

# The Impact of COVID-19 on Consumer Behavior. The Role of Lack of Control and Risk Perception on Stockpiling

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## Abstract

**Purpose:** The coronavirus pandemic has suddenly changed the lives of people all over the world, both in terms of their health, everyday habits, work, and the patterns of their consumer behavior. The goal of our study was first to examine the intensity of stockpiling in Poland that appeared in response to the onset of the COVID-19 pandemic and explore the role of psychological factors (sense of control over the pandemic and subjective perception of the risk of getting infected with the coronavirus) for different dimensions of stockpiling.

**Design/methodology/approach:** The study was conducted in April 2020 on a nationwide representative random-quota sample (n=1,046) shortly after the first COVID-19 infection was diagnosed in Poland. At the time, certain changes in shopping behavior, especially increased purchase frequencies and stockpiling intensity, were observed in Poland, similarly to many other countries.

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**Findings:** The results showed that the factors affecting consumer behavior, such as making supplies or spending more on pandemic-related and unrelated items, are explained not only by demographic variables but also by psychological factors such as the experience of a lack of control and fear of being infected with the coronavirus.

**Research limitations/implications:** The study has managerial implications regarding sales and logistics management. In an emergency situation (not only directly related to the economic crisis and consumption), both producers of basic products and retailers should be prepared for increased interest in the purchase of these products and provide access to consumers accordingly. Controlling communications in public spaces that could generate anxiety would be advisable too.

**Originality/value:** The conducted study shows that the shopping behavior during the onset of the COVID-19 pandemic was predicted by fear of the coronavirus and feelings of a lack of control.

**Keywords:** consumer behavior, stockpiling, coronavirus disease, lack of control, fear of infection, risk perception of COVID-19 infection.

**JEL:** D10

## Wpływ COVID-19 na zachowania konsumentów. Rola poczucia braku kontroli i postrzegania ryzyka w tendencji do robienia zakupów na zapas

### Streszczenie

**Cel:** pandemia COVID-19 gwałtownie zmieniła życie ludzi na całym świecie w zakresie zarówno zdrowia, codziennych nawyków, pracy, jak i zachowań konsumenckich. Celem badania było zmierzenie intensywności gromadzenia zapasów w Polsce jako odpowiedzi na pojawienie się pandemii COVID-19 oraz zbadanie roli czynników psychologicznych (poczucie kontroli i subiektywne postrzeganie ryzyka zakażenia koronawirusem) dla gromadzenia różnych rodzajów produktów.

**Metodologia:** badanie przeprowadzono w kwietniu 2020 roku na ogólnopolskiej reprezentatywnej próbie losowo-kwotowej (n=1046) krótko po wykryciu pierwszego zakażenia COVID-19 w Polsce. W tym czasie w Polsce, podobnie jak w wielu innych krajach, zaobserwowano pewne zmiany w zachowaniach zakupowych, zwłaszcza zwiększoną częstotliwość zakupów i intensywność gromadzenia zapasów.

**Wyniki:** wyniki pokazały, że czynniki wpływające na zachowania konsumentów, takie jak robienie zapasów czy większe wydatki na zakupy związane i niezwiązane z pandemią, są wyjaśniane nie tylko przez zmienne demograficzne, lecz także przez czynniki psychologiczne, takie jak doświadczenie braku kontroli i strach przed zakażeniem koronawirusem.

**Ograniczenia/implikacje badawcze:** badanie ma implikacje dotyczące zarządzania sprzedażą i logistyką. W sytuacji kryzysowej (nie tylko bezpośrednio związanej z kryzysem gospodarczym i konsumpcją) zarówno producenci podstawowych produktów, jak i ich sprzedawcy powinni być przygotowani na zwiększone zainteresowanie zakupem tych produktów i odpowiednio zapewnić ich dostęp konsumentom. Wskazane byłoby również kontrolowanie komunikatów w przestrzeni publicznej, które mogłyby wywołać niepokój.

**Oryginalność/wartość:** przeprowadzone badania wskazują, że zachowania zakupowe na początku pandemii COVID-19 były spowodowane przez lęk przed koronawirusem i poczucie braku kontroli.

**Słowa kluczowe:** zachowania konsumenckie, robienie zakupów na zapas, koronawirus, brak kontroli, strach przed zakażeniem, postrzeganie ryzyka związanego z zakażeniem COVID-19.

## 1. Introduction

Various types of local or global crises have been observed over the last several years. They have mainly been economic crises which translated into the lower psychological well-being of people, sometimes also influencing their consumer behavior (Mansoor & Jalal, 2011). Since 2020, we have been facing the coronavirus disease (COVID-19) pandemic which, due to the threat to the health and life of people around the world, has made the governments of the majority of countries decide to shut down parts of the economy (Kraemer et al., 2020). The governments of most European countries opted to implement numerous restrictions, such as the closure of schools and universities, shopping malls, restaurants, and cinemas, accompanied by the imposition of a ban on many services. This has resulted in the loss of jobs and incomes for a large number of people. A Dutch study (Andersen et al., 2020) showed that there is a drop of around 25% in aggregate spending during the COVID-19 pandemic. A recent study by Laguna et al. (2020) reveals changes in shopping frequency as well as demonstrates that there is a correlation between government restrictions and decreased spending.

