

DIGITAL TECHNOLOGIES AND CONSUMER PERCEPTION IN THE CROATIAN MARKET - MITIGATING THE CONSEQUENCES OF GLOBAL DISRUPTIONS

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ABSTRACT Today's consumers are guided by several internal and external factors that shape their preferences when purchasing products and services. Many disruptions, such as the pandemic and legal, economic, and financial disruptions, have occurred in recent years on a global and economic level. First, the COVID-19 pandemic with numerous consequences on all aspects of human life; second, the sudden outbreak of the war in Ukraine, which shapes new international trade policies; and, finally, the accession of the Republic of Croatia to the Schengen area with the introduction of a new official currency are just some of the global events that influence consumer behavior. Under such uncertain conditions, the levels of stress, fear, panic, and anxiety are high among consumers because confidence in producers has been lost, and prices are expected to rise dramatically. The question is whether such negative perceptions could be prevented or mitigated through digital technologies that could give consumers an insight into price changes during crises and help them overcome or even mitigate the fear of reduced purchasing power. This paper explores consumer perceptions of how the COVID-19 pandemic, the war in Ukraine, and a new currency have influenced consumer behavior, whether they have changed it, and to what extent. The research also examined how consumers' negative perceptions can be mitigated by applying digital solutions. The second part of the paper presents empirical results collected through detailed research to complement the theoretical background with practical data.

KEYWORDS: *consumer perception; COVID-19; war in Ukraine; Euro; digital technology*

1. INTRODUCTION

Consumer behavior in the new world of everyday disruptions is subject to change, and it is very difficult to observe and evaluate whether it is rational and appropriate or negative, hasty and irrational (Pantano et

al., 2022). Disruptions are various events or crises that cause problems in the market of goods and services and affect consumer behavior. When studying cases in which consumer behavior changes in response to disruptions, it is critical to understand consumers' decision-making processes. Psychological factors

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and feelings of individuals determine their behavior, and due to disruptions, they can be described in a negative context, such as fear, stress, uncertainty, and others (Crosta et al., 2021; Loxton et al., 2020). According to Maslow's hierarchy, the needs of individuals change in the context of disruption because consumer behavior is influenced by unusual events (Loxton et al., 2020). Namely, customer needs focus on biological and safety needs, and consumption related to these needs has increased significantly. Monitoring consumer behavior is very important from the point of view of the consumers themselves, as well as from the point of view of the producer as a supplier on the market. Due to numerous disruptions, it is much more complex to clearly explain consumer behavior, predict their steps in the consumption process, and adapt the actions aimed at them. However, digital technologies offer an opportunity for disruptive innovation and the discovery of new ways to meet consumer needs in times of crisis (Cruz-Cárdenas et al., 2021; International Review of the Red Cross, 2021). The digital trends in the market and numerous solutions developed encourage consumers to buy and offer numerous solutions today that can help consumers make rational purchasing decisions. Such digital solutions are designed to support consumers in the event of disruption and enable them to consider the offers and conditions on the market, offering manufacturers an improved way of observing consumers and their interests.

In recent years, disruptions have created new trends in the market that have drastically impacted consumer needs, thinking, and behavior. This paper explores consumer perceptions in the Republic of Croatia due to the global disruptions caused by the COVID-19 pandemic, the war in Ukraine, and a time when a new currency was simultaneously introduced. The disruptions mentioned above represent external disruptions and are categorized as follows: pandemic (COVID-19), legal disruptions (war in Ukraine), and economic and financial disruptions (currency changes in the Republic of Croatia) (Novak et al., 2022).

The long-term consequences of the pandemic and the challenges arising from the current Russian-Ukrainian war have triggered a series of economic phenomena such as rising global energy and grain prices, inflation, fear of an economic recession, rising interest rates, a decline in global trade and fear of the war spreading to several neighboring countries (Rosenbaum et al., 2022). As a result, social well-being is also affected, and the consequences are felt in people's psychophysical state. Given the challenges posed by these phenomena, organizations and retailers must adapt their operations and business models to meet the needs of consumers. Consumers affected

by the drastic impact of rising prices are looking for ways to ease the burden on their household budgets. As a result, consumers develop new desires and focus on brands that communicate and empathise with them in times of crisis. Organizations create plans by considering the psychological changes that consumers go through, and they must consciously consider and monitor psychology as a new target segmentation based on crisis responses (Yassin, 2022). The introduction of the new currency created additional uncertainty among buyers, and many wondered if it was the right time for this process, given all the disruption affecting the market. Many feared the increase in prices of goods and services in the market and the decrease in the value of money earned.

The research interest stems from the new market situation and consumers' position amid disruptions. There is a need to rethink how to mitigate consumer backlash due to disruption and how digital technologies can help the community adapt to new and unknown situations in the market. Accordingly, the research goals are as follows:

- a) To identify consumer sentiments due to market disruptions,
- b) To analyze consumers' perception of their behavior as a consequence of disruptions and
- c) To recognize technological trends to support consumers in the purchase process, which can alleviate their negative feelings due to disruptions.

This paper follows the structure outlined below. The next chapter provides an overview of the existing research on consumer sentiment and behavior due to the three observed disruptions – the COVID-19 pandemic, the war in Ukraine, and the currency changes. The third chapter provides an overview of the benefits of digital technologies for consumers during disruptions. The fourth chapter explains the research methodology and then presents the research findings. The fifth chapter provides a discussion of the research results. Finally, the paper ends with concluding statements and an overview of the research limitations and implications.

2. LITERATURE BACKGROUND

The theoretical basis for this research was a review of the relevant literature on consumer behavior due to three observed disruptions – the COVID-19 pandemic, the war in Ukraine, and the currency changes in the Republic of Croatia. The effects of each of these disruptions are examined and explained in detail in the following chapters.

2.1. Consumer behavior and the COVID-19 pandemic

The COVID-19 pandemic caused global consequences that did not bypass consumers and their consumption habits (Eger et al., 2021; Loxton et al., 2020). Activities within supply chains were disrupted, economic flows were temporarily stopped (Bahmanyar et al., 2020), and food safety and manipulation became one of the most frequent consumer topics (Galanakis et al., 2021).

In order to minimize their infection and prevent the spread of the pandemic, consumers have changed the type and quantity of consumption of goods and services available on the market (Novak et al., 2023). Improvised purchases and the adoption of new habits (Sheth, 2020; Loxton et al., 2020), panic buying (Yuen et al., 2020), and hoarding of essential goods (Donthu & Gustafsson, 2020) were prominent in the first few months of pandemic uncertainty (Bahmanyar et al., 2020). Purchases were largely made virtually, as evidenced by the noticeable increase in e-commerce. Noticeable changes were seen in the increased demand for food outside restaurants and home delivery (Novak et al., 2023). Furthermore, the demand for snacks and alcoholic beverages rose exceptionally sharply (Poelman et al., 2021), as did the demand for disinfectants and protective masks (Laato et al., 2020; Pantano et al., 2022; Vanapalli et al., 2021).

Increased health care (Goolsbee & Syverson, 2021) has led to a reduction in the number of trips to the stores (Grashuis et al., 2020; Jribi et al., 2020; Zwanka & Buff, 2021). Apart from that, consumers accept price increases of up to 300% (Pantano et al., 2020) and are ready to wait in lines to make a purchase (Pantano et al., 2020). Consumers shop there as smaller local stores are perceived as less risky in terms of pandemic infection (Goolsbee & Syverson, 2021). Let us look at the decline in demand. It is noticeable in the consumption of hairdressing services, gyms, and other recreational services (Laato et al., 2020), while the demand for luxury goods (Donthu & Gustafsson, 2020) was minimal.

The pandemic resulted in several fundamental consequences reflected in consumer behavior (Sheth, 2020; Novak et al., 2023). The first consequence can be seen in daily consumption accumulation of food stocks (Jribi et al., 2020; Eger et al., 2021). In addition, the pandemic affected the extreme scale of purchases (Kirk & Rifkin, 2020; Yuen et al., 2020), but also the shortage of essential goods in stores (Laato et al., 2020; Brogan, 2020; Pantano et al., 2020). The second consequence of the pandemic can be seen in the improvised activities of consumers in the consumption of goods or services, such as weddings via

communication platforms (Chung, 2021). Consumers are currently postponing purchases using hidden demand, which will affect the growing demand for "deprived" goods and services in the future. The introduction of digital technologies enables online shopping (Pantano et al., 2020; Eger et al., 2021) and the use and availability of various services remotely (Zwanka & Buff, 2021; Kirk & Rifkin, 2020; Galanakis et al., 2021). The fifth consequence of the pandemic can be seen in the delivery of products to the home address (Sheth, 2020; Pantano et al., 2020; Vanapalli et al., 2021; Eger et al., 2021), where the fixed space changes product consumption, but also the use of accompanying services. The boundaries between private and business life become invisible, affecting consumers' psychological states and, consequently, purchasing decisions (Novak et al., 2023). Reviews in the form of sharing consumer experiences are moving to online environments (virtual platforms, websites, etc.) (Sheth, 2020; Kirk & Rifkin, 2020), while creative shopping in the form of review videos is considered a new promotional activity for products or services.

