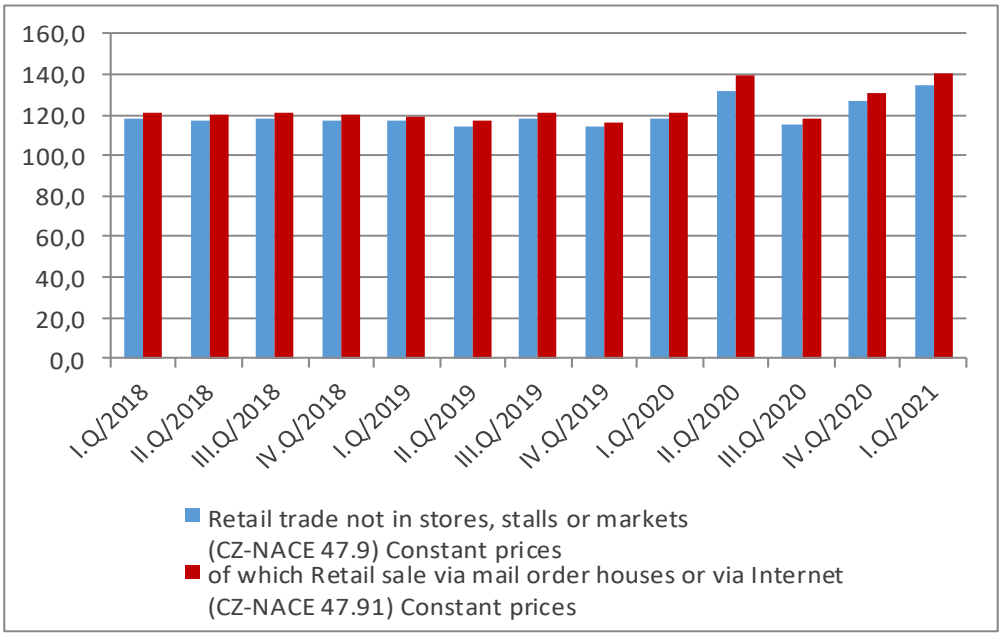
These figures show that the most significant percentage increase was recorded between the fourth quarters of 2018-2020 and then in the first quarter between 2019 and 2021. In 2018 and 2019, the Covid-19 pandemic was not yet widespread in the Czech Republic; nevertheless, there was a percentage increase in the number of non-cash payment orders. These quarter-on-quarter increases can be attributed to the standard operation of the economy, not the pandemic. Year-on-year increases in consecutive quarters (i.e. Q4 of one year compared to Q4 of the year immediately preceding it) ranged from 1.9% (Q3 2019 and 2018) to 9.9% (I Q 2021 and 2020). From the graph No. 1 and numerical values it can be stated that from the point of view of the number of payment orders including instant payments, it cannot be clearly established that the slight increase in the number of orders was due to the "coronavirus crisis". A gradual trend in a slight increase in the number of transactions can be observed in virtually each of the examined quarters, although the values decrease occasionally - always in I. and III. Q of the given year. This trend is recurring and can be easily explained by the behavior not only of consumers after the end of the year and the holiday season, but also by business entities.

Retail trade - sales index

Chart 2 below shows the share of retail sales outside stores, stalls and markets and sales via the Internet or mail order services. These are sales indices, where the observed periods are on the X-axis and the percentage expression of the sales index on the Y-axis. The sales index indicates how sales changed (increased or decreased) in the observed period compared to the comparison base. Depending on the type of index, the comparison base means either the same period of the previous year (year-on-year index) or the average period of the base year (base index) (CZSO, 2021).

The above graphic representation shows year-on-year indices and they show quite clearly that the year-on-year movement, with a few exceptions, has a value of around 120%. Only the second and fourth quarters of 2020 and the first quarter of 2021 are in the year-on-year index between 120 – 140%. These values initially correspond to the trend in cashless operations, but they may not have a direct link to the Covid 19 pandemic. The final customer can also make his purchase of goods or services by paying in cash or using a payment instrument other than a non-cash payment order.

Chart 2: Retail trade and sale via internet - sales index



Source: CZSO, 2021a, own processing of authors.

Table 3 shows the input data - sales indices, which were determined according to the methodology of the CZSO.