In many countries, the introduction of a lockdown resulted in many services being closed, human interactions being limited, and a special order being introduced to keep social distance and wear face masks in public places. This situation has not only led to a decreased life comfort but has also created a salient threat to the health and even life of individuals. The outbreak of the pandemic and the introduction of many bans and orders were also accompanied by changes in consumer behavior. Some of these changes are directly related to the restrictions imposed (e.g., the number of people admitted to stores at any one time) and are, therefore, understandable, while others seem less clear and reasonable, such as making very large food supplies. The fact that certain changes in the patterns of consumer behaviors were quite similar (at least in Europe) – regardless of any previous crisis experiences of the citizens of various countries – posed a question of whether this was a strategy to cope with an increased threat to health and lack of personal control over the pandemic situation. For example, a surprisingly increased stockpiling of toilet paper was observed both in Poland, whose citizens had already experienced something similar during the time of the great economic crisis in the 1980s (it was extremely difficult to buy toilet paper for several years), and in countries that had had no such experience since World War II, such as Sweden and India (Anastasiadou et al., 2020; Vijai & Nivetha, 2020).

The goal of our study was to first examine the intensity of different consumer behaviors in Poland that appeared in response to the onset of the COVID-19 pandemic. Second, we aimed to show the extent to which these consumer behaviors are predicted by psychological factors, such as a sense of

control over the pandemic situation, and a subjective perception of the risk of getting infected by the coronavirus, controlling for demographic factors, such as gender, age, education, and income. There are numerous studies analyzing how consumer behavior changes during various types of crises but they are mostly concern economic crises (Ang et al., 2000; Mansoor & Jalal, 2011; Voinea & Filip, 2011), where changes in consumer behavior are obvious; however, few studies have explored the changes in consumer behavior that have occurred in response to the health crisis relating to the COVID-19 pandemic (Davis et al., 2021; De Backer et al., 2021; Eftimov, 2020; Grunert et al., 2021; Molina-Montes et al., 2021; Wang et al. 2021).

## 2. Psychological Reactions to the Crisis

There have been many different types of crises in the history of humanity, each with different origins and effects, such as economic, ecological, or health crises. Every crisis, regardless of its type, has implications for human well-being. The most typical reaction to a crisis is a sense of fear, anxiety, and panic (Sperling et al., 2008). Psychological reactions to crises can also be observed and a study by Chryssochoou et al. (2013) showed that there are multiple strategies of reacting to a changing situation in the world, some more and some less radical: ranging from depression to self-harm and even violent practices. For example, the 2013 studies of Chang, Stuckler, Yip, and Gunnell demonstrated that after the economic crisis that occurred in 2008, the suicide rates in both European and American countries increased compared to previous trends. These reactions are influenced by a person's social position, sensitivity, their sense of grief, and a whole range of other emotions felt in relation to a crisis. Drawing on experiences with the Greek economic crisis, Chryssochoou et al. (2013) concluded that emotions play a crucial role in predicting possible reactions to a crisis.

Some studies have also demonstrated that individual psychological traits exert a strong influence on how people deal with crises. As early as in 1984, Chebat and Filiatrault examined the relationship between the locus of control and the reaction to the recession in the early 1980s. The research was carried out with the participation of people who voted for a political party that identified the causes of the crisis in external factors (e.g., the global economic situation) and those who voted for a party that explained the crisis by internal factors. Some studies demonstrated that individual psychological traits, such as locus of control (Chebat & Filiatrault, 1984) or belief in a just world (Christandl, 2013), exert a strong influence on how people deal with a crisis. Research carried out during the recession in the early 1980s showed that people with an external locus of control were more psychologically affected by the economic crisis than those with an internal locus of control (Chebat & Filiatrault, 1984).

### 3. Changing Consumer Behavior as a Response to a Crisis

Different crises and the stress associated with them exert an impact not only on people's psychological functioning but also on their consumer decisions and behaviors. In this context, economic crises and their impact on consumer and financial behavior have been explored most extensively to date (Nistorescu & Puiu, 2009). An economic crisis affects the expectations of all consumers and is directly connected to purchasing behavior, due to a usual tax- related increase, salary reductions or job losses. While those who have lost their jobs face a drop in their income, employed consumers face the uncertainty of not being able to keep their jobs or maintain their current salary level. At some level, the degree of uncertainty depends not only on the severity of the crisis but also on its subjective perception.

Various changes take place in consumer behavior at the time of an economic crisis. Usually, consumption decreases (Amalia & Ionut, 2009). Consumers postpone major expenditures and choose cheaper brands than usual. Some people may focus more on the price of the product and, as a result, become more price-driven than loyal to their preferred brand. Ang et al. (2000) studied consumer behaviors during the Asian economic crisis. They found that Asian consumers did more comparative shopping, delayed purchases of big-ticket items, placed more emphasis on product durability and functionality, switched to lower-end and local brands, and bought at discount stores more often. Studies showed that increasing uncertainty leads to a reduction in consumption, particularly the consumption of discretionary goods. For example, Kang and Sawada (2008) showed that Korean consumers tried to maintain their expenditures on food, education, and health, while reducing their consumption of luxuries during the 1997 Asian crisis. Mansoor and Jalal (2010) described the effects of an economic crisis in a well-developed country, namely, the Kingdom of Bahrain. The financial crisis affected both planned and unplanned consumer behaviors.

