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## SERVING THE ECONOMIES OF COUNTRIES WITH ELECTRONIC PAYMENT SYSTEMS

*The article presents the consequences of the impact of Covid-19 and describes new features of payment systems functioning based on the analysis of the countries' economies by region. Also, there were analyzed, the turnover of e-commerce and the use of cash in the countries of the world, clarified the role of electronic payment systems in servicing the economies of countries. The authors of the article identified the major drivers of non-cash payment development and distinguished perspectives for electronic payments extension in the world.*

**Keywords:** internet banking; electronic payment system; gross domestic product (GDP); cybersecurity; electronic commerce.

**Introduction.** The challenges set new requirements for the level of technological equipment and ensuring uninterrupted financial flows. Since the inception of the Internet, capital in the physical dimension has been consistently digitalized, which has triggered a transformation of investment into speculative capital. For example, the rapid development of the crypto-assets segment, that in essence, duplicate part of the functions of money, but in turn, does not belong to any of the countries governments, there is no single body (including any of regulator), that would be responsible for the cost, quality of service and the availability of this asset. In times of crisis, the formation and development of financial bubbles is an integral element.

The cross-border movement of significant amounts of funds (over 20 thousand US dollars) is impossible without the participation of electronic payment systems. It is hard to imagine the modern payment landscape only locally. It is functioning in three levels international, regional, and state. They all play an important role in serving economic agents. On the one hand, payment systems are a weal, and on the other, they are a "stimulator" of crises, since is existing a disproportion in the country's financial regulation development.

The purpose of the article is to summarize and highlight the impact of the pandemic on servicing the economies of countries by electronic payment systems.

The article relies on such methods as induction, deduction, logic, graphical, and dialectics to determine the cause-and-effect relationship.

**Methodology.** The article is based on the indicators that show a positive connection between the state economy and electronic payments. Thus, we chose the following indicators gross domestic product; e-commerce revenue; the share of banks' participation in e-commerce; the level of cash usage in developed and developing countries; online and offline payments in European countries.

These indicators allow us to characterize the features of servicing the economies of countries by electronic payment systems, reveal the impact of Covid-19 and countries' approaches to overcoming the crisis.

The article uses the following statistical sources, namely the databases of the IMF, Statista, McKinsey, Adobe Analytics, Blue Yonder, Oliver Wyman, BIS, etc.

### Review of the literature

The volume growth of transactions within the country was the reason to search for the solution that would allow fast and smooth processing of requests for the funds' transfer. So, in 1968, the Californian Union of Banks decided for the first time to use an electronic digital computer (EDC) to carry out transfer operations. Of course, there were other payment instruments to carry out transactions for long distances like the telegraph or the telephone, but the main problem was paper media to store information.

The very emergence of electronic banking is combined with the formation and use of electronic payment systems (EPS) to provide fast transfer service in real-time, occurred only in the 80s of the 20th century.

According to Kay Pusch and Michael Shuring, e-banking is one of the most successful applications in the

business-to-consumer (B2C) e-commerce model [1]. Professor of the University of Eastern Finland Tommi Laukkanen believes that the banking industry is the most progressive in adapting and using the Internet and mobile technologies in the consumer market. Low commission, time savings, the ability to use services anywhere and anytime have become the main advantages of Internet banking [2].

In turn, Mingchi Li shares the advantages of e-banking as direct and indirect. The direct advantages of e-banking include the instant benefit that the user receives from using electronic banking [3], for example, high data transfer rate or priority of the operation. The indirect advantages of e-banking are less tangible and difficult to assess in particular: the ability to use it anywhere in the world and around the clock, investment opportunities in the application.

In 2012, a cooperation of six Swedish banks created the first mobile application that allows the transfer of funds between different personal accounts. For example, Privat24 was the first mobile application for Internet banking in Ukraine and was launched in 2001.

Of course, the development of Internet banking is impossible without the existence of a high-quality and uninterrupted electronic payment system (EPS).

The view on the definition of EPS as a phenomenon is quite different and based on the direction of use, the user, and even the elements involved in the system [5].

The professor of the University of California, Hossein Bidgoli believes, that EPS is an established software and hardware system, allows the consumer to pay online [6]. The author identified the main goals of EPS, which are to

increase efficiency, increase safety, improve convenience for consumers, and facilitate use. Also, he considered many methods and tools that are used to ensure the implementation of EPS.