Considering the global consequences of the pandemic, which include the reduction of demand and the redirection of purchases towards essential products, it can be concluded that it has an enormous impact on consumer habits. This topic is the first disruption that motivated the authors to investigate the impact of the pandemic on consumer behavior patterns.

2.2. Consumer behavior and the war in Ukraine

With the start of the Russian invasion of Ukraine in February 2022, it immediately became clear that conditions in the supply chain would change drastically, and the goods and services market would pose numerous challenges for organizations and customers (Ahmed et al., 2022). The dependence on trade exchange with Russia and Ukraine due to their importance in the production of energy, food, and fertilizers (Benton et al., 2022; Nicolson & Maresia, 2022) has threatened many countries, posing a problem and challenge in finding alternative solutions to complete the supply on the market (Novak et al., 2023).

The disruption of supply chains limited the availability, affordability, and supply of a wide range of food products and raw materials for their production (Ahmed et al., 2022). The limited availability of energy resources and increased prices led to increased production costs, which were ultimately reflected in consumer goods and services prices. The present insecurity, instability, and uncertainty regarding the duration of the war and the final political and economic consequences, which are unpredictable as the end of

the war cannot be foreseen after the first year of its duration, are changing the market situation and the behavior of consumers: organizations and individuals. This war has exacerbated the already worrying situation in the post-pandemic period and significantly intensified the energy, agricultural, food chains, and social and economic crises (Novak et al., 2023).

Current inflation has already reduced purchasing power, and an increase has been announced (Benton et al., 2022). Managing a household's financial budget is challenging and requires reviewing spending by planning and allocating money to only the "necessary" needs. Households with very low incomes are the most affected and are forced to make difficult choices and even reduce their consumer basket (Benton et al., 2022; European Union, 2022). Due to the situation in the global supply chain and the market caused by the war, consumer habits and behavior are changing. New trends in consumer behavior are reflected in the household budget allocation, the quantities purchased and consumed, the search for alternative solutions (substitutes), the method of purchase, and other consumer habits (Novak et al., 2023). In the breakdown of household budgets, the proportion of expenditure on necessities such as energy, transportation, and food increased (Benton et al., 2022; European Union, 2022). The purchase of products, such as luxury goods, is decreasing and reducing. Directing money to savings or investments is not a priority (European Union, 2022), especially for people with lower or middle incomes. Consumers are increasingly turning to shopping in discount stores and looking for more affordable offers and brands (European Union, 2022).

Nowadays, however, the involvement of society is present in different spheres, which the digital environment enables through various forms of participation, such as social networks and platforms. An informed society and access to different data types are important and inevitable under these conditions (Yassin, 2022). Therefore, information about possible consequences and situational speculations that the war has on the goods and services markets reaches organizations and end customers very quickly, which was not the case in historical wars. This encourages organizations to innovate and invest in business processes, service development, technology implementation, digitization, and sales (Panduru & Scarlat, 2022).

2.3. Consumer behavior and currency changes

The Euro is the official and common currency of the European Union member states. The idea of using a common currency was born on January 1, 1999, in

response to numerous monetary and trade issues. However, the official introduction in the member states took place on January 1, 2002. (European Central Bank, 2021). Using a common currency is very attractive to consumers. It has several advantages, such as the increased possibility of comparing prices among the member states, facilitating international trade and transactions, and forming a common market (Gärling & Thøgersen, 2007). In addition, the Euro facilitates purchasing decisions in sectors with significant cash transactions and prevents consumer discrimination by preventing the producers from setting different prices for different markets (Bukovšak et al., 2017).

Although the introduction of the Euro as the official currency has positively affected a country's economic development, the citizens of many member states have not accepted the new currency changes lightly. Their disapproval of the new currency can be explained by the term "money illusion" effect, which states that consumers are strongly influenced by a known value scale when evaluating prices in a new currency and that purchasing behavior is determined by the "money illusion" until they get used to its presence (Hsu, 2022). In the context of the Euro, Hsu (2022) mentions the term "Euro illusion", which confirms that consumers' experiences with the domestic currency affect their judgments and decisions regarding prices expressed in the new currency, the Euro. Furthermore, the author assumes in his paper that consumers' emotions about the domestic currency strongly influence their decisions, regardless of whether they are familiar with the new currency's exchange rate. Gärling and Thøgersen (2007) recognize the "Euro illusion" as the tendency to estimate prices and salaries based on their nominal value in the domestic currency. Since the Euro has a lower nominal value than most European currencies, the "Euro illusion" implies that consumers perceive prices and salaries to be lower than in the domestic currency when switching to a new currency.

Even when comparing salaries in Euros with salaries in domestic currencies, the "Euro illusion" causes a feeling of poverty, confusion with the new currency, and fear of possible price fraud. The prices of products and services expressed in Euros are presented as cheaper or more expensive compared to prices in the domestic currencies (this phenomenon is particularly evident in the Republic of Croatia, whose currency has a lower nominal value than the Euro) (Hsu, 2022; Gärling & Thøgersen, 2007). Consumers' perception of the new currency is also influenced by their level of education, with highly educated consumers converting the Euro into the domestic currency less accurately than consumers with a lower level of education.

In addition, frequent travelers suffer from greater price illusion than consumers who do not travel abroad and do not have frequent dealings with the Euro (van Raaij & Rijen, 2003). In the context of the above, the main problems common to most member states, which have influenced consumers' attitudes towards the Euro are the following: misperception of euro banknotes and coins, price estimation in the new currency when its nominal value differs from that of the domestic currency, emotional factors and biased attitudes of consumers due to the habit of using the domestic currency, lack of knowledge about exact conversion strategies, slow learning and adaptation to the new currency and the belief that price changes are greater than the actual ones (Gärbling & Thøgersen, 2007).

In general, consumer behavior is most strongly influenced by the visual image of the price. When the price of products and services is expressed in a "round" amount (e.g., 10.00 monetary units), consumers remember and convert it into a new currency more easily than a price that ends in an odd number (e.g., 9.99 monetary units). Consumers are more inclined to buy when prices are "round" because the conversion process to a new currency is faster than when the prices are expressed in odd decimals. The latter gives the consumers the impression of a lower price but also makes it more difficult to convert the prices into Euros (Guido & Peluso, 2004). Another problem is the conversion rate (exchange rate), which strongly influences their consumers' perception of prices. The more complex the conversion rate is (e.g., the conversion rate from HRK to EUR is 7.53450), the more the consumer doubts his cognitive abilities and uses a converter. In this way, the possibility of an incorrect conversion from domestic to new currency is reduced. It enables the consumer to get a realistic and accurate picture of the prices expressed in Euros, thus weakening the effect of the "Euro illusion" (Desmet, 2002).

Finally, introducing the Euro causes consumers to fear price increases (inflation). Conversion costs that are "passed on" to consumers, rounding prices for more convenient payment, using incorrect conversion rates, and adjusting domestic prices to the Euro are why consumers in many countries have not readily welcomed the Euro. Some factors that lead to increased fear of inflation are changes in the prices of consumer goods, asymmetric price increases and decreases, expectations of price movements after their conversion, the influence of the media, and the comparison of current and old prices in domestic currencies. Although studies have shown that the effect of the conversion into the Euro on inflation is minimal, consumers are more sensitive to a slight increase in

prices than to a decrease. This means that, even if the increase does not occur, consumers will believe that the prices have changed (Pufnik, 2018).

From January 1, 2023, the Euro is the official currency of the Republic of Croatia. As expected, introducing the Euro has led to a slight increase in the prices of products and services and has had a slightly greater impact on consumers with higher incomes. On the other hand, consumers with lower incomes, pensioners, and the unemployed felt that the price had increased less (Pufnik, 2018). Besides the negative aspects, the new currency positively affects trade due to lower transaction costs, easier price comparisons, and eliminating currency risk. In addition, the Euro contributes to strengthening tourist activity due to increased cash transactions and attracts foreign direct investments by reducing foreign exchange uncertainties and macroeconomic stabilization (Bukovšak et al., 2017).

Since joining the European Union (on July 1, 2013), the Republic of Croatia has begun to prepare its economy and consumers for the new currency. These preparations were intensified from September 5, 2022, when it became mandatory to indicate the prices of goods and services in Croatian kuna (HRK) and Euro (EUR) at the official conversion rate. This measure made it easier for consumers to accept the idea of the Euro as the official currency. It proved that producers would not increase prices unreasonably when the changeover took place. Furthermore, some of the other measures that reduced the fear of price increases were instructions to round up prices and the existence of competent authorities to whom any unjustified increase would be reported. Finally, consumers could pay in two currencies fourteen days after the full changeover to facilitate the withdrawal of the Croatian kuna and better adjustment to the new currency (Anonymous, 2022; Gaži Kovačević & Tadić-Čolić, 2022).