Other types of crises than economic ones, e.g. those connected to health, can also affect consumer behaviors. Pavia and Mason (2004) conducted qualitative studies – in-depth interviews and one focus group – with 22 breast cancer survivors. They explained the findings of their research in relation to the everyday consumer behavior of people whose future was uncertain. In their study, this uncertainty resulted from a disease that could potentially result in death. Consumption and related behavior have become a way for some patients to cope with the crisis that they were going through. For example, the exertion of strong control over consumption was a surrogate for their loss of control in other dimensions of their lives. Some chose to engage in various activities (e.g., travelling or shopping) as a means of anchoring themselves in the world. Making plans for the future, saving for the future, and even buying a pet, are all manifestations of a person with some degree of future orientation. The findings of this report also

referred to other life-threatening situations where consumers were faced with uncertainty, such as a health crisis or pandemic.

Changes in consumer behavior as a response to various types of crises are analyzed primarily from a demographic perspective. For example, Urbonavicius and Piktuniene (2010) analyzed the emotional response of consumers to the economic crisis in Lithuania. They found that the younger generation tried to maintain their level of consumption, while a part of the older generation lowered their consumption expenditures. Other studies scrutinized the changes in consumer behavior in response to economic crises depending on individual psychological variables. The main focus of these studies was the perceived social support, self-efficacy, and resilience (Greenglass et al., 2013; Marjanovic et al., 2013). Ang (2000), who conducted studies among people affected by the Asian economic crisis, argues that the psychological characteristics that moderate the effects of the economic crisis on consumer behavior include materialism, value-consciousness (the importance of getting the best deal), and, lastly, risk aversion. Risk aversion in this context refers to the degree to which a certain person feels comfortable in unusual situations. Another study, conducted in the context of the COVID-19 pandemic, showed a degree of dependency between the Big Five personality traits and consumer behavior. Such behavior as stockpiling was connected with high scores on the Extraversion and Neuroticism scales, and low scores on the Conscientiousness and Openness to Experience scales (Dammeyer, 2020).

#### 4. Loss of Control as a Reaction to a Crisis

One of the problems that people face during any kind of crisis is the perceived loss of control – people start to feel that the situation is beyond their control. Loss of control can have a dual effect on human behavior, both mobilizing and demobilizing. In some studies, the lack of control in relation to a given situation is seen as a challenge that mobilizes people to gain back control (e.g., Wortman & Brehm, 1975). This approach presents the human as an active agent trying to fulfill their needs and regain the control that was lost by engaging in behavior that helps to regain control. The learned helplessness syndrome is in contrast to this – it is assumed that the loss of control has a demobilizing effect and leads to the complete cessation of any activity (Maier & Seligman, 1976).

Personal control is a basic type of motivation that, when threatened, leads people to look for different ways of restoring it. There are specific types of behavior and mechanisms that can be observed in people during periods of loss of control. Some people focus on and try to deal with their emotions (emotion-focused coping), while others try to change the situation that they are facing (problem-focused coping) (Lazarus & Folkman,

1984). Other distinctions regarding coping strategies also include reappraisal, avoidance, and reorganization (Garnefski & Kraaij, 2007), while others still are focused on the social context and emphasize the role of acting as a member of a specific social group (Bukowski et al., 2016). Defining oneself as a member of a group can increase the feeling of connectedness with others and, as a result, help maintain a global sense of control.

Besides social group identification, people can also engage in different behaviors to cope with the feeling of loss of control. Consumption and related behavior can also be a way of coping with the crisis that a person is going through. For example, some choose to engage in various activities (e.g., travelling or shopping) as a means of anchoring themselves in the world (Pavia & Mason, 2004). The exertion of strong control over consumption can also be a surrogate for the loss of control in other dimensions of a person's life (Pavia & Mason, 2004). Thus, in the current study, we hypothesized that people who feel a lack of control due to the pandemic would compensate for this by intensification of their shopping activities and buying more necessity goods.

## 5. Risk Perception as a Factor Influencing Reaction to the Crisis

There is a large number of studies (Amalia & Ionut, 2009; Angulo & Gil, 2007; Liu-Lastres et al., 2019; Liu et al., 2019; Pennings et al., 2002) that argue that one of the most important factors affecting the response to a crisis (both health and economic) in the context of consumer behavior is, in fact, risk perception. It means that in the context of crises, not only the severity of a crisis for society is important but also how its threat to life is subjectively perceived by those experiencing it (Kozłowski et al., 2020). The perception of risk refers to subjective beliefs and assessments of uncertain situations resulting from a particular risk (Bauer, 1960). The way people assess risk is usually presented in two dimensions – actual risk and perceived risk (Sjöberg, 2000).