Table 3: Retail trade and sale via internet - sales index, input data

Period	Retail trade not in stores, stalls or markets	Retail sale via mail order houses or via Internet
I.Q/2018	118.1	121.5
II.Q/2018	117.1	119.7
III.Q/2018	117.9	121.0
IV.Q/2018	117.6	119.7
I.Q/2019	117.1	119.4
II.Q/2019	113.8	117.6
III.Q/2019	117.6	120.6
IV.Q/2019	114.3	116.5
I.Q/2020	118.2	121.2
II.Q/2020	1317	139.4
III.Q/2020	115.4	117.9
IV.Q/2020	126.8	130.5
I.Q/2021	135.0	140.2
I.Q/2018	118.1	121.5

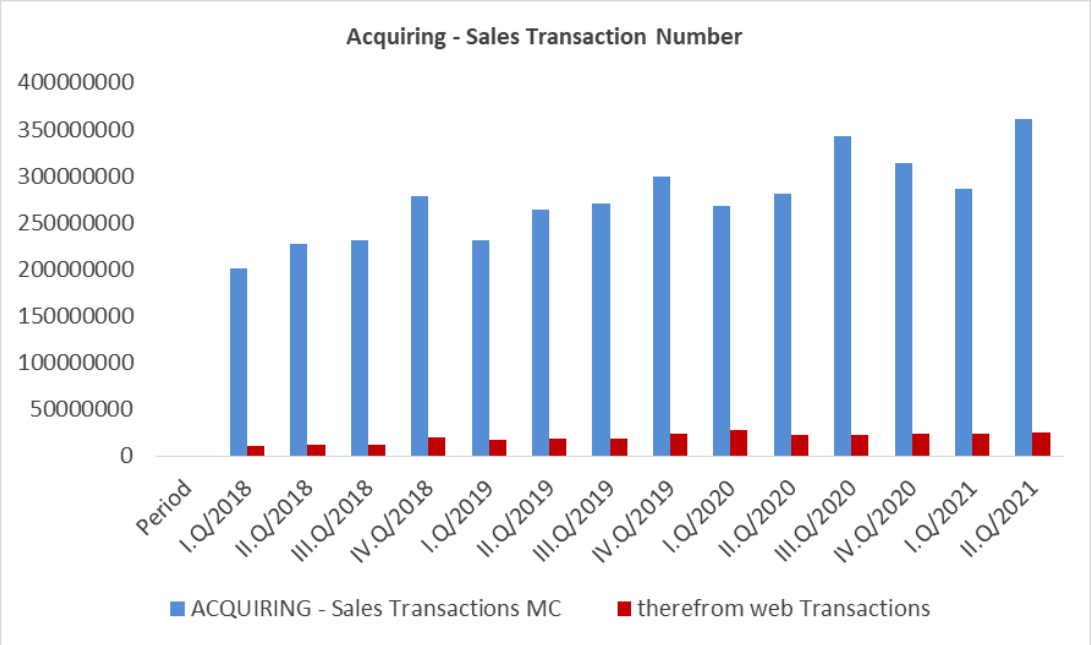
Source: CZSO, 2021a, own processing of authors.

Card transactions

For the reasons stated above, the authors further focused their analysis on the analysis of data consisting in the use of payment when purchasing goods or services by a payment instrument, which is a payment card, from which the scope made through a web application is particularly shown. The so-called acquiring transactions, i.e. payment card acceptance services, were selected for the analysis. Charts 3 and 4 graphically show the state of the number of these transactions in the period from 2018 to II. Q. 2021 after individual quarters, resp. the volume of transactions carried out by these instruments.