3. MITIGATING THE IMPACT OF DISRUPTIONS USING DIGITAL TECHNOLOGIES

Digital technologies have significantly facilitated the transfer of information and enabled consumers to adapt more quickly to disruptions. Numerous functionalities of digital technologies have influenced the transformation of existing behavior patterns during global and economic processes. In the continuation of the paper, the benefits of various technological solutions due to the mentioned processes are presented.

3.1. Digital technologies during the COVID-19 pandemic

As digital technologies, with their characteristics, influence the adaptation and sustainability of businesses, it is not surprising to recognize their importance in disruption management. They have an increasing influence on the purchase decision-making process in all phases, from need recognition to post-purchase evaluation (Kutnjak et al., 2022). In the phases mentioned above, consumers rely on technologies such as Mobile Technologies, Social Networks, the Internet of Things (IoT), Artificial Intelligence, Big Data, Virtual Reality, etc. Given the far-reaching changes that the COVID-19 pandemic suddenly brought about, from restrictions on freedom of movement to social distancing and the temporary closure of a large part of economic activities, consumers were forced to respond to the changes and adapt to a new way of consuming goods and services. The adjustment took place "on the back" of digital technologies.

For example, buying and selling activities are completely moving to e-commerce platforms (Cruz-Cárdenas et al., 2021; Ong et al., 2021), reducing consumers' perceived health risks. Ordering food from restaurants during pandemic conditions uses mobile applications or websites (Ali et al., 2021). Furthermore, a contactless delivery service was introduced (Ali et al., 2021), where delivery robots pick up goods and deliver them to the place of order, all to reduce social contact. Contactless digital payments using cards or e-wallets are advocated (Sunarjo et al., 2021) based on the integration of 5G technologies and IoT data (Mondal & Mitra, 2022). To ensure food safety, robots are introduced in food preparation, serving, and delivery activities (Mondal & Mitra, 2022).

The restrictions imposed during the pandemic triggered negative feelings among consumers, such as fear, anxiety, anger, loneliness, frustration, and many others. To counteract this, facilitate communication under conditions of isolation and social support, and maintain meaningful social relationships, digital technological solutions have been introduced. They reduce negative feelings and allow the "new normal" to resume private and business activities (Gabbadini et al., 2020; Cruz-Cárdenas et al., 2021). For example, consumers can communicate with their loved ones via video conferencing to discuss product and service reviews. They can then use mobile technologies to buy essential products such as food or disinfectants or carry out home renovations using Augmented Reality. Healthcare services take on a new face and are used remotely. The focus here is on technological solutions that improve diagnostics (Artificial Intelligence), prevention, and monitoring (Big Data, Mobile

Technologies) of the user's health condition (Golinelli et al., 2020).

The above examples prove that consumers have adapted their behavior patterns to the new market conditions created by the COVID-19 pandemic, and digital technologies have greatly facilitated this adaptation. Accordingly, the correct and timely use of technology can help mitigate the conditions of the pandemic and create new purchasing activities that will certainly be represented in the future, given the spread of technology.

3.2. Digital technologies in times of political crises and wars

Digital technologies have helped to overcome the challenging period caused by the war. After introducing sanctions in several rounds, organizations, as buyers, had to find and organize alternative procurement channels to meet the needs of their production. Commodity exchange platforms were important in finding required goods and materials. As many transportation routes were cut due to the war, especially in the areas close to the war, new transportation routes were established, which were helped by spatial data and navigation systems.

Individual consumers in the market for goods and services have witnessed price increases for certain products and services. However, many other activities, such as digital marketing, humanitarian campaigns, and cyberwarfare, can impact consumers.

Information and pictures about war events spread quickly worldwide, and digital technologies played a significant role. People affected by war events have access to social and other media platforms and information, and the potential impact and consequences of war on markets have also quickly resonated in the social and business world. The traditional control of information and propaganda during wartime does not work in a digital environment, allowing people to see the market situation through the fog of war (Trudel et al., 2022). Social media propaganda exacerbates the difficult war situation by spreading false and biased news and thus becoming one of the sources of conflict. The warring parties use social media as a battlefield where they seek to influence the broader population's psychological aspect and public opinion with information (Dwi Astuti et al., 2022). In addition, digital advertising is very important for businesses in Ukraine in times of war to survive and secure income (Dubovyk et al., 2022). The information available in the media that is directly or indirectly related to war events can be crucial for buyers when it comes to large investments.

War events are not confined to a physical space,

but in the context of the digital age, it can be said that a different kind of war is being waged, namely a cyber war. Cyber warfare is one of the key components of the war in Ukraine, as all operations are conducted and monitored using the Internet and various other digital technologies, as well as the physical infrastructure used to support this. War operations that influence society's activities include network disruption, jamming of websites, monitoring the actual situation on the ground, and others (Trudel et al., 2022). In this way, they want to influence society, including consumers on the market, to react in a way acceptable to a particular side of the war.

In the context of war events, digital technologies have opened up new opportunities for humanitarian actors and the communities they serve and sales organizations to raise funds (money and goods) for humanitarian causes. Digital payments and machine learning can enable efficient humanitarian processes and facilitate access to those in need. At the same time, this is a challenge, as implementation without full consideration of the situation can lead to inequalities in access to humanitarian aid. In addition, one of the challenges is the privacy and security of individuals, as well as discrimination and violence against those involved in the activities in any way. Indeed, consumers as participants in humanitarian activities can help alleviate the difficulties of those who need help due to their compassion and desire to help. However, they can also be deceived (Trudel et al., 2022).

Although it is rarely discussed how digital technologies can help consumers in times of war, there are indeed ways and solutions. Digital media and various platforms provide customers with data and information about the state of the market (quantities, prices, conditions, etc.). Smart payment systems allow consumers to quickly and easily purchase goods from all parts of the world, including war zones, and participate in humanitarian activities. Data on monitoring the situation in Ukraine and analyzing big data from their production segments can help consumers analyze and reflect on their production and consumption activities.

3.3. Digital technologies during currency changes

The period of the introduction of the Euro in the Republic of Croatia was very dynamic. Although the adjustment measures taken by the government softened consumer attitudes toward the Euro, the acceptance of the new currency was somewhat easier as digital technologies supported the introduction. To gain even more trust and mitigate the consumers' fear, the Croatian government launched two applica-

tions for a more accurate kuna-Euro conversion and better price control of goods and services. The first application was "Euro.hr" and was initially set up as a website with the most important information about the new currency, such as the official exchange rate, dual display of prices, characteristics of banknotes and coins, deadlines for exchanging kuna for Euro and consumer protection during the Euro introduction process. The website provides information for citizens and entrepreneurs through webinars, guides, and training (euroHR, n.d.). In September 2022, the Euro.hr website got its mobile application version called "euroHR", which still helps citizens easily convert kuna to Euro and vice versa, using a conversion calculator. It also provides answers to questions about the introduction of the new currency. The Euro on Wheels exhibition contains quiz questions and a picture quiz to learn more about the new Croatian currency. It is free of charge for Android and iPhone devices and, above all, helps reduce the fear of miscalculating prices (Merkl, 2022).

The second application tracks price changes in several retail chains and compares prices for specific product categories that make up a consumer basket. To set up the "White list" application, retail chains had to provide the Ministry of Economy and Sustainable Development with information on 350 items, the prices of which citizens can compare every 15 days. The application helps track which prices retail chains change for which goods and how much compared to other retail chains (PoslovniHr, 2023). The application enables Croatian retail chains to enter prices at least twice a month and allows consumers to monitor their movement. The reference prices are the prices that were valid on December 31, 2022, and all other prices are compared to them. The data can be searched using filters by retailer and product category, as well as by the options "cheaper," "more expensive," "on sale," and "kept the price" options (Ministry of Economy and Sustainable Development, 2023b). Once the consumer enters the application, they can choose from three retail chains (Konzum plus d.o.o., KTC d.d., Tommy d.o.o.) and click on the category (products) whose price they want to see. The application then displays the prices of the products in all three retail chains, expressed in Euros and kunas, and by clicking on the product, the user can see the current prices of the product by the manufacturer (Ministry of Economy and Sustainable Development, 2023a).

Digital technologies are a growing imperative in every aspect of human life. These modern ways of trading, communication, connection, and information have triggered many new trends in the world economy and defined new business rules. One of the latest innovations related to digitalizing payment is digital

currencies. Just like paper or coin money, digital currencies are nominally stable, accessible, and intended as legal ways of payment for public and private transactions (Çelik & Dülek, 2022). With mobile phones, near-field communication, data analytics, storage, cloud computing, and encryption, the use of digital currencies is rapidly increasing. Although they have no physical counterpart, such currencies have the same characteristics as traditional money, i.e., they can be received, transferred, or exchanged with other currencies, used to pay for goods and services, and the transactions with them can be sent from one part of the world to another (Çelik & Dülek, 2022).