Professor Michael Bushri notes the more general role of EPS for any place where money must change ownership and examines the relationship of EPS between organizations and buyers [7].

IBM researcher Phillip Janson and professor at the University of Waterloo Nicholas Asokan distinguished EPS criteria, and they are integrity, authorization, confidentiality, availability, and reliability for security requirements [8].

Thus, in general, the views of foreign scientists are riveted to the practical component of the concept of Internet banking and EPS [4]. Some of the definitions are limited because of differences in the advancement of technology, the requirements for security, quantity, and cost of services, service time, and convenience. By most authors, EPS is presented as a tool for ensuring and providing uninterrupted transfer of funds on the Internet.

**1. The global economic overview**

The place and importance of electronic payment systems during the Covid-19 pandemic can not consider in isolation from the situation of the economies of the countries of the world. The gross domestic product (GDP) is basic in assessing the state of the country's economy (see Fig. 1).

The article analyzes the GDP data of the International Monetary Fund from the 1st quarter of 2019 to the 3rd quarter of 2020. The analysis uses the quarterly comparison method.

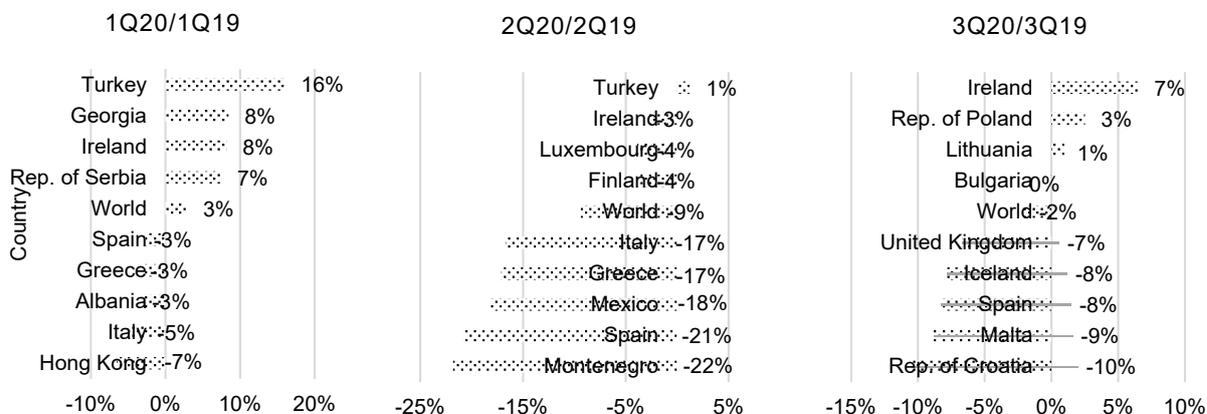


Fig. 1. Top 5 countries in terms of GDP growth and decline during the Covid-19 pandemic

\* In the context of countries, there are no data for the United States, and indicators for China are distributed among the three autonomous republics.

Source: compiled by the author based on the data of the IMF statistical database [10].

According to official information, the Covid-19 pandemic began on March 11, 2020. But the economies of countries felt its effects much earlier. For example, according to statistics, Spain, Greece, Albania, Italy, and Hong Kong had a 3 % or more drop in GDP in the first quarter of 2020 compared to the corresponding previous period.

European countries have become hostage to the decrease in the transportation of products and the receipt of funds from China. Since a significant part of the production of well-known companies is located in the People's Republic of China. Hong Kong is one of the largest financial centers, and during a period of the pandemic, there were protest actions. That's negatively influenced investors' policy and provoked an outflow of investments.

As for the countries leading in terms of quarterly GDP growth, an inflationary crisis began in Argentina during this period; Turkey actively began a policy of using foreign exchange reserves to fight the Kurds and prepare for hostilities in Nagorno-Karabakh; Georgia received significant income from tourists; in Ireland and Serbia's balance of payments, the surplus was driven by an increase in investment.

The main impact of the pandemic is visible in European countries and Mexico, where quarterly GDP fell from 3 % to 22 %, for example, in Montenegro. It was a period of closed borders and imposed movement restrictions on the population. A significant part of the inhabitants of these countries lost their jobs or was forced to go on vacation. For

example, Turkey used USD 13.5 billion or 12.5 % of its gold and foreign exchange reserves for military needs.