Research on risk perception (Fischhoff, 2002) shows that it may be very different from quantitative risk analysis. Many researchers argue that threatening events that are interpreted as uncertain and uncontrolled increase the perceived risk. These patterns are often influenced by several factors, including personal characteristics (e.g., gender, political or cultural beliefs), trust in risk managers (e.g., officials), belief in the ability to deal with an adverse event, and the existence of negative emotions regarding the crisis (Burns et al., 2012). What is more, in the case of crises, people's perception of risk seems to fall the fastest in the initial phase of the crisis and then begins to even out (Burns et al., 2012).

Many researchers focus on the concept of perceived risk rather than actual risk because it is the perception of risk by individuals, despite it being subjective, that is the main determinant of human behavior (Dillard et al., 2012). Studies show that consumer behavior during a crisis is not always compatible with how dangerous it really is. Some researchers suggest that consumer behavior in response to a crisis is a combination of factors such as risk perceptions, risk attitudes, and the interactions between them. According to Amalia and Ionut (2009, p. 780), “Risk attitude reflects consumer’s interpretation concerning the risk content and how much he/she dislikes the content of that risk. Risk perception reflects the interpretation of the consumer of the chance of being exposed to the risk content”.

Based on the analysis of consumer reactions during different crises (health, terrorist, and economic), Amalia and Ionut (2009) proposed a segmentation model based on the risk perceptions describing consumer behaviors in a time of crisis. They suggested four segments: panicked consumers, prudent consumers, concerned consumers, and rational consumers. Each segment acts differently regarding the influence of the crisis on their behavior. A significant impact of crises is visible in the case of the first and second segments while, in the case of others, they have a moderate (concerned consumers) or very weak effect (rational consumers).

Although economic crises (especially the one of 2007–2008) are the most frequently discussed in the context of crises and consumer behavior, there are single studies that also describe consumer behavior in the context of other crises. One of them is the study by Pennings et al. (2002), who describe consumer behavior and risk perception in the context of mad cow disease. However, it should be noted that this was a specific crisis that mainly concerned food. The researchers looked at respondents from several countries who were affected by the crisis to different extents (Germany, the Netherlands, and the USA) in terms of risk attitudes and risk perceptions. The study showed the differences in risk perceptions of respondents from different countries partly reflected the extent to which a country was actually affected by the crisis; however, this was also related to the trust in the government and the information they provided. Single studies discussing the relationship between perceived risk and COVID-19 have recently begun to emerge. A study on South Korean citizens (Bae & Chang, 2020) shows that risk perception, among other factors, impacts the behavioral intention towards a new type of tourism, focused mostly on the avoidance of crowded places and indoor activities. The question arises as to whether risk perception has a bearing on shopping behavior during a crisis. Based on the literature review, we hypothesized that the risk perception of being infected with COVID-19 would change consumer behavior, among other, intensify stockpiling.

## 6. Current Study

Although the above-mentioned research shows the psychological conditions and responses to crises, it is mainly related to very specific crises (economic or food-related) in the first decade of the 21<sup>st</sup> century. Despite these crises not only exerting economic but also social effects, it is worth noting that the coronavirus pandemic is a precedent – mankind has never, over the last century, been in a situation wherein the well-being of the whole world was disrupted to such an extent and in such a short time. Therefore, it is worth considering the reaction to the COVID-19 pandemic on an individual basis, taking into account both its sudden onset and its extensive effects.

The effects of this pandemic were immediate and clearly visible. People have changed their daily behavior related to work, social life, as well as consumer behavior. The question remains, therefore, what makes people behave differently than usual in a shopping context in such a type of crisis, affecting both the health, life, everyday habits, and social and economic situation? Most articles on the impact of the coronavirus pandemic on consumer behavior have mainly been theoretical (e.g., Hobbs, 2020; Sheth, 2020). Some empirical studies conducted in several countries have shown changes in consumer behavior during the COVID-19 outbreak (Anastasiadou et al., 2020; Vijai, Nivetha, 2020, Grunert et al., 2021). However, none of these studies focused on changes in consumer behavior during the earliest phase of the pandemic (the first month) and the importance of purchasing behavior of psychological factors such as fear of coronavirus infection and a sense of lack of control over the pandemic situation.

The aim of the current study was to, in the first place, test the intensity of a particular type of consumer behavior that is stockpiling behavior of Poles as a reaction to the beginning of the COVID-19 pandemic. Moreover, we explored both demographic and psychological factors influencing higher consumption.

Although most of the previous studies indicate that in the situation of the crisis consumption decreases, some observations during the onset of COVID-19 suggest that in this case, behavior of the consumer may be different. In times of an unknown event like a pandemic, making purchases can serve as a tool to regain control, thus higher consumption and stockpiling can be expected.

H1. At the beginning of the COVID-19 pandemic, the intensity of the stockpiling behavior will increase.

Previous studies showed that subjective beliefs, rather than actual ones, are the determinant of human behavior (Dillard et al., 2012). Based on the previous studies suggesting that risk perception can be one of the factors influencing consumer behavior, and data showing an increase in stockpiling

during the COVID-19 pandemic (Anastasiadou et al., 2020; Vijai & Nivetha, 2020), we hypothesize that the intensity of risk perception can be related to stockpiling behavior.

H2. A higher perception of the risk of COVID-19 infection will result in intensified purchases at the beginning of the pandemic.