As the Euro is becoming the most widely used currency in European countries, the European Central Bank (ECB) has launched a project to introduce a digital "Euro". It will be equivalent to cash and complement banknotes and coins, giving citizens the choice of how they want to pay. Having digital money issued by the ECB means a more stable monetary system, strengthening monetary sovereignty and promoting competition and efficiency in the European payments sector (European Central Bank, n.d.). The Euro will be based on blockchain technology, which contains large files of transaction data and is under the control of the ECB, making it different from cryptocurrencies such as Bitcoin or Ethereum (PoslovniHr, 2020; Çelik & Dülek, 2022).

The biggest challenge of the digital "Euro" project is that the public knows little about it. Consumers generally welcome contactless payments in Europe but still associate them with cryptocurrencies, which are perceived as criminal, fraudulent, insecure, unsafe, and risky. The ECB research from 2022 shows that more technologically literate consumers are more likely to like the idea of the digital Euro because they are familiar with electronic payment methods such as mobile payments via smart devices and others. Most of the consumers surveyed trust the digital Euro because the ECB supports it, and they like the possibility of cashless payments, the reduction of fraud and crime, tax evasion, and the black economy. The biggest concern regarding the digital Euro is the loss of physical cash and the problematic use for the elderly and less tech-savvy consumers. Finally, the aversion to the new payment method stems from the belief that it is an invasion of privacy and a form of surveillance and control of all financial transactions. Although the digital Euro raises many questions regarding security, privacy, and stability, the general opinion is that it is the best way to fully digitize current payment methods (Kantar Public, 2022).

4. METHODS

This research is based on the authors' previously conducted theoretical research (Novak et al., 2023) and aims to expand knowledge of consumer perceptions of their behavior under the influence of uncertain disruptions. In the context of this research, disruptions mean disturbances or events that interrupt the normal performance of an activity or process. Accordingly, the author's research examines consumers' perceptions of their behavior in the Republic of Croatia due to three uncertain disruptions - the COVID-19 pandemic, the war events in Ukraine, and the introduction of the Euro as the official currency.

Consumers' feelings and changes in their behavior that occurred due to disruptions were identified based on data collected through the literature review, using three queries: (1) ("customer behavior" OR "customer behavior" OR "consumer behavior" OR "consumer behavior") AND "Covid" AND "pandemic"; (2) ("customer behavior" OR "customer behavior" OR "consumer behavior" OR "consumer behavior") AND "Ukraine crisis"; (3) ("customer behavior" OR "customer behavior" OR "consumer behavior" OR "consumer behavior") AND "Euro" AND "currency" AND "conversion." Literature from 2020, 2021, and 2022 was considered, while additional literature was taken into account to analyze the introduction of the new currency, as the Euro was introduced in different periods in the European Union countries. Query (1) yielded 16 papers, query (2) 7 papers, and query (3) comprised nine papers (Novak et al., 2023). The data collected in this part of the research was used to prepare the research instrument. Research on technological solutions that mitigate the impact of disruptions was identified by analyzing academic and professional literature on specific disruptions and digital technologies using the query: ("digital technologies" OR "digital technology" AND "Covid" AND "pandemic" OR "Ukraine crisis"; "currency" AND "conversion").

Secondary data collected through desk research (Novak et al., 2023) formed the background for creating a theoretical framework based on which a research tool for collecting primary data was created. Quantitative, descriptive research was conducted using a questionnaire as a measurement tool to collect primary data from respondents. The questionnaire was created using Google Forms survey administration software. It was shared on the authors' social media accounts, Facebook, Instagram, and LinkedIn at the end of July and mid-August 2022. A non-probability sample (convenience sample) was used in line with the quantitative descriptive research conducted. The primary data was collected using the snowball method. In order to capture different demographic

characteristics, in particular respondents from different geographical areas, the survey was distributed via social networks, whose users were asked to share the link to the survey in their network to ensure the representativeness of the sample. In the end, 167 respondents answered all the questionnaire items and their responses were considered for the statistical analysis presented in this paper.

The questionnaire is divided into several basic parts. The first part refers to the collection of general, descriptive data about the respondents, and the second part examines the respondents' attitudes toward the impact of the COVID-19 pandemic and the attack on Ukraine on the consumption of goods and services. In contrast, the last part examined the respondents' attitudes towards introducing the Euro as the official currency in the Republic of Croatia and future expectations.

5. RESULTS

This chapter presents general information about the respondents. The total sample included 167 re-

spondents, the majority of whom were women (62.9%), while the male population participated in the research with a percentage of 37.1. The age group that participated in the research was mostly 25 - 34 (47.9%). The educational structure of the respondents varied greatly, but the most represented were completed specialist vocational or university graduate studies / integrated undergraduate and graduate university studies with 41.8%. The questionnaire was predominantly completed by employed people, i.e., 119 respondents were in permanent employment (71.3%). Finally, most of the respondents were from northern Croatia (76.6%) and were evenly distributed between rural (53.9%) and urban areas (46.1%).

Most respondents lived in a household of four members (30.5%), and the income was usually earned by two members of the same household (45.5%). Most of the respondents had an income between €797 and €1,194 (34.7%), and the monthly budget was between €1,195 and €1,858 (20.4%).

Tables 1, 2, and 3 present general information about the respondents and their income and budget.

TABLE 1. General information about the respondents

General information	Variables	Number of respondents	Percentage (%)
Gender of respondents	Male	62	37.1
	Female	105	62.9
Age of respondents	15-24	20	12
	25-34	80	47.9
	35-44	33	19.8
	45-54	22	13.2
	55-64	11	6.6
	More than 65	1	0.6
Educational qualification	Not completed primary school	0	0
	Completed primary school	2	1.2
	Completed two- or three-year high school	9	5.4
	Completed four-year high school	37	22.2
	Completed professional or university undergraduate studies	35	21
	Completed specialist professional or university graduate studies / integrated undergraduate and graduate university studies	70	41.8
	Completed postgraduate specialist studies	1	0.6
	Completed postgraduate scientific master's studies	1	0.6
	Completed university postgraduate doctoral studies	12	7.2

General information	Variables	Number of respondents	Percentage (%)
Employment status	Primary and high school student	0	0
	University student	15	9
	Part-time job	23	13.8
	Full-time job	119	71.3
	Housewife	0	0
	Unemployed	6	3.6
	Retired	4	2.4
Residence region	Zagreb region	18	10.8
	Northern Croatia	128	76.6
	Slavonia	12	7.2
	Lika, Kordun, Banovina	2	1.2
	Istria, Primorje, Gorski Kotar	4	2.4
	Dalmatia	3	1.8
Settlement	City or urban area	77	46.1
	Village or rural area	90	53.9

Source: Authors' research results

Table 2. Household and income-earning household members

	Household members		Income-earning household members	
	Number	Percentage	Number	Percentage
Single	11	6.6	21	12.6
Two members	36	21.6	76	45.5
Three members	33	19.8	39	23.4
Four members	51	30.5	22	13.2
Five members	23	13.8	6	3.6
More than five members	13	7.8	3	1.8

Source: Authors' research results

TABLE 3. Monthly income per respondent and monthly household budget

	Monthly income per respondent		Monthly household budget	
	Number	Percentage	Number	Percentage
Up to €530	8	4.8	1	0.6
From €531 € to €796	16	9.6	10	6
From €797 € to €1,194	58	34.7	22	13.2
From €1,195 € to €1,858	39	23.4	34	20.4
From €1,859 € to €2,256	14	8.4	26	15.6
From €2,257 € to €2,654	7	4.2	27	16.2
From €2,655 € to €3,981	12	7.2	24	14.4
From €3,982 € to €5,309	3	1.8	11	6.6
More than €5,309	1	0.6	3	1.8
I do not know / I do not want to answer	9	5.4	9	5.4

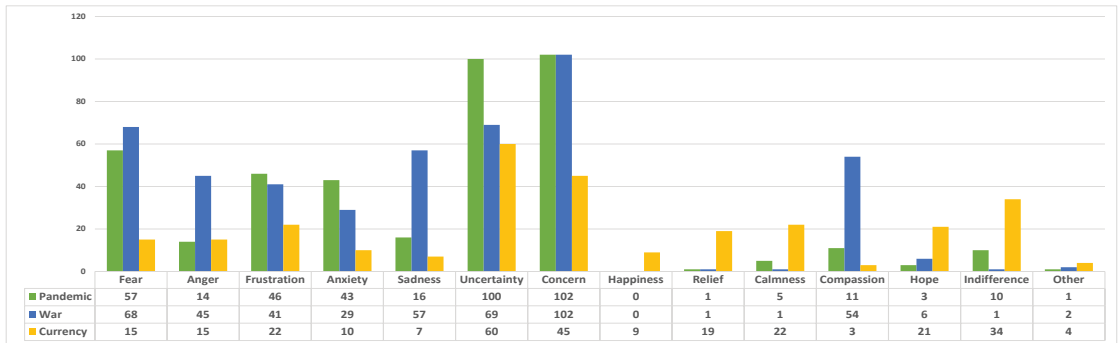
Source: Authors' research results

The following results show that the disruptions above had a major impact on consumer attitudes and behavior. It can be seen that during the pandemic, the majority of respondents felt concerned (61.1%), uncertainty (59.9%), and fear (34.1%), while the war in Ukraine triggered the same feelings, but to a different extent, i.e., 61.1% of respondents were concerned, 41.3% felt uncertainty and 40.7% were afraid. The introduction of a new official currency triggered feelings of uncertainty (35.9%), concern (26.9%) and indifference (20.4%). The distribution of the remaining feelings caused by the pandemic, the war in Ukraine, and the introduction of a new currency in the Republic of Croatia can be seen in Figure 1.