In Q3 2020, European countries managed to reduce the negative consequences of the pandemic, and some even improved their economic positions. Lithuania, Poland, and Ireland had modest GDP gains compared to 2019, mainly driven by higher prices for agricultural products and transfers from workers. Turkey continued using foreign exchange reserves, that's push up inflation and gained 23 % of GDP.

In general, considering the GDP indicator without additional indicators, such as gold and foreign exchange reserves, trade position, investment position, and consumer price index, does not allow making a qualitative analysis of the situation in the world. Therefore, we used these indicators from the website of the International Monetary Fund. We found that most countries tried to reduce the consequences of the pandemic due to the use of foreign exchange reserves and the growth of inflation in the short term. It could reduce the negative effects of the economic fall. In the long term, it can get out of control and lead to hyperinflation. This situation is typical for the African and South American countries, where the number of defaults over the past 20 years is extremely high.

**2. E-commerce phenomena**

One of the most actively growing indicators in the world is the turnover of e-commerce. Its volume, according to Statista, in 2019 amounted to USD 3,5 billion, which is almost twice as much as in 2016 [11]. This extreme growth is associated with the development of online platforms for trading operations created by banks. According to the consulting company McKinsey, the global turnover from payment transactions in 2019 was \$ 2 trillion; the problem in the qualitative assessment of the size of funds is the existence of electronic money, which complicates the actual settlement, since it is quite difficult to track their owner and in some cases impossible [12].

The leaders in terms of the volume of payments made and the commission paid for them in 2019 are the countries of Asia and Oceania. In 2010 the North American countries were the leaders in e-commerce turnover (see Fig. 2). This phenomenon can be explained by the size of the population and the introduction of technologies.

The Asian and Oceanian countries are leaders in high-tech product production, such as smartphones, TVs, laptops, computer processors, etc. That's why their process of introducing banking innovations was more rapid and received a positive response from society.

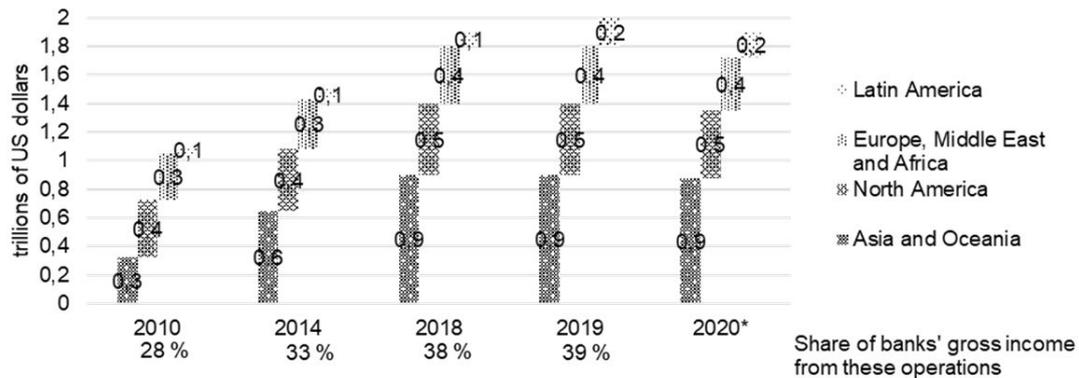


Fig. 2. Amount of proceeds from payment transactions

Source: compiled by the author based on data from the McKinsey report [12].

A quite an important indicator in the proceeds from payment transactions is the share of banks' gross income from these transactions. As you can see, banking institutions did not immediately "feel" the trend. Banks increased income from payment transactions by 11%, from 28 % in 2010 to 39% in 2019 [12]. The reasons for this rapid growth include the work of AliExpress and Amazon, which began to crowd out offline giants such as WallMart, Achan, Metro, etc.

**3. Cash usage in developed and developing countries**

The popularization of non-cash transactions and the innovative approach of central banks were adopted by

commercial banks, which became the reason for the development of e-commerce. This approach allowed not only reduce the cost of serving cash but also forced banks to join the international payment systems Visa and Mastercard to provide their customers with the opportunity to carry out transactions anywhere in the world. An important indicator is the dynamics of the introduction of non-cash transactions in the context of developing countries and developed countries (see Fig. 3 and 4).