Consumption can be a way of coping with the crisis that a person is going through. It can be a surrogate for the loss of control in other dimensions of a person's life (Pavia & Mason, 2004). Thus, we hypothesized that people who feel a lack of control due to the pandemic would intensify their shopping activities and buy more necessity goods.

H3. The high feeling of lack of control resulting from the COVID-19 pandemic would lead to higher intensity of stockpiling.

## 7. Research Methodology

### 7.1. Sample

The study (a CAWI – Computer Assisted Web Interview) was conducted between 13<sup>th</sup> and 18<sup>th</sup> March 2020, shortly after the first case of COVID-19 was diagnosed in Poland (on 4<sup>th</sup> March) and the first restrictions were introduced by the Polish government, which included: the closure of schools, shopping malls, and restaurants, along with social distancing recommendations (introduced on 12<sup>th</sup> March). The nationwide random quota sample of  $N = 1,046$  was recruited from the participants of the Ariadna Polish Online Research Panel. The study was a part of a larger survey.

The panel participants were volunteers who participated in surveys for a small compensation (small gift vouchers). The panelists were randomly invited to take part in the research with a control for the demographic structure of the sample to make it comparable to the structure of the Polish population. The quotas were based on the gender, age, and size of the place of residence of the general Polish adult population (aged 18–70 years). Women accounted for 52% of the sample, and the mean age was 44.35 years ( $SD = 14.63$ ). All the participants provided informed consent to take part in the research after reading some information about the study.

### 7.2. Measures

#### 7.2.1. COVID-19 – awareness, lack of control, and risk perception

##### 7.2.1.1. Awareness of the coronavirus – filter item

First of all, it was checked whether the respondents were aware of the presence of the coronavirus by asking the following question: “Have you heard about the coronavirus (COVID-19)?” The participants responded to

the statement by answering yes or no. Further questions were only asked to people who had heard about the pandemic ( $n = 1,033$ , 99% of the sample).

#### **7.2.1.2. COVID-19 risk perception**

*Perceived risk of COVID-19 infection was measured with one item: “Are you afraid of the coronavirus (COVID-19)?”*. The responses were given on a scale ranging from 1 – definitely not, to 4 – definitely yes.

#### **7.2.1.3. Lack of personal control**

The sense of lack of control was measured with three items: “The coronavirus epidemic has made me feel less in control of my life”; “I feel like, whatever I do, I won’t be able to effectively protect myself against the coronavirus”; “The coronavirus pandemic has made me uncertain of what will happen to me in the near future” (see also Bukowski et al., 2017). The answers were given on a scale ranging from 1– totally disagree, to 7 – totally agree. The reliability of the scale measured by Cronbach’s alpha was 0.77.

### **7.2.2. Stockpiling**

Consumer behavior during the pandemic was measured by several questions about shopping in the first stage of the epidemic.

#### **7.2.2.1. Stockpiling behavior**

The first question concerned whether the respondent had made any additional purchases due to the epidemic: “Have you recently bought more products than before due to the coronavirus (COVID-19)?” The respondents could choose one of four answers to the question: 1 – no, my shopping behavior has not changed; 2 – yes, I made a small stock of products (for a few days); 3 – yes, I made a large stock of products (for a few weeks); 4 – yes, I made a large stock of products (for several months).

The next questions about consumer behavior were only asked to people who responded 2, 3 or 4, meaning that they did stock up.

#### **7.2.2.2. Number of products bought while stockpiling**

A list of products was presented to the respondents, asking them to mark those they bought specifically relating to the pandemic. The list that was presented to them contained 15 fast moving consumer goods (FMCG), including food products (e.g., flour), and hygienic products (e.g., soap). The respondents circled ‘yes’ or ‘no’ alongside each of the products to indicate whether they stocked up on a given product. In the regression analysis, this variable was analyzed as a sum of the products (variety of products) bought.

#### **7.2.2.3. Additional money spent on stockpiling**

The respondents were then asked about the amount of money they had spent on pandemic-related purchases (“How much did you more or less spend on additional purchases related to the coronavirus over the last few weeks?”). The respondents had a choice of 6 answers: 1 – up to PLN 100 (approximately €23); 2 – PLN 101–200 (€23–46); 3 – PLN 201–500 (€47–114);

4 – PLN 501–1,000 (€115–228); 5 – PLN 1,001–2,000 (€229–455); and 6 – over PLN 2,000 (€455).

#### 7.2.2.4. Reason for stockpiling

After enquiring about the amount of money spent on stockpiling, the participants were asked about the reason for their additional purchases. The presented question was “Why did you recently buy more than usual?”. Then, a list of seven reasons was presented to the respondents and they had to indicate whether they agreed with the reason or not (on a scale of 1 to 7, ranging from 1 – totally disagree, to 7 – totally agree). All the reasons are shown in Figure 2, with the summed answers: strongly agree, agree, and rather agree.

Additionally, the demographic variables, such as gender, age, education, professional status, income, and having children were also measured.