In addition, the authors used a Likert scale to show the respondents' level of agreement with state-

ments related to familiarity with the consequences of the COVID-19 pandemic and the possibilities of inducing fear in different crisis scenarios (Table 4). The levels of agreement were defined as follows: (1) Strongly Disagree; (2) Disagree; (3) Undecided; (4) Agree; (5) Strongly Agree. The results show that, on average, the respondents were familiar with the consequences of the COVID-19 pandemic (3.83) and the war in Ukraine (3.72). On average, the respondents were mostly afraid of the rise in prices of goods and services (4.02) and the occurrence of a new economic crisis (3.93). The respondents were least afraid of the possibility of job loss, reduced purchasing power (2.70), and a possible spread of the war in Ukraine to the territory of the Republic of Croatia and surrounding countries (2.89).

FIGURE 1. Customer sentiments regarding the pandemic, the Ukraine war, and the currency changes



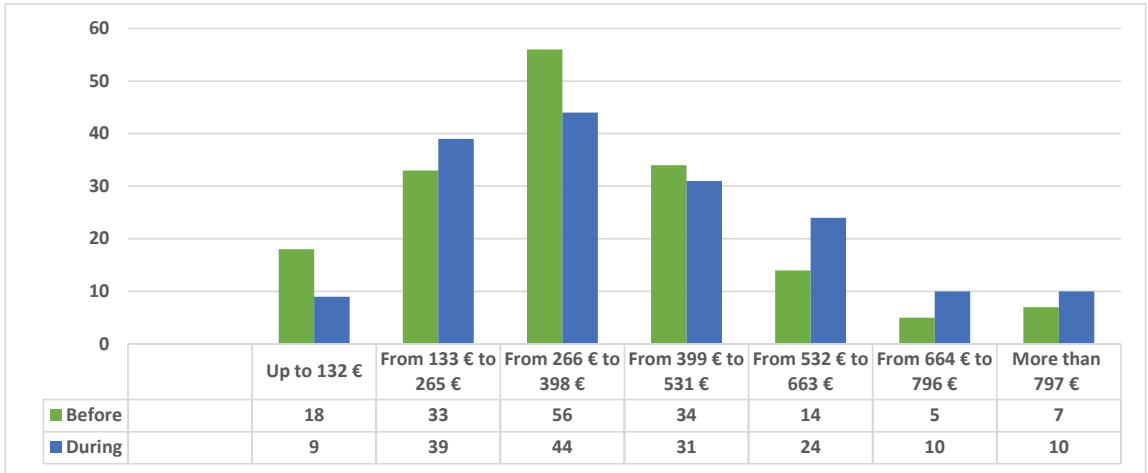
Source: Authors' research results

TABLE 4. Respondents' familiarity with the consequences on the goods and services market

Statements	Level of agreement					Average
	1	2	3	4	5	
The COVID-19 pandemic will have an impact on the goods and services market.	4	6	44	73	40	3.83
The war in Ukraine will impact the goods and services market.	4	9	51	68	35	3.72
Disruptions cause fear of rising prices for goods and services.	3	11	24	70	59	4.02
Disruptions cause fear of a shortage of goods on the shelves of retail chains.	13	31	52	40	31	3.27
Disruptions cause fear of COVID-19 diseases and lack of healthcare.	21	35	49	35	27	3.07
Disruptions cause fear of the war spreading to the territory of the Republic of Croatia or surrounding countries.	29	40	39	39	20	2.89
Disruptions cause fear of a possible economic crisis.	7	11	25	68	56	3.93
Disruptions cause fear of job losses and decreased purchasing power.	38	37	43	35	14	2.70

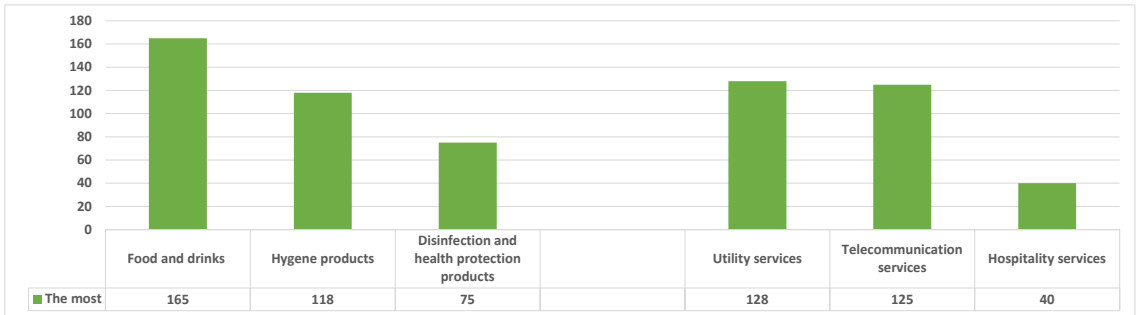
Source: Authors' research results

FIGURE 2. Amount of monthly household budget spent on consumer goods before and during the COVID-19 pandemic and the war in Ukraine



Source: Authors' research results

FIGURE 3. The most purchased goods and services during the COVID-19 pandemic and the war in



Source: Authors' research results

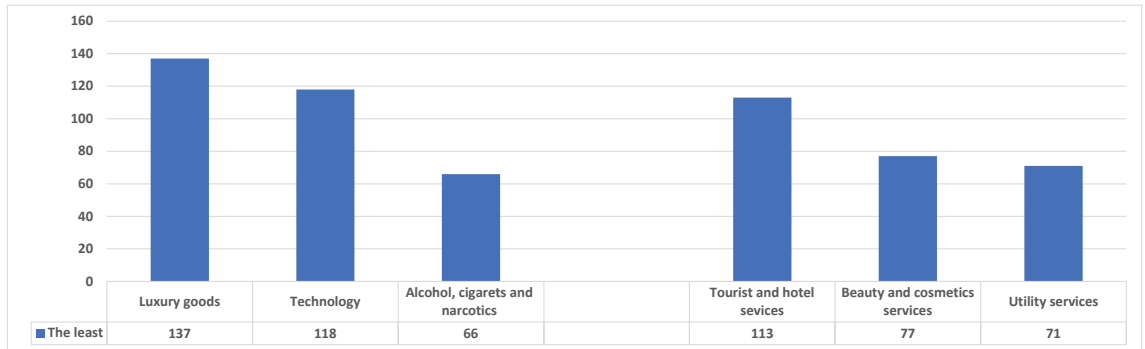
When looking at the monthly household budget, disproportions in purchasing consumer goods (food and drink, hygiene products) were observed before and during the pandemic and the war in Ukraine. Thus, it is evident that most respondents spent between €266 and €398 per month before and during the abovementioned disruptions. However, during the pandemic and the war in Ukraine, spending on consumer goods was noted, probably due to stockpiling, rising prices, and higher allocations of budgets for hygiene products. The remaining breakdown of the household budget is shown in Figure 2.

Even during the pandemic and the war in Ukraine, respondents mainly bought food and drinks (bread, oil, salt, sugar, milk, flour, yeast, water, soft drinks, etc.), hygiene products (cleaning supplies, shampoos, soaps, toilet paper) and products for dis-

infection and health protection (disinfectants, masks, gloves, pharmaceutical products) (see Figure 3). In terms of services, the highest expenditure was recorded for utility services (water, electricity, heating, communal services), telecommunications services (telephone, Internet, online video stores, programs for watching movies and series, packages with additional programs), and catering services (cafés, restaurants, deliveries). Such results were to be expected, considering that consumers shopped more intensively during the disruptions to stock up and were more concerned about protecting their health.