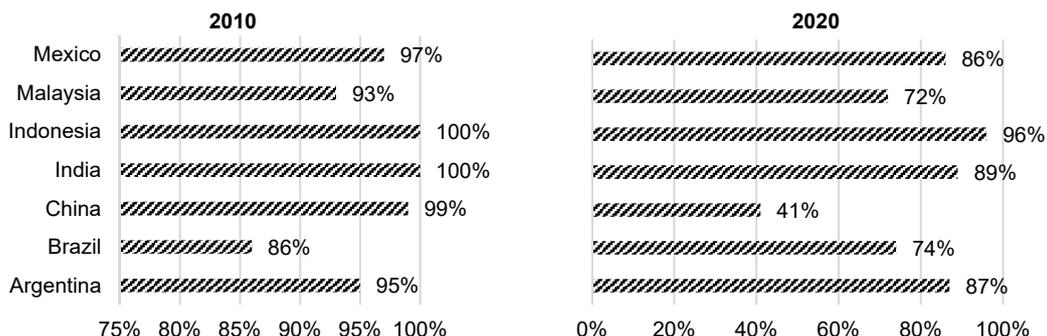


Fig. 3 Cash use in developing countries in 2010 and 2020

Source: compiled by the author based on the McKinsey report [12].

The spread of non-cash transactions is heterogeneous; it is preceded not only by the level of technological development but also by the availability of infrastructure. For example, China is one of the main centers for the development of e-commerce, creating business opportunities for international corporations, has one of the largest financial exchanges in Hong Kong, is the second country in the world in terms of visits in 2019, and could more than twice reduce the turnover of cash [13]. As for the other countries in Fig. 3, Malaysia shows slightly lower volumes but strong positive dynamics. The reasons for this include the creation of conditions for foreign capital, the development of banking

services, and tourism, according to this indicator, Malaysia is in 22nd place in the world in 2019 [13].

Other countries, due to significant disparities in incomes of the population, seasonal tourism, low financial activity, can quickly introduce new payment technologies and reduce the level of use of cash. Interesting in this regard is the dynamics of the development of non-cash transactions, experience on the path of introducing modern electronic payment instruments as money equivalents in developed countries. Since the modern payment space is difficult to imagine without the use of crypto assets. And as experience shows, the most successful in this direction are countries with a developed payment infrastructure (see Fig. 4).



Fig. 4 Cash use in developed countries in 2010 and 2020

Source: compiled by the author based on the McKinsey report [12].

Among the developed countries, the leadership belongs to the Scandinavian country, Sweden, with the social direction of development and geographic territorial distribution. The country managed to attract significant financial injections from citizens and international investments in the development of banking infrastructure. The Netherlands, in turn, is a tourist country in Europe, as evidenced by the 22nd place in 2018, in terms of tourism receipts [13]. As for other countries, among them, there are financial centers such as the USA, Japan, Great Britain; the innovation center in South Korea, and the most famous project of the "economic miracle" is Singapore. In comparison with Western countries, the low rates of non-cash payments introduction are in Asian countries. It explains by cultural characteristics and strong conservatism.

The European experience among developed countries is the most interesting, as they achieved the lowest values

of cash usage and improved banking services for consumers in the economic downturn.

According to the report of the company Oliver Wyman, the countries of the European Union need a year to restore the volume of non-cash payments, which decreased as a result of the pandemic. By the lockdown, the volume of transactions through POS terminals grew by an average of 7.5 % in six months and contactless by 56%, and in the event of a lockdown, it decreased by 60 % in a month. Terminal usage is projected to grow by 9.6 % by the end of the year, up from -8.9 % in 2020 [14].

The fastest recovery occurred in the B2C segment, as contactless payments are more secure. In Germany, for example, where the share of cash use was quite high and amounted to 47 % in 2017, 53 % in 2019, decreased to 36 % (see Fig. 5). In other countries, some retailers have offered their consumers a QR code-based wallet outlet at Walmart, USA.