## 8. Results

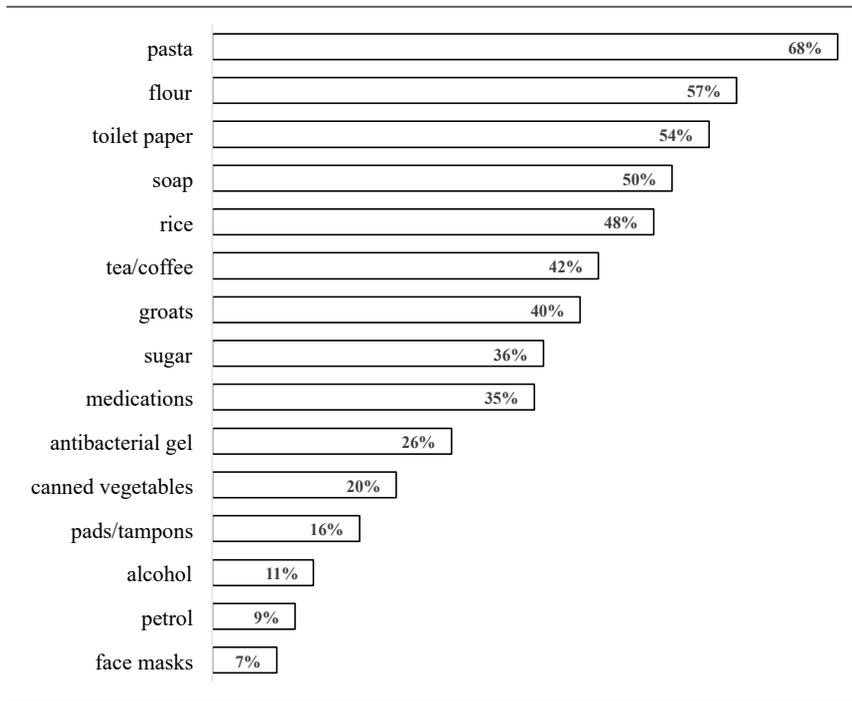
### **The intensity of different consumer behaviors under the COVID-19 pandemic in the Polish population**

In the first step, it was decided to examine the different purchasing behaviors of Polish consumers shortly after the outbreak of the coronavirus. We first verified whether the respondents were doing any stock shopping. It turned out that more than half of the respondents (56%) declared to have bought more products than usual. Most people in this group bought products to last a few days (45%), and a small percentage were preparing for a few weeks (9%), and some even for several months (2%) ahead.

In the next step, we only analyzed the answers of those people who were making stocks during the pandemic ( $n = 594$ ) in terms of the type of FMCG products that they were buying (Figure 1). It turned out that the most frequently bought products were food products, such as pasta (68% of the respondents, constituting their most frequent choice), flour or rice, as well as personal care and hygiene products (toilet paper and soap, etc.). Interestingly, at the beginning, as the pandemic was developing, a relatively small percentage of Poles bought products directly related to the epidemic, such as antibacterial gels or protective face masks as they were more focused on making food supplies.

The most amount of money (32% of the respondents) ranging from PLN 101 to PLN 200 (approx. €23 to 45) or from PLN 201 to 500 (€46–114, 35% of the respondents) was spent on additional purchases. As few as 17% of the respondents spent less than PLN 100 (€23) on additional purchases related to the coronavirus, 11% spent an amount between PLN 501 and 1,000 (€114–227), and only 6% spent more than PLN 1,000 (€227) on this purpose.

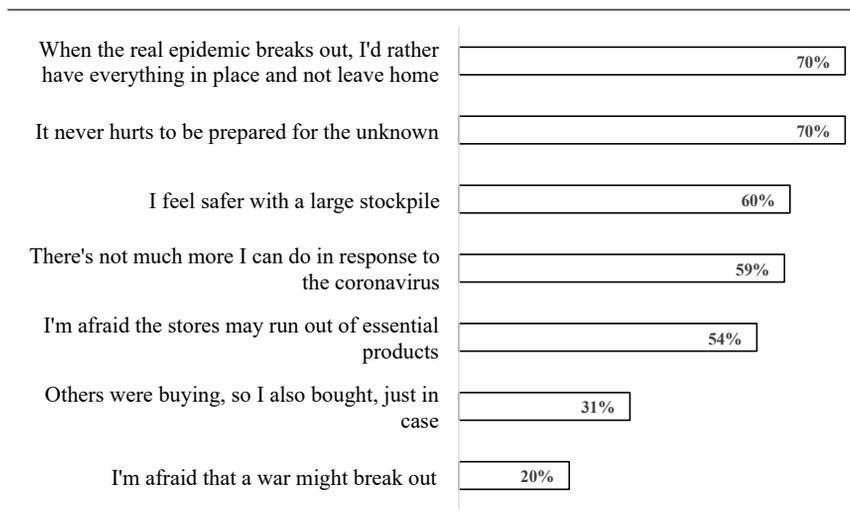
Figure 1  
 Percentage of People Purchasing Different FMCG Products for Stockpiling



*Note.* Only those who had made stock purchases,  $n = 594$ . The question “Which of the following products did you buy in recent weeks in larger quantities than usual due to the coronavirus?” was answered “yes” or “no”.