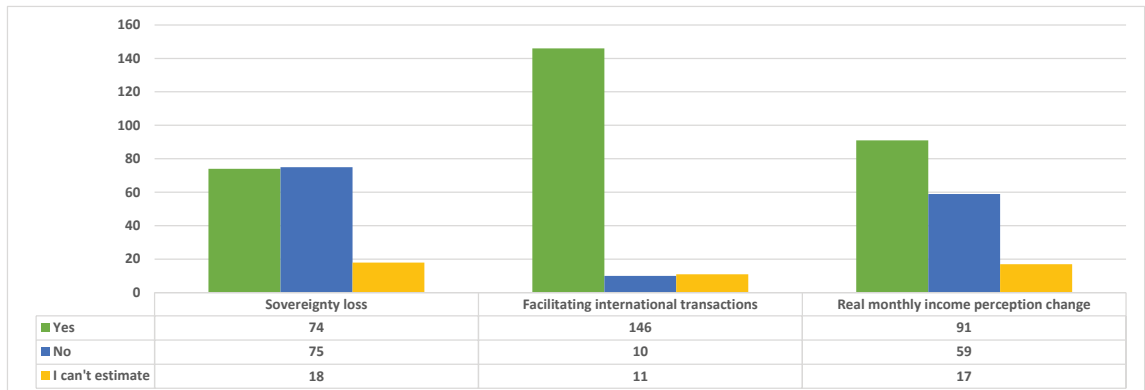
Next, Figure 4 shows the least purchased goods and services during the pandemic and the war in Ukraine. The graph shows that consumers spent the least of their household budgets on luxury goods (cars, perfumes, jewelry, works of art, yachts, sum-

FIGURE 4. The least purchased goods and services during the COVID-19 pandemic and the war in Ukraine



Source: Authors' research results

FIGURE 5. Consumer opinion on the impact of currency changes



Source: Authors' research results

mer houses), technology (computers, laptops, mobile phones, chargers, tablets, cameras, microphones, headphones, printers), as well as alcohol, cigarettes, and drugs. Tourism and hotel services (travel, hotel accommodation, overnight stays), beauty services (cosmetics, hairdressers, pedicures/manicures), and catering services (cafés, restaurants, delivery services) are also the least used services during the pandemic and war period.

The results show that during the pandemic and due to the closure of catering establishments for several months, catering services were mainly used to deliver food, drinks, and other daily necessities to the respondents' homes. On the other hand, they were also the least used, as many citizens worked and studied from home and prepared their meals.

Finally, the change in the Croatian currency

also impacted respondents' perceptions, as Figure 5 shows. It is evident that 87.4% of the respondents believed that introducing the Euro would facilitate international transactions, but at the same time, their perception of the real monthly income changed (54.5%). It is also evident from the results that opinions were divided on the loss of sovereignty caused by the change of national currency.

6. DISCUSSION

The research results show how consumers perceive the dual impact of the pandemic and the war on consumer behavior. On the one hand, it shows that most consumers have not increased their consumption due to market uncertainty and financial instability caused

by the disruptions. On the other hand, the reasons for the increased consumption of the remaining consumers may be personal awareness of the need to stockpile goods, media reports on the shortages of goods and services, and recommendations from the Croatian government. It can be assumed that consumers felt a sense of fear and panic, which further influenced their habits. Despite negative feelings and opinions about introducing a new currency in the Republic of Croatia, such as the loss of sovereignty or increased prices, respondents recognized numerous positive aspects of those above. The stability of the currency, lower interest rates, the same currency represented in several countries, simplified international transactions, easier foreign investments, etc., are mentioned, as can be seen from the example of other EU member states that have already accepted the Euro as their official currency.

Furthermore, the positive aspects are confirmed by the respondents' opinion on their consumption, where they mention that it will remain unchanged, which will be particularly noticeable in consumer goods. Despite the positive effects mentioned, some respondents believe that their consumption will decrease due to price increases and a decrease in purchasing power, which is a consequence of the potential economic unpreparedness for implementing the abovementioned transition. It can be concluded that pandemic and legal disruptions have a greater impact on consumer behavior than economic and financial disruptions. During pandemic and legal disruptions, consumers spend exactly what they need or less on purchasing goods. In contrast, financial disruptions are not expected to impact consumption and consumer behavior significantly.

The study examined open questions about digital solutions and their application due to disruptions. The respondents emphasized both the positive and negative aspects. Many respondents pointed out that the information available in digital media tires and burdens them negatively, which was also reflected in the negative feelings caused by the disruptions examined. Technologies such as commodity exchange platforms, navigation systems, digital payments, and machine learning can be used to support consumers in times of war, reducing the negative effects of war. However, during COVID-19, consumers consider digital opportunities (such as e-commerce platforms, mobile technologies, robotic deliveries, etc.) in the purchasing process (information, ordering, payment, delivery) as a successful tool to mitigate negative feelings. Introducing price monitoring applications as a digital solution can be a good alternative to mitigate consumer anxiety during currency changes.

7. CONCLUSION

Based on the research results, the authors drew the following conclusions. All three disruptions' positive and negative consequences are undoubtedly reflected in consumer behavior. When looking at consumer habits, it can be concluded that consumer opinions are divided, and there are differences in their personal profile and purchasing power. Due to unforeseen disruptions, the research has identified the main consumer opinions and predictions on the analyzed consumer habits. As the general opinion of the respondents is that the global and economic processes will repeat the scale of the economic crisis in the Republic of Croatia from 2008, it can be concluded that they do not accept the new global and economic situations lightly. Although the predicted consequences of the above disruptions were divided from very positive to extremely negative, the current situation shows that the consumption of certain goods and services has decreased.

In contrast, other goods and services are purchased more than needed. During the disruptions, the potential of using digital technologies was recognized, and their functionalities contributed significantly to mitigating the resulting problems. This implies that when unforeseen circumstances arise, digital technologies can be an adequate solution and a trigger for lasting innovative change.

8. RESEARCH LIMITATIONS AND IMPLICATIONS

The research sample and its elements (gender, age, education level, employment status, region of residence) are recognized as the main research limitations. Since the authors did not use a random sample, the generalization of results is not fully possible. If we look at the results and the distribution of responses, it is clear that 62.9% of the respondents are women, while 50% are between 25 and 34 years old, which, it is assumed, influences the study's conclusions. Furthermore, completed specialist vocationally or university graduate studies / integrated undergraduate and graduate university studies are respondents' most represented education degrees. The authors believe that educational background is likely to influence consumer perceptions and attitudes when disruptions occur in the subject of this research.

Furthermore, Northern Croatia has been over-represented in the research sample (76.6%). This also means that the results cannot be generalized to the entire population of the Republic of Croatia; they can only be analyzed from the region's perspective.

The next limitations identified were the measurement instrument selection and the questions' structure. The questions are designed as closed questions, leaving little room for descriptive parts and the respondent's opinions. Finally, individual biases may be evident in the respondents' answers. Considering the limitations mentioned, future research should focus on removing these limitations in order to obtain more representative results. In addition, after introducing the Euro in Croatia, the authors of this study could investigate consumer perception regarding which disruptions (COVID-19, war in Ukraine, or currency changes) had the greatest impact on their behavior.

Despite the recognized limitations, the results of

this research have a twofold benefit. First, they can be significant for the academic community to build upon future research on the effects of disruptions on consumer behavior. As the research combines and demonstrates the impact of current disruptions, these are the first comprehensive findings that, to the author's knowledge, include the pandemic, the war in Ukraine, and the introduction of the Euro as a new currency in the Republic of Croatia. Second, the research results can be used in practice to develop an appropriate sales policy that allows for less volatility and better prediction of consumer behavior in the future, given the major role of technology.