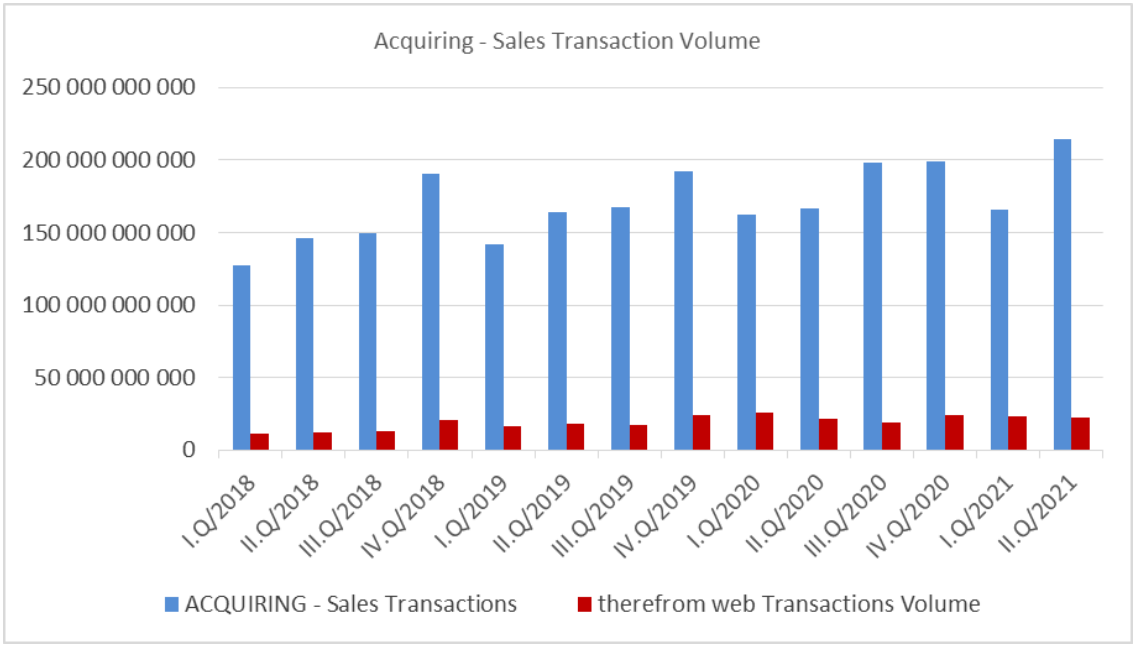
The following Tables 4 and 5 then show the input data for the research.

Chart 3: Acquiring – Sales Transaction Number



Source: SBK, 2021, own processing of authors.

Chart 4: Acquiring – Sales Transaction Volume



Source: SBK, 2021, own processing of authors.

Table 4: Sales Transaction Number - input data

Period	ACQUIRING - Sales Transactions MC Sales Transactions Number	therefrom web Transactions
I.Q/2018	200 565 383	10 542 829
II.Q/2018	226 639 210	11 257 667
III.Q/2018	231 561 035	12 160 617
IV.Q/2018	278 739 570	19 972 681
I.Q/2019	231 367 685	16 753 406
II.Q/2019	264 107 054	18 684 381
III.Q/2019	270 936 650	18 091 189
IV.Q/2019	299 367 481	23 781 826
I.Q/2020	267 269 085	27 385 689
II.Q/2020	280 449 240	21 834 186
III.Q/2020	343 090 410	21 913 229
IV.Q/2020	313 870 720	23 783 650
I.Q/2021	285 606 887	23 749 387
II.Q/2021	360 865 673	25 129 569

Source: SBK, 2021, own processing of authors.

As for the number of transactions, a somewhat more significant increase can be seen in III. Q of 2020 in II. Q 2021. At the same time, increased values of payment orders and year-on-year sales indices do not correspond to these higher values (see graphs and input data above).

A similar development can be observed in the volume of transactions, where the trend in the gradual increase in the volume of transactions may also be partly due to inflation. Table 6 below shows, for illustration, the average inflation rates over the years.

Table 5: Sales Transaction Volume - input data

Period	ACQUIRING - Sales Transactions Sales Transactions Volume	therefrom web Transactions Volume
I.Q/2018	127 054 449 687	11 098 199 655
II.Q/2018	145 940 267 834	11 775 166 125
III.Q/2018	149 859 381 991	13 107 408 508
IV.Q/2018	190 150 593 858	21 129 200 562
I.Q/2019	141 787 531 553	16 182 973 440
II.Q/2019	164 360 222 753	17 877 346 290
III.Q/2019	167 128 376 375	17 516 144 288
IV.Q/2019	192 600 560 850	24 400 860 946
I.Q/2020	162 044 703 221	26 121 009 692
II.Q/2020	166 677 598 437	21 717 226 544
III.Q/2020	197 918 935 088	19 170 434 395
IV.Q/2020	199 466 579 061	24 503 209 735
I.Q/2021	166 182 549 643	23 345 924 099
II.Q/2021	214 558 175 349	22 410 886 842

Source: SBK, 2021, own processing of authors.

Table 6: Average annual inflation rate in % in the Czech Republic

Year	2018	2019	2020	2021 (III. Q)
Inflation	2.1	2.8	3.2	4.9

Source: CZSO, 2021, own processing of authors.