We also asked why the respondents were making additional purchases. The most frequently indicated reason (70% of the respondents) was the desire to prepare for a “real” epidemic (“when a real epidemic breaks out, I prefer to have everything in place and not to have to go to shops from home”), and to prepare for the unknown (also 70% of the respondents). Other frequently mentioned factors included: an increase in the sense of security thanks to making supplies (60%), the fact that little more can be done in response to a pandemic (59%), and the fear of running out of certain products (54%) (Figure 2).

Figure 2  
 Declared Reasons for Stockpiling



Note. N = 594. The question "What is the main reason why you bought more products than usual?" was answered on a 7-point scale. Percentages show the summed answers: strongly agree, agree, and rather agree.

### The relation of different consumer behaviors and the feeling of threat and lack of control

In the next stage of the analysis, we examined what role the subjectively perceived risk of a COVID-19 infection and a lack of control played in consumer behavior (stockpiling and amount of money spent) at the beginning of the pandemic. For this purpose, three regression analyses were conducted differing in the dependent variable (general indicator), the first one with stocking up as the dependent variable (Table 1), the second with a variety of products bought (Table 2), and the third with the amount of money spent (Table 3). In all analyses, the demographic variables: gender, age, education, having children, and income were controlled.

Table 1  
*Regression Analysis of Stockpiling (General Indicator)*

Dependent variable	<i>Stockpiling</i>	
	B	SE
Predictors		
Gender	0.00	0.05
Age	-0.08**	0.00
Education	0.03*	0.01
Having children	0.09	0.06
Average income	0.01	0.01
Lack of control	0.06**	0.02
COVID-19 anxiety	0.17**	0.03
R <sup>2</sup>	0.12	

Note. \*\*  $p < .01$ , \*  $p < .05$ .

Both a lack of control and COVID-19 anxiety significantly predicted stockpiling. People who experienced a more severe lack of control and COVID-19 anxiety were accumulating more product stocks. Age and education were also significant predictors. Younger participants and those having higher education bought more products due to the COVID-19 pandemic.

Table 2  
*Regression Analysis of the Variety of Products Bought While Stockpiling*

Dependent variable	<i>Variety of products bought while stockpiling</i>	
	B	SE
Predictors		
Gender	-0.02	0.02
Age	0.00	0.00
Education	0.00	0.01
Children	0.04*	0.02
Average income	0.00	0.00
Lack of control	0.02*	0.01
COVID-19 risk perception	0.05**	0.01
R <sup>2</sup>	0.09	

Note. \*\*  $p < .01$ , \*  $p < .05$ .

Both the lack of personal control and the perceived COVID-19 anxiety significantly predicted a greater variety of products bought while stockpiling. Among the demographic variables, having children also predicted the number of products bought.

Table 3  
*Regression Analysis of Additional Money Spent on Stockpiling*

Dependent variable	Additional money spent on stockpiling	
	B	SE
Predictors		
Gender	-0.30**	0.10
Age	-0.01*	0.00
Education	0.01	0.03
Having children	0.28*	0.13
Average income	0.08	0.02
Lack of control	0.11*	0.04
COVID-19 anxiety	0.08	0.07
R <sup>2</sup>	0.06	

Note. \*\*  $p < .01$ , \*  $p < .05$ .

The feeling of a lack of control also significantly predicted the amount of money spent on stockpiling; however, the relation with COVID-19 anxiety was on the trend level. Nonetheless, in the case of both variables, people who felt a more profound lack of control and COVID-19 anxiety spent more money on stockpiling. Moreover, men, younger participants, and those having children spent more money on additional purchases.

## 9. Discussion and Conclusions

Our study showed an increased purchase of FMCG products in the food, personal hygiene, and cleaning categories at the beginning of the COVID-19 pandemic, which is in line with the results observed in other European countries and around the world. The respondents declared that the most frequently purchased products were: pasta and flour from the food category, and toilet paper and soap from the personal hygiene and cleaning category. First, food was dominated by products with a long shelf life. Second, toilet paper was among the most frequently purchased hygiene products. The respondents explained their intensified purchase behavior by preparing supplies for the arrival of the “real pandemic” and for the unknown.

The presented study was conducted in Poland and, at this point, the question arises whether its results should be treated as specific to Poland or worldwide. On the one hand, Poland is a country with a recent experience of a serious economic crisis. During the greatest crisis that took place in Poland in the 1980s, there were shortages in stores of most food products, and the purchase of many products (such as sugar, meat, toilet paper, and shoes) was rationed. Therefore, one may assume that the stockpiling observed among Polish consumers is the result of their previous experiences. However, the appearance of similar behaviors in other countries (including those that had not experienced such a severe crisis since World War II) during the COVID-19 pandemic and the fact that these behaviors were observed regardless of age (i.e., equally among those who had a personal experience of the 1980s crisis and those who did not) suggests that we are dealing with a more universal phenomenon.

Furthermore, we found that product stockpiling (both in terms of the number of items purchased and the amount of money spent) was predicted by a lack of control over the outbreak situation and fear of COVID-19. Individuals who felt a stronger lack of control and a greater fear of COVID-19 accumulated larger stocks than those who did not. This relates to both the number of products purchased in a category, the expansion of the range of products purchased and the amount of money spent (for risk perception of COVID-19 infection on the tendency level).