REFERENCES

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1. Ahmed, S., Hasan, M. M., & Kamal, M. R. (2022). Russia–Ukraine crisis: The effects on the European stock market. *European Financial Management*, *n/a(n/a)*. <https://doi.org/10.1111/eufm.12386>
2. Ali, S., Khalid, N., Javed, H. M. U., & Islam, D. M. Z. (2021). Consumer Adoption of Online Food Delivery Ordering (OFDO) Services in Pakistan: The Impact of the COVID-19 Pandemic Situation. *Journal of Open Innovation: Technology, Market, and Complexity*, *7*(1), Article 1. <https://doi.org/10.3390/joitmc7010010>
3. Anonymous. (2022). *An overview of the euro introduction process in Croatia*. <https://www.bdo.hr/en-gb/insights/featured-insights/an-overview-of-the-euro-introduction-process-in-croatia>
4. Bahmanyar, A., Estebansari, A., & Ernst, D. (2020). The impact of different COVID-19 containment measures on electricity consumption in Europe. *Energy Research and Social Science*, *68*. Scopus. <https://doi.org/10.1016/j.erss.2020.101683>
5. Benton, T., Froggatt, A., Wellesley, L., Graham, O., King, R., Morisetti, N., Nixey, J., & Schröder, P. (2022). *The Ukraine war and threats to food and energy security: Cascading risks from rising prices and supply disruptions*. Royal Institute of International Affairs. <https://doi.org/10.55317/9781784135225>
6. Brogan, J. (2020). *Perspective I The strangest thing about the pandemic is that it isn't strange anymore*. Washington Post. https://www.washingtonpost.com/outlook/yeast-srangement-covid-grocery-store/2020/10/01/c83a1548-0373-11eb-897d-3a6201d6643f_story.html
7. Bukovšak, M., Čudina, A., & Pavić, N. (2017). *Adoption of the Euro in Croatia: Possible effects on international trade and investments*. Zagreb : Croatian National Bank, Publishing Department.
8. Çelik, Z., & Dülek, B. (2022). Investigation of consumers' intentions to use digital currency for shopping. *Journal of Economics and Administrative Sciences*, *12*(23), 284–303.
9. Chung, C. (2021). *I "zoomed" into this virtual wedding during the Covid-19 pandemic in NYC*. Cynthia Chung Weddings. <https://www.cynthiachungweddings.com/nyc-new-york-city-wedding-elopement-engagement-photographer-photography/2020/5/8/i-zoomed-into-this-virtual-wedding-during-the-covid-19-pandemic>
10. Crosta, A. D., Ceccato, I., Marchetti, D., Malva, P. L., Maiella, R., Cannito, L., Cipi, M., Mammarella, N., Palumbo, R., Verrocchio, M. C., Palumbo, R., & Domenico, A. D. (2021). Psychological factors and consumer behavior during the COVID-19 pandemic. *PLOS ONE*, *16*(8), e0256095. <https://doi.org/10.1371/journal.pone.0256095>
11. Cruz-Cárdenas, J., Zabelina, E., Guadalupe-Lanas, J., Palacio-Fierro, A., & Ramos-Galarza, C. (2021). COVID-19, consumer behavior, technology, and society: A literature review and bibliometric analysis. *Technological Forecasting and Social Change*, *173*, 121179. <https://doi.org/10.1016/j.techfore.2021.121179>
12. Desmet, P. (2002). A study of the potential effects of the conversion to Euro. *Journal of Product & Brand Management*, *11*(3), 134–146. <https://doi.org/10.1108/10610420210430033>
13. Donthu, N., & Gustafsson, A. (2020). Effects of COVID-19 on business and research. *Journal of Business Research*, *117*, 284–289. <https://doi.org/10.1016/j.jbusres.2020.06.008>
14. Dubovyk, T., Buchatska, I., Diachuk, I., & Zerkal, A. (2022). Digital Marketing in the Condition of Wartime Posture in Ukraine. *International Journal of Computer Science and Network Security*, *22*(7), 206–212. <https://doi.org/10.22937/IJCSNS.2022.22.7.25>
15. Dwi Astuti, Y., Attaymini, R., & Dewi, M. (2022). Digital Media and War: Social Media as a Propaganda Tool for the Russia-Ukraine Conflict in the Post-truth Era. *Proceedings of the Annual International Conference on Social Science and Humanities (AICOSH 2022)*, 19–27. https://doi.org/10.2991/978-2-494069-87-9_4
16. Eger, L., Komárková, L., Egerová, D., & Mičík, M. (2021). The effect of COVID-19 on consumer shopping behaviour: Generational cohort perspective. *Journal of Retailing and Consumer Services*, *61*. Scopus. <https://doi.org/10.1016/j.jretconser.2021.102542>
17. euroHR. (n.d.). *EURO HR I EURO - naš novac*. EURO HR. Retrieved June 26, 2023, from <https://euro.hr/>
18. European Central Bank. (n.d.). *Digital Euro*. Retrieved June 26, 2023, from https://www.ecb.europa.eu/paym/digital_euro/html/index.en.html
19. European Central Bank. (2021, January 20). *Naš novac*. Europska središnja banka. <https://www.ecb.europa.eu/euro/intro/html/index.hr.html>
20. European Union. (2022, June 13). *9 charts that show how inflation and the Ukraine war are impacting European consumers*. World Economic Forum. <https://www.weforum.org/agenda/2022/06/how-inflation-and-the-conflict-in-ukraine-are-impacting-european-consumers/>
21. Gabbiadini, A., Baldissarri, C., Durante, F., Valtorta,

- R. R., De Rosa, M., & Gallucci, M. (2020). Together Apart: The Mitigating Role of Digital Communication Technologies on Negative Affect During the COVID-19 Outbreak in Italy. *Frontiers in Psychology*, 11. <https://www.frontiersin.org/articles/10.3389/fpsyg.2020.554678>
22. Galanakis, C. M., Rizou, M., Aldawoud, T. M. S., Ucak, I., & Rowan, N. J. (2021). Innovations and technology disruptions in the food sector within the COVID-19 pandemic and post-lockdown era. *Trends in Food Science and Technology*, 110, 193–200. Scopus. <https://doi.org/10.1016/j.tifs.2021.02.002>
 23. Gärling, T., & Thøgersen, J. (2007). Effects of the Euro Changeover on Consumer Behaviour: Introduction to the Special Issue. *Journal of Consumer Policy*, 30, 303–311. <https://doi.org/10.1007/s10603-007-9046-1>
 24. Gaži Kovačević, D., & Tadić-Čolić, L. (2022). Enlargement of the Eurozone: Road Map to the Introduction of the Euro in Croatia - WT. <https://www.wolftheiss.com/insights/enlargement-of-the-eurozone-road-map-to-the-introduction-of-the-euro-in-croatia/>
 25. Golinelli, D., Boetto, E., Carullo, G., Nuzzolese, A. G., Landini, M. P., & Fantini, M. P. (2020). Adoption of Digital Technologies in Health Care During the COVID-19 Pandemic: Systematic Review of Early Scientific Literature. *Journal of Medical Internet Research*, 22(11), e22280. <https://doi.org/10.2196/22280>
 26. Goolsbee, A., & Syverson, C. (2021). Fear, lockdown, and diversion: Comparing drivers of pandemic economic decline 2020. *Journal of Public Economics*, 193. Scopus. <https://doi.org/10.1016/j.jpubeco.2020.104311>
 27. Grashuis, J., Skevas, T., & Segovia, M. S. (2020). Grocery shopping preferences during the COVID-19 pandemic. *Sustainability (Switzerland)*, 12(13). Scopus. <https://doi.org/10.3390/su12135369>
 28. Guido, G., & Peluso, A. (2004). Consumers' perception of odd-ending prices with the introduction of the Euro. *Journal of Product & Brand Management*, 13(3), 200–210. <https://doi.org/10.1108/10610420410538096>
 29. Hsu, T. (2022). The Effects of Money Illusion on Consumer Perception: The Euro Changeover. *Journal of Marketing Development and Competitiveness*, 16(1), Article 1. <https://doi.org/10.33423/jmcd.v16i1.5023>
 30. International Review of the Red Cross. (2021, March 10). *Digital technologies and war*. International Review of the Red Cross. <http://international-review.icrc.org/reviews/irrc-no-913-digital-technologies-and-war>
 31. Jribi, S., Ben Ismail, H., Doggui, D., & Debba-bi, H. (2020). COVID-19 virus outbreak lockdown: What impacts on household food wastage? *Environment, Development and Sustainability*, 22(5), 3939–3955. Scopus. <https://doi.org/10.1007/s10668-020-00740-y>
 32. Kantar Public. (2022). *Study on New Digital Payment Methods*. https://www.ecb.europa.eu/paym/digital_euro/investigation/profuse/shared/files/dedocs/ecb.dedocs220330_report.en.pdf
 33. Kirk, C. P., & Rifkin, L. S. (2020). I'll trade you diamonds for toilet paper: Consumer reacting, coping and adapting behaviors in the COVID-19 pandemic. *Journal of Business Research*, 117, 124–131. Scopus. <https://doi.org/10.1016/j.jbusres.2020.05.028>
 34. Kutnjak, A. (2021). Covid-19 Accelerates Digital Transformation in Industries: Challenges, Issues, Barriers and Problems in Transformation. *IEEE Access*, 9, 79373–79388. <https://doi.org/10.1109/ACCESS.2021.3084801>
 35. Kutnjak, A., Gregurec, I., & Tomašek, L. (2022). How Digital Technologies Influences Consumer Decision Making Process – Literature Review. *Proceedings of 11th International Scientific Symposium Region, Entrepreneurship, Development*, 387–402.
 36. Laato, S., Islam, A. K. M. N., Farooq, A., & Dhir, A. (2020). Unusual purchasing behavior during the early stages of the COVID-19 pandemic: The stimulus-organism-response approach. *Journal of Retailing and Consumer Services*, 57. Scopus. <https://doi.org/10.1016/j.jretconser.2020.102224>
 37. Loxton, M., Truskett, R., Scarf, B., Sindone, L., Baldry, G., & Zhao, Y. (2020). Consumer Behaviour during Crises: Preliminary Research on How Coronavirus Has Manifested Consumer Panic Buying, Herd Mentality, Changing Discretionary Spending and the Role of the Media in Influencing Behaviour. *Journal of Risk and Financial Management*, 13(8), 166. <https://doi.org/10.3390/jrfm13080166>
 38. Merkl, I. (2022, December 2). *euroHR – aplikacija za preračunavanje kuna u eure*. EURO HR. <https://euro.hr/eurohr-aplikacija-za-preracunavanje-kuna-u-eure/>
 39. Ministry of Economy and Sustainable Development. (2023a). *Kretanje cijena u Republici Hrvatskoj*. <https://kretanje-cijena.hr>
 40. Ministry of Economy and Sustainable Development. (2023b). *Ministar Filipović predstavio aplikaciju "Kretanje-cijena."* Mingor.Gov.Hr. <https://>