If we compare the numbers or volumes of transactions with the time for which the government's measures related to the Covid-19 pandemic applied, then even at this level it cannot be said that significantly more card transactions were processed in pandemics than in the pre-pandemic period. Certain deviations may be due to influences such as consumer behavior during the holidays or before Christmas, a shift from non-cash transfers, which, however, also includes business transfers to trends in inflation, affecting prices and thus transaction volumes.

Discussion

The authors are aware that they used only selected secondary data for their research, which, however, clearly reflect the development in the field of non-cash, or and electronic transactions shortly before the pandemic and in its first stage. Payment system data at the level of the payment order include instant payments and data when accepting payment cards were supplemented by a sales index. With the presented research, they tried to find dependence without the use of mathematical models, whether the emerging Covid-19 pandemic had an impact on the growth of non-cash, resp. and electronic transactions. It would be possible to discuss other influences that may have occurred in the period after the onset of the pandemic, which could affect or affect the outcome of the research. These effects may be (except for inflation - see above):

1) closing shops and services without the possibility of buying online,
2) the possibility of electronic payment used before the Covid-19 pandemic (by payment card or other electronic application),
3) consumer behavior during a pandemic,
4) the downturn in the economy as a whole, with an impact on lower production.

Thanks to the so-called lockdown, a number of shops or service establishments (especially hotels, theaters, hairdressers, etc.) were closed, which could not provide any services, and therefore the number of payment transactions had to decrease, often in the form of using a payment card. This was especially true in tourism, where payment cards are used very often. A similar situation can also be expected in supplier-customer relations, which in turn make mainly non-cash transfers from account to account.

On the other hand, the Czech Republic is one of the countries that use payment cards and other electronic applications at the forefront of European countries (Gallistl, 2020). From this it can be deduced that the use of electronic operations is widespread in the Czech Republic. Therefore, if in one area they ceased to be used due to their impossibility (physical closure of establishments), these electronic payments were transferred from one trading platform to another, without significant effects on the number or volume of operations, i.e. from brick-and-mortar shops to virtual shops (internet).

Another area that cannot be ignored is consumer behavior in times of any crisis, including Covid-19. Consumers tend to save rather than to spend in times of crisis. E.g. according to research by Oliver Wymen from February to May 2020, after the onset of the pandemic, 58% of respondents said they would buy food and other necessities less often (Oliver Wymen, 2020). From this and similar research (CBA, 2021) it can be concluded that consumer behavior can have an impact on reducing the number and volume of payment transactions.

Last but not least, it is necessary to take into account that Covid-19 had an impact on the decline in GDP and thus the economy in 2020, the production of many industries decreased and thus the supply of goods and services on the market.

These and possibly other influences could have influenced the result of the research and thus the fulfillment of the set research goal, which the authors are fully aware of.

Conclusions

In their research, the authors have long been dealing with the area of payments and settlement.

This post dealt with a fact that affected the whole society, and that was the Covid-19 pandemic.

They dealt with the question of whether this phenomenon affected or deepened the non-cash form of

payment by increasing the number of these transactions, including operations through alternative payment instruments and routes, such as any electronic payment instruments (payment cards or their derivatives such as card applications in other portable electronic media - telephones, watches, etc.).

The authors aimed to investigate the following research question: "Did the pandemic caused by Covid-19 increase the share of non-cash payments?" They also based their hypothesis that “the pandemic period had a significant impact on the development of cashless payments.” However, based on their research, which they summarized in this article, there is no clear answer to this fact.

From the point of view of the total number of non-cash operations in the form of payment orders including newly implemented instant payments, it can be stated that the Covid-19 pandemic did not have a significant share in its increase, which is documented by data on the number of non-cash transactions. This sub-conclusion can also be supported by quarterly data on retail sales. However, it can be stated here that the shares between the quarters showed higher purchases via the Internet or purchases from home via e-mail.

The authors of the research made a similar conclusion in the area of operations in the processing of card transactions, including their volume. From the analysis of the examined data, it is clearly not possible to conclude that the Covid-19 pandemic would significantly increase the number of card transactions, including their volume. A certain surprise in the research is the fact that the data did not show an increased share of the use of web applications for payment in pandemic times.

From the above facts, it can be stated that the established hypothesis failed to be proven and the answer to the research question is that the pandemic period did not contribute to the increase in the share of non-cash payments. Its development is gradual and can be attributed to the Czech consumer population's inclination towards more efficient and operative means of payment. The business sphere is already used to the non-cash form of payment, in particular it uses classic tools, such as electronic payment orders.