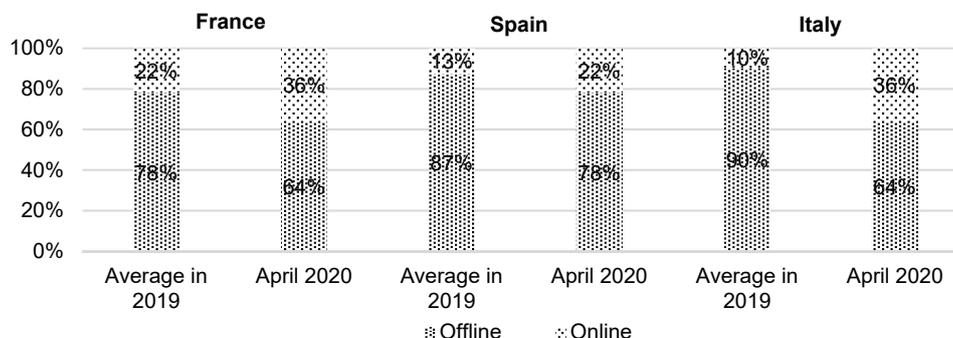


Fig. 5. Comparison of online and offline payments in France, Spain, and Italy in 2019 and April 2020

Source: compiled by the author based on the Oliver Wyman report [14].

As we can see from Figure 5, conservatism in the payment process is typical for residents of European

countries, but the pandemic and lockdown have made their adjustments. So, among the countries under consideration,

online settlement increased from 9% to 26 % compared to 2019. The greatest progress in this indicator is characteristic of Italy, where, as you know, the Covid-19 epidemic was one of the most severe in the world.

#### 4. The major drivers of electronic payments development

As a result of the research, analysis of information sources, and our observations, we believe that the main drivers of the development of cashless payments should include:

**The variety of tools for making purchases online.** In Europe, the diversity of payment instruments are regulated by law. According to analysts at BIS (Bank for International Settlements), in light of Covid-19, sellers saw an influx of installment payments in such forms, as direct purchases; payments later; and even consumers planned purchases for weeks, months, or even years. For retail, the most popular payment tool was only contactless cards [15].

According to the thoughts of BIS experts, consumers expect a comprehensive solution, allows them to process and store receipts, terms, and conditions, warranty documents, use loyalty points, and give tips. Until now, no solution meets these requirements, and, as a result, digital solutions have not fully revealed their potential [15].

**The cybersecurity.** One of the main problems of our time is the security of the Internet, since the outbreak of Covid-19 has caused the emergence of a new form of employment – telecommuting. The limited knowledge in the field of personal data protection, organization of secure Wi-Fi networks, and low awareness of online tools has led to the emergence of cybersecurity threats [16]. For example, over 500,000 Zoom accounts have been sold for less than a penny each or even free on the darknet and hacker forums [17]. In addition, Sentinel One, an end-user security platform, fixed a 433% increase in attacks from late February to mid-March 2020 [18]. The "new form" of work is vulnerable to cyberattacks; it is necessary to accommodate significant privacy risks creating new opportunities for suppliers and sellers [19].

**The availability and convenience of e-commerce.** The pandemic has forced many people to shop online to get what they need. As a consequence, the volume of e-commerce grew by 25% through mid-March 2020. According to Adobe Analytics, food spending accounted for 8 % of total e-commerce, up from 6% three years ago [20]. In April 2020, consumer spending on Amazon increased 35 % compared to the same period in 2019 [21]. The RBC Capital Markets predicts that Amazon's online grocery division could sell products for \$ 70 billion, which would be three times higher than in 2019 [22].

Although consumers spend more on the Internet, they spend less overall [23]. According to a Blue Yonder study in March 2020, 59 % of respondents buy less than usual because they avoid going out in public [24].

Consumer surveys conducted by McKinsey & Company for April 2020 show a 70-80 % decline in consumer intent regularly and a 30-40 % decline on the Internet in Europe and North America [25]. The retailers with temporarily closed physical stores compete on an equal footing with market leaders and sometimes even win in terms of delivery times [26].

**The cloud technologies.** Cloud services are an irreplaceable tool in work from home. They help to simplify adaptation to the operational needs of consumers [27]. Remote working has greatly boosted demand from data centers supporting streaming and cloud computing, driving up the price of memory chips. By the beginning of April, according to the industry tracker DRAMeXchange, prices

for DRAM memory chips have increased by more than 3.5 % since January [28]. Companies have also realized that capacity can add right away.

The dynamics of changes and restructuring of the global digital infrastructure have caused the need for high-quality provision of consumers with banking services that have become convenient and easy to use. Modern contactless payment methods partially solve these requirements, but the issue of personal data protection remains unresolved. Unfortunately, but a significant part of financial service operators, online platforms, and logistics companies are fictitious, it is impossible to protect the consumer from the attacks of a fraudster, as evidenced by the rapidly growing number of cyberattacks and frauds.