Firstly, a variation in consumer stock-accumulation behavior was observed depending on the feeling of a loss of control. Those who felt that they were not in control due to the epidemic had stockpiled earlier, bought more different products, and spent more money on them. Their behavior is usually explained by the need to prepare for a major outbreak of a “real epidemic” when one cannot leave home. This behavior can be explained as an attempt to regain control over what is unknown to people and what they cannot control. Another psychological variable that has changed consumer behavior is the fear of COVID-19. People who were more afraid of the coronavirus did more stocking up at the beginning of the pandemic and bought more product categories. These results show that when one feels that one’s health or perhaps even one’s life is threatened and, at the same time, loses a sense of control over the situation, shopping can probably serve a compensatory function. This is because by shopping, one can perhaps regain a sense of control (if not over the area where control was lost, then over another area) and reduce one’s anxiety, at least to some degree.

The theory that explains why people change their behavior in times of crisis, especially life-threatening ones, is the terror management theory (TMT) (Arndt et al., 1997, 2004). This theory assumes that people, when they become aware of their death and experience existential anxiety, try to give meaning to their lives in response to the overwhelming awareness of the fragility of their own lives. Research on TMT has shown that people

tend to take action to remove any associations with death from their consciousness when thoughts about death appear in their minds. These actions may consist in engaging cognitive resources to suppress thoughts of death (Arndt et al., 1997), the emergence of cognitive distortions to deny vulnerability to imminent death (Greenberg et al., 2000) or proactive actions to improve one's health (e.g., physical exercise) in order to live longer. The study of Zaleskiewicz et al. (2013) showed that money can have also the power to lower the fear of death – participants primed with the concept of money reduced their self-reported fear of death. For some people, the way to distance themselves from the idea that human life inevitably leads to death might also be consumption or shopping. The acquisition of material goods is a symbolic testimony of self-esteem, which is conditioned by culture. In a sense, possession is a certain guarantee of safety and protection in life, a manifestation of a certain kind of immortality associated with a material thing. Since the confrontation with death intensifies efforts to raise self-esteem, people for whom owning, spending, and buying are significant determinants of self-esteem will even buy more in the face of a crisis (Arndt et al., 2004).

Looking at the socio-demographic variables, overall stockpiling depended primarily on age – younger people stocked up on products more than older people. The number of categories purchased depended mostly on having children, where parents had a larger spectrum of product categories purchased as a reaction to the pandemic. In contrast, the amount of money spent on inventory depended on age (with younger people spending more), having children, and gender (more men). Interestingly, no relationship between stocking behavior and income was observed in any analysis. Particularly interesting is the lack of a relation between income and the amount of money spent on supplies. This result shows once again that the amount of money spent is not directly related to income, but is more determined by psychological factors (Maison et al., 2019).

The conducted study shows that the shopping behavior during the onset of the COVID-19 pandemic was predicted by fear of the coronavirus and feelings of a lack of control. However, the study is not free of limitations. One limitation was that all the measurements were based on declarations. It would have been interesting to verify sales data with behavioral measurements. The second area of interest could be to conduct a qualitative study to further validate the hypothesis of the compensatory function of stockpiling in the context of induced anxiety and feelings of a lack of control.

In the context of future research, it would be worthwhile to conduct studies that would provide information in two areas. First, to what extent the change in consumer behavior observed in the above study persists with the duration of the crisis. As the COVID-19 pandemic continued, a weakening of stockpiling was observed – after a few weeks, shortages of goods in stores were eliminated. Nevertheless, an interesting question is whether the

tendency to hoard and hold more stockpiles persists despite the duration of the pandemic (e.g., in people with a strong level of fear of the coronavirus). In such a situation, fear would be a factor that would undermine the natural process of habituation to the threatening situation. A longitudinal qualitative study conducted in Poland showed that ways of responding to a pandemic threat depended more on the psychological profile than objective changes in the pandemic situation (Maison, 2021; Adamczyk et al., 2022). However, answering the question of the persistence of the relationship between anxiety levels and increased purchases would require a longitudinal quantitative study conducted in several waves. The second area of inquiry could be to answer the question of whether the stockpiling that accompanied the initial phase of the pandemic can be applied to situations of other non-economic crises. Given the terror management theory (Arndt, 1997), which shows that increased consumption can be a way of managing anxiety, it can be expected that the way of responding to the crisis through, for example, increased purchases may have a more general character, and not just the specific one typical for the response to the COVID-19 pandemic.

The survey also has managerial implications, primarily regarding sales and logistics management. In an emergency situation (not only directly related to the economic crisis and consumption), both producers of basic products and retailers should be prepared for increased interest in the purchase of these products and provide access to consumers accordingly. Another issue is also media communication during an emergency, which can be directed at reducing the level of fear (constructive communication), or at reinforcing or even generating fear (destructive communication). This means that also controlling communications in public spaces that could generate anxiety would be advisable too.

#### **Author Contributions**

*Conceptualization, D.M., T.O., and A.W.; Methodology, D.M., A.W., and T.O.; Formal Analysis, T.O., A.W.; Writing – Original Draft Preparation, D.A.; Writing – Review and Editing, D.A., D.M., T.O., and A.W.; Supervision, D.M.; Project Administration, D.M.; Funding Acquisition, D.M.*

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