Prediction of further development will be the subject of further research by the authors, when the examined data will be extended by entire year 2021 and supplemented by the numbers and volumes of executed payment orders in the form of direct debit orders.

Acknowledgement

The output has been created as an output of the internal project of the University of Finance and Administration, project ref. no. 7429/2021/1, "Performance indicators of the banking sector of major world economies and their main determinants in relation to selected bank products".

References

Aktuálně.cz (2020). *Skvělý rok Netflixu i obří ekonomický pokles. Projděte si rekordy kolem koronaviru. Retrieved from* https://zpravy.aktualne.cz/zahranici/cesko-spadne-ekonomicky-nejnize-ve-sve-historii/r~f9f63466854411eab115ac1f6b220ee8/.

Bílek, A. (2020). *Odložená platba pomáhá minimalizovat kontakt během mimořádné situace. Retrieved from* https://mallpay.cz/blog/odlozena-platba-pomaha-minimalizovat-kontakt-behem-mimoradne-situace/.

CNB (2021). *První odhad dopadů pandemie COVID-19 na ekonomiku ČR*. Retrieved from https://www.cnb.cz/cs/o_cnb/cnblog/Prvni-odhad-dopadu-pandemie-COVID-19-na-ekonomiku-CR/.

CNB (2021a). ARAD – systém časových řad. Retrieved from https://www.cnb.cz/docs/ARADY/HTML/index.htm.

CBA (2021). *Češi a platební styk 2021.* Retrieved from https://cbaonline.cz/pruzkum-cba-cesi-a-platebni-styk-2021.

CZSO (2021). Veřejná databáze. Retrieved from https://vdb.czso.cz/vdbvo2/faces/cs/index.jsf?page=vystup-objekt-parametry&pvo=OBU01-D&sp=A&skupId=1351&pvokc=&katalog=31029&z=T.

CZSO (2021a). Měsíční indexy tržeb v odvětví maloobchodu, prodeje aut, ubytování a stravování. Retrieved from https://www.czso.cz/csu/czso/metodika_mesicni_indexy_trzeb_v_odvetvi_obchodu_ubytovani_a_stravovani.

CZ (2020). *Vláda kvůli šíření epidemie koronaviru omezila volný pohyb osob na nezbytné minimum. Retrieved from* https://www.vlada.cz/cz/media-centrum/aktualne/vlada-kvuli-sireni-epidemie-koronaviru-omezila-volny-pohyb-osob-na-nezbytne-minimum--180350/.

CZ (2021). *Nouzový stav a protiepidemická opatření – co aktuálně platí*. Retrieved from https://www.vlada.cz/cz/epidemie-koronaviru/dulezite-informace/mimoradna-a-ochranna-opatreni-_-co-aktualne-plati-180234/.

CZ (2017). Zákon č. 370/2017 Sb., o platebním styku, ve znění pozdějších předpisů. *Retrieved from* https://www.zakonyprolidi.cz/cs/2017-370.

CZ (2000). Zákon č. 258/2000 Sb., o ochraně veřejného zdraví a o změně některých souvisejících zákonů. Retrieved from https://www.zakonyprolidi.cz/cs/2000-258?text=z%C3%A1kon+o+ochran%C4%9B+ve%C5%99ejen%C3%A9ho+zdrav%C3%AD.

EUR-Lex (2015). Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC. Retrieved from https://eur-lex.europa.eu/legal-content/CS/TXT/?qid=1578221150797&uri=CELEX:32015L2366.

Ford, D. & Joliet, J (2020). *Payment Acceptance Will Never Be the Same After the COVID-19 Pandemic.* Retrieved from https://www.gartner.com/doc/reprints?id=1-24F031AA&ct=201021&st=sb&utm_campaign=2020-12%20Gartner%20Reprint%20-%20Payment%20Acceptance%20Post-COVID-19&utm_medium=email&_hsmi=101544127&_hsenc=p2ANqtz--FrsUJ01iPaiuP-59J2B6BhnuPAoKsje1vReUsCGCaF8vcFS1CG9-MfLPblqsePpAp_X6E5L-Xog6VAGiwF-B1YzlMoOZxanLh2PUwFHvAZLg_OZ8&utm_content=101544127&utm_source=hs_automation.