In our opinion, a solution to this problem is to create an open online space where any user cannot hide behind a VPN. Of course, this process will be difficult since the openness and impossibility of hiding the IP address will stimulate the defenders of personal data and the right to privacy to act. According to the trends in social networks, browsers, and online services, the consumer is already forced to agree with the new rules of use. It means that social networks or other online services reserve the right to dispose of the user's data.

In fact, humanity is on the verge of moving from an ordinary form of work to a digital one. It means that service providers are forced to violate the rights of users to ensure security.

Modern trends are just the first steps towards eliminating intermediaries in the chain between the manufacturer and the buyer. As noted above, Amazon is not only an online marketplace for products and services but has also become a manufacturer. The manufacturer's margin, delivery times, and quality drove the company to expand its activities and advent a "giant" retail company. This process is an example of globalization shifts and competition to increase the number of customers by providing them with the necessary goods.

An interesting fact is a decrease in the volume of non-food product purchases, which harms the textile industry and technologies. Companies began to specialize in precisely those devices and things where the demand is greatest. Thus, computing technologies in the fields of data processing, games, and hardware have reduced activity. The consumer is interested in expanding his capabilities and is more focused on improving his efficiency in cloud services. Therefore, the quality of the connection and the provision of Internet services have become paramount for him.

The payment infrastructure in this variety is a sphere of opportunities for banks and payment systems. Since their main prerogatives are to find innovative solutions to the problems of storing and transporting contactless cards, protecting personal data, accounts, servicing POS terminals, and providing opportunities for international transactions. The globalization process is inseparable from quality financial infrastructure. As you can see, in this study, the process is diverse, and its manifestations depend on the specialization of the country and logistics capabilities.

Of course, the European countries and the United States are leaders in the field of contactless payments. The reason for this is the historical innovation shifts in the provision of financial services. The European Union was the first to adopt the laws that gave impetus to the development of international banking. For Asian countries, the religious characteristics, conservatism of society are the constraining aspects for innovation.

### Conclusions

The financial environment cannot imagine without proper support for its functioning. The Covid-19 pandemic became a negative phenomenon, and European countries became one of the first to experience significant economic damage. The combination of such elements as the developed financial infrastructure, the flexibility of employers, and the modern technological equipment of companies helped to overcome the crisis effects.

The current geopolitical position of the countries of the Middle East and Eastern Europe is extremely aggravated. According to our research, some countries have relatively easily economically endured the "lockdown" period, and among them are participants and initiators of military conflicts. The efficiency of using gold and foreign exchange reserves for economic growth during the crisis is rather doubtful. The results of these measures can assess only in the long term.

The developed infrastructure for cashless transactions has become a driving force on the way to overcoming the crisis. An example, the European countries, that without significant injections of funds, withstand the crisis. Considering that on January 1, 2020, one of the financial centers of the European Union pulled out, it was the UK.

Ensuring the development of the financial infrastructure is possible only under the following conditions: existing payment instruments and innovations in this segment; adequate level of cybersecurity and prevention of free theft of personal data; opportunities for access to e-commerce, which would allow consumers to uninterruptedly receive the necessary goods for life, develop logistics and create a giant company; cloud technologies have become an effective solution for workers and employers because, without them, a significant part of workers would be out of work, and this would further reduce purchasing power and deepen the crisis.

It is impossible to imagine a modern digital "eco-system" without its combination with all spheres of human life. The main one among them is financial. Without its functioning, the consumer cannot receive the benefits that he needs, and the producer cannot receive remuneration for his activities. Thus, it was the integration of digital technologies into the financial industry that became the turning point and allowed to reduce the costs of each party on the way to meeting needs. Modern financial technologies are in a period of heightened demands from consumers and the need to introduce new equivalents to existing payment instruments. The next few years will be decisive in shaping a new dimension in the electronic payments system.

### Implications for a future research

The topic of the impact of the Covid-19 pandemic is complex and requires further research. Modern approaches to economic processes do not allow a qualitative and clear assessment of the effects of the crisis. This article is an attempt to reflect on the diversity of the crisis consequences and tries to find out measures to manage them.