- mingor.gov.hr/vijesti/ministar-filipovic-predstavio-aplikaciju-kretanje-cijena/9157
41. Mondal, S., & Mitra, P. (2022). The Role of Emerging Technologies to Fight Against COVID-19 Pandemic: An Exploratory Review. *Transactions of the Indian National Academy of Engineering*, 7(1), 157–174. <https://doi.org/10.1007/s41403-022-00322-6>
 42. Nicolson, R., & Maresia, D. (2022). *How Does Kes-pro's Procurement in the EU Contribute to Their Overall Competitive Advantage in the Wholesale Sector* (pp. 1–34) [fi=AMK-opinnäytetyölsv=YH-examensarbetel en=Bachelor's thesis]. <http://www.theseus.fi/handle/10024/753889>
 43. Novak, E., Hrustek, L., & Kutnjak, A. (2023). Utjecaj poremećaja u globalnim i gospodarskim procesima na ponašanje potrošača. *CroDiM*, 6(1), 121–131.
 44. Novak, E., Kutnjak, A., & Hrustek, L. (2022). Opportunities for a Digital Transformation of the Global Supply Chains: Case Study of the Suez Canal Blockade. *Proceedings of Central European Conference on Information and Intelligent Systems*, 137–147. <https://www.proquest.com/openview/dbdodc097866bdb6foa4509b51668373/1?pq-origsite=gscholar&cbl=1986354>
 45. Ong, A. K. S., Cleofas, M. A., Prasetyo, Y. T., Chuenyindee, T., Young, M. N., Diaz, J. F. T., Naldifatin, R., & Redi, A. A. N. P. (2021). Consumer Behavior in Clothing Industry and Its Relationship with Open Innovation Dynamics during the COVID-19 Pandemic. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(4), 211. <https://doi.org/10.3390/joitmc7040211>
 46. Panduru, D. A., & Scarlat, C. (2022). Digitalization and Strategic Changes in Romanian Retail Fuel Networks: A Qualitative Study. *Information*, 13(9), Article 9. <https://doi.org/10.3390/info13090416>
 47. Pantano, E., Pizzi, G., Scarpi, D., & Dennis, C. (2020). Competing during a pandemic? Retailers' ups and downs during the COVID-19 outbreak. *Journal of Business Research*, 116, 209–213. Scopus. <https://doi.org/10.1016/j.jbusres.2020.05.036>
 48. Pantano, E., Willems, K., Pantano, E., & Willems, K. (2022). How Pandemic Crisis Times Affects Consumer Behaviour. In *Retail in a New World* (pp. 13–28). Emerald Publishing Limited. <https://doi.org/10.1108/978-1-80117-846-420221004>
 49. Poelman, M. P., Gillebaart, M., Schlinkert, C., Dijkstra, S. C., Derksen, E., Mensink, F., Hermans, R. C. J., Aardening, P., de Ridder, D., & de Vet, E. (2021). Eating behavior and food purchases during the COVID-19 lockdown: A cross-sectional study among adults in the Netherlands. *Appetite*, 157. Scopus. <https://doi.org/10.1016/j.appet.2020.105002>
 50. PoslovniHr. (2020). *U planu je uvođenje digitalnog eura, evo za što će se koristiti*. <https://www.poslovni.hr/trzista/u-planu-je-uvodenje-digitalnog-eura-evo-za-sto-ce-se-koristiti-4253438>
 51. PoslovniHr. (2023). *Gdje proći jeftinije? Aplikacija 'Kretanje cijena' od sutra dostupna građanima*. <https://www.poslovni.hr/hrvatska/gdje-proci-jeftinije-aplikacija-kretanje-cijena-od-sutra-dostupna-gradanima-4376742>
 52. Pufnik, A. (2018). Effects of the Adoption of the Euro on Consumer Prices and Inflation Perceptions: An Overview of Experiences and Assessment of the Possible Impact in Croatia. *Privredna kretanja i ekonomska politika*, 27(1 (142)), 129–159. <https://doi.org/10.15179/pkiep.27.1.4>
 53. Rosenbaum, M. S., Russell-Bennett, R., & Contreras-Ramírez, G. (2022). Editorial: Research priorities in the new service marketplace. *Journal of Services Marketing*, 36(8), 1009–1014. <https://doi.org/10.1108/JSM-06-2022-0190>
 54. Sheth, J. (2020). Impact of Covid-19 on consumer behavior: Will the old habits return or die? *Journal of Business Research*, 117, 280–283. <https://doi.org/10.1016/j.jbusres.2020.05.059>
 55. Sunarjo, W. A., Nurhayati, S., & Muhardono, A. (2021). Consumer Behavior Toward Adoption of Mobile Payment: A Case Study in Indonesia During the COVID-19 Pandemic. *The Journal of Asian Finance, Economics and Business*, 8(4), 581–590. <https://doi.org/10.13106/JAFEB.2021.VOL8.NO4.0581>
 56. Trudel, D., Tworek, H. J. S., Niemeyer, K., Siliņa, M., & Matviyenko, S. (2022, March 28). *The Russian invasion shows how digital technologies have become involved in all aspects of war*. The Conversation. <http://theconversation.com/the-russian-invasion-shows-how-digital-technologies-have-become-involved-in-all-aspects-of-war-179918>
 57. van Raaij, F., & Rijen, C. (2003). *Money illusion and euro pricing*.
 58. Vanapalli, K. R., Sharma, H. B., Ranjan, V. P., Samal, B., Bhattacharya, J., Dubey, B. K., & Goel, S. (2021). Challenges and strategies for effective plastic waste management during and post COVID-19 pandemic. *Science of the Total Environment*, 750. Scopus. <https://doi.org/10.1016/j.scitotenv.2020.141514>
 59. Yassin, C. A. (2022). What is Enough? The Impact of the Russia-Ukraine Crisis on Consumers' Panic-Buying Behaviour. *The Academic Journal of Contemporary Commercial Research*, 2(3), 29–46. <https://doi.org/10.21608/ajccr.2022.277216>
 60. Yuen, K. F., Wang, X., Ma, F., & Li, K. X. (2020). The psychological causes of panic buying following

- a health crisis. *International Journal of Environmental Research and Public Health*, 17(10). Scopus. <https://doi.org/10.3390/ijerph17103513>
61. Zwanka, R. J., & Buff, C. (2021). COVID-19 Generation: A Conceptual Framework of the Consumer Behavioral Shifts to Be Caused by the COVID-19 Pandemic. *Journal of International Consumer Marketing*, 33(1), 58–67. Scopus. <https://doi.org/10.1080/08961530.2020.1771646>

DIGITALNE TEHNOLOGIJE I PERCEPCIJA POTROŠAČA NA HRVATSKOM TRŽIŠTU – UBLAŽAVANJE POSLJEDICA GLOBALNIH POREMEĆAJA

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SAŽETAK

Današnji potrošači vođeni su raznim unutarnjim i vanjskim čimbenicima koji oblikuju njihove preferencije pri kupnji proizvoda i usluga. Mnogo poremećaja, poput pandemije te pravnih, ekonomskih i finansijskih poremećaja, dogodilo se posljednjih godina na globalnoj i ekonomskoj razini. Prvo, pandemija COVID-19 sa brojnim posljedicama na sve aspekte ljudskog života; drugo, iznenadni izbijanje rata u Ukrajini, koji oblikuje nove međunarodne trgovinske politike; i, konačno, pristupanje Republike Hrvatske šengenskom području uz uvođenje nove službene valute, samo su neki od globalnih događaja koji utječu na ponašanje potrošača. U takvim neizvjesnim uvjetima, razine stresa, straha, panike i anksioznosti su visoke među potrošačima jer je izgubljeno povjerenje u proizvođače, a očekuje se drastičan rast cijena. Postavlja se pitanje mogu li se takve negativne percepcije spriječiti ili ublažiti putem digitalnih tehnologija koje bi potrošačima omogućile uvid u promjene cijena tijekom kriza te im pomogle da prevladaju ili čak ublaže strah od smanjenja kupovne moći. Ovaj rad istražuje percepciju potrošača o tome kako su pandemija COVID-19, rat u Ukrajini i nova valuta utjecali na ponašanje potrošača, jesu li ga promijenili i u kojoj mjeri. Istraživanje je također ispitalo kako se negativne percepcije potrošača mogu ublažiti primjenom digitalnih rješenja. U drugom dijelu rada predstavljeni su empirijski rezultati prikupljeni kroz detaljno istraživanje kako bi se teorijska podloga nadopunila praktičnim podacima.

KLJUČNE RIJEČI: *percepcija potrošača, COVID-19, rat u Ukrajini, euro, digitalna tehnologija*