Gallistl, V (2021). *Mobilní rekordy. Češi jsou evropskými lídry v placení mobily a chytrými hodinkami.* Retrieved from https://www.e15.cz/byznys/finance-a-bankovnictvi/mobilni-rekordy-cesi-jsou-evropskymi-lidry-v-placeni-mobily-a-chytrymi-hodinkami-1379531.

Google.cz (2021). *Pandemie covidu-19 v Česku*. Retrieved from https://www.google.com/search?q=Historie+covid-19+v+%C4%8Dr&client=firefox-b-d&ei=XK6HYZzdJ47TkgWGh4PIAw&oq=Historie+covid-19+v+%C4%8Dr&gs_lcp=Cgdnd3Mtd2l6EAMyBggAEBYQHjIGCAAQFhAeOgsIABCABBCxAxCwAzoJCAAQsAMQBxAeOgcIABCxAxBDOgsIABCABBCxAxCDAToFCAAQgAQ6CAgAEIAEELEDOg4ILhCABBCxAxDHARCjAjoLCC4QgAQQxwEQrwE6CAguEIAEELEDOgUILhCABDoECAAQQzoKCC4QxwEQrwEQQzoLCC4QgAQQsQMQgwE6DgguEIAEELEDEMcBENEDOggILhCABBCTAjoHCAAQgAQQCjoJCAAQyQMQFhAeOggIABAWEAoQHjoFCCEQoAE6CAghEBYQHRAeSgQIQRgBUJ4HWKBeYJpkaAhwAHgCgAGqAYgBxh2SAQUyMC4xN5gBAKABAbABAMgBCsABAQ&sclient=gws-wiz&ved=0ahUKEwic-7SiiYb0AhWOqaQKHYbDADkQ4dUDCA0&uact=5.

Kraenzlin, S., Meyer, CH., Nellen, T. (2020). COVID-19 and regional shifts in Swiss payments. *Swiss Journal of Economics and Statistics,* no. 156, Article number: 14. Retrieved from https://sjes.springeropen.com/articles/10.1186/s41937-020-00061-x.

MediaGuru.cz. (2020). Zájem o Košík.cz a Rohlík.cz se zvýšil několikanásobně. Retrieved from https://www.mediaguru.cz/clanky/2020/03/zajem-o-kosik-cz-a-rohlik-cz-se-zvysil-nekolikanasobne/.

Michl, A. (2020). Ztracený rok. *Forbes*. Pg. 30. Retrieved from https://www.cnb.cz/cs/verejnost/servis-pro-media/autorske-clanky-rozhovory-s-predstaviteli-cnb/Ztraceny-rok/.

Michl, A. (2021). *Reset ekonomiky*. Praha: *Euromedia Group, edice Universum*.

Oliver Wyman (2020). Customer Survey 2020. Retrieved form https://www.hl-display.com/cs/bezproblemova-budoucnost-prodeje/maloobchodni-trendy/jaky-dopad-ma-pandemie-na-nakupni-chovani-spotebitel/.

Seznamzpravy.cz (2020). *Epidemie způsobí převrat v našich životech.* Retrieved from https://www.seznamzpravy.cz/clanek/nahrada-za-zavrene-obchody-mall-group-skokove-posiluje-on-line-trziste-95909.

SBK (2021). Statistiky. Retrieved from http://www.bankovnikarty.cz/pages/czech/profil_statistiky.html.

Shoptet (2020). Platformu Shoptet už využívá přes 20 tisíc e-shopů, pomáají I s rozvozem hotových jídel a trvanilivých potravin. Retrieved from https://www.shoptet.cz/tiskove-zpravy/platformu-shoptet-uz-vyuziva-pres-20-tisic-e-shopu--pomahaji-i-s-rozvozem-hotovych-jidel-a-trvanlivych-potravin/.

Srivastava, CH., Mahendar, G. & Vandana, V. (2021). Adoption of Contactless Payments During COVID-19 Pandemic – An Integration of Protection Motivation Theory (PMT) and Unified Theory of Acceptance and Use of Technology (UTAUT). *Academy of Marketing Studies Journal*, no. 1, 2021. Retrieved form: https://www.abacademies.org/articles/adoption-of-contactless-payments-during-covid-19-pandemic-an-integration-of-protection-motivation-theory-pmt-and-unified-theory-of-9970.html.

Šafránek, A. (2021). *Shopping centers: revenues back to pre-crisis level and renewed investor interest. Retrieved from* https://www.retailguide.cz/shopping-centres-revenues-back-to-pre-crisis-level-and-renewed-investor-interest/.