Of course, other economic incentives are not considered in this article and require coverage in the following publications, namely:

- the effectiveness of the use of foreign exchange reserves and material assistance;
- the possibility of payment for the delivery of food and non-food products during a pandemic;
- the consumer price index and inflation expectations as tools to reduce negative effects;

- the use of crypto assets in the process of buying and selling.

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### ОБСЛУГОВУВАННЯ ЕКОНОМІК КРАЇН ЕЛЕКТРОННИМИ ПЛАТІЖНИМИ СИСТЕМАМИ

*На основі аналізу стану економік країн за регіонами виявлено наслідки впливу Covid-19 на них і охарактеризовано нові реалії функціонування. Проаналізовано оборот електронної комерції та використання готівки в країнах світу, з'ясовано роль електронних платіжних систем в обслуговуванні економік країн. Виявлено драйвери розвитку безготівкових розрахунків у світі та обґрунтовано перспективи їхнього поширення.*

*Ключові слова: інтернет банкінг; електронна платіжна система; валовий внутрішній продукт (ВВП); кібербезпека; електронна комерція.*

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### ОБСЛУЖИВАНИЕ ЭКОНОМИК СТРАН ЭЛЕКТРОННЫМИ ПЛАТЕЖНЫМИ СИСТЕМАМИ

*На основе анализа состояния экономик стран по регионам обнаружено последствия воздействия Covid-19 на них и охарактеризовано новые реалии функционирования. Проанализированы оборот электронной коммерции и использования наличных денег в странах мира, выяснена роль электронных платежных систем в обслуживании экономик стран. Выявлено драйверы развития безналичных расчетов в мире и обоснованы перспективы их распространения.*

*Ключевые слова: интернет банкинг; электронная платежная система; валовой внутренний продукт (ВВП); кибербезопасность; электронная коммерция.*

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## DIE GELEGENHEITEN UND BEDROHUNGEN DES OMNICHANNELS IM HINBLICK AUF DIE LOGISTISCHEN HERAUSFORDERUNGEN DER MÖBELBRANCHE

*Sowohl der stationäre Handel als auch die Online Pure Player befinden sich durch die zunehmende Digitalisierung und die Beeinflussung durch die dynamisch veränderten Trends in einem Wandel. Insbesondere wird von der Möbelbranche ein adaptives Verhalten an die vorliegenden Entwicklungen verlangt. Durch die Intensivierung der Markt- und Wettbewerbslandschaften und die Veränderungen des Verbraucherverhaltens bezüglich der verlangten Verschmelzung der Einkaufskanäle wird ein Umdenken gefordert und notwendig. Zusätzlich wird diese Notwendigkeit durch aktuelle Gegebenheiten, wie die Covid-19-Pandemie dringlicher. Die Omnichannel-Strategie und deren Etablierung birgt für die Möbelbranche insbesondere hinsichtlich der logistischen Herausforderungen Gelegenheiten und Bedrohungen. Diese sind zu erkennen, zu nutzen und zu beheben.*

*Schlüsselwörter: Möbelbranche, Omnichannel, Logistik, Herausforderungen, Business-Continuity-Management.*

### 1. Einleitung

Bereits außerhalb der Covid-19-Pandemie ist ein zunehmender Rückgang der Menschenmenge an den ursprünglich frequenzstarken Samstagen festzustellen [33]. In einer Umfrage aus den Jahren 2015 bis 2020, durchgeführt von dem Handelsverband Deutschland (HDE), berichten rund 41 Prozent der befragten Einzelhändler im Jahr 2020 über eine sinkende und rund 15 Prozent eine deutlich sinkende Kundenfrequenz in den vergangenen zwei Jahren zuvor [31]. Verantwortlich

ist der Onlinehandel mit den großen Onlinehändlern, bspw. Amazon. Insgesamt ist die Entwicklung des Marktanteils vom Onlinehandel aus dem Jahr 2000 mit einem Marktanteil von 0,2 Prozent auf einen Marktanteil von 5,1 Prozent im Jahr 2019 gestiegen. Dabei ist ein Umsatzanstieg im E-Commerce (B2C) von 1,3 Mrd. Euro auf 59,2 Mrd. Euro (ohne Umsatzsteuer) zu verzeichnen [31]. Dennoch liegt die Zukunft trotz des Internettrends nicht mehr allein im Onlinegeschäft. Diesen Wandel erkennen die Online Pure Player und