

Who Is More Rational During a Crisis Situation: Men Who Do Not Spend Their Money or Women Who Think About the Future?

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Abstract

The COVID-19 pandemic was one of the most important events in entire world history. This event changed and influenced human lives forever. The changes in human behavior were so relevant when the pandemic started. Furthermore, due to the recorded data and our personal experiences, research on this subject can serve as an instrument to reduce and minimize the impact of future health crises. We need to analyze, study, and draw significant conclusions to understand as much as possible how consumers reacted in order to avoid such situations in the future.

In this article, I analyze data obtained from a survey about the consumer behavior of agro-food products during the COVID-19 crisis. Specifically, I study the influence of gender on the financial resource allocation of consumers of agro-food products during the lockdown period of March to June 2020.

This analysis was performed using linear regression with binary variables. We can develop plans and safety measures based on the results and conclusions of the article. We also can use the article results and conclusion to have an image of consumer behavior toward agro-food products during health crises, to know how we can action. On the other hand, the analysis can be very helpful for retailers of agro-food products. They can develop new marketing or sales strategies based on the findings to maximize their income. These new strategies can be utilized during health crises, maximizing the opportunity presented.

Keywords

Men, women, crisis, money, the COVID-19 pandemic.

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Introduction

Many crisis situations have appeared globally since the start of the 21st century. These crises were financial or energy crises, epidemics, or pandemics. Even if most of these crises were non-military, they have impacted society (Jones et al., 2008; Reinhart and Rogoff, 2009; Rahmstorf Stefan and Coumou Dim, 2011).

All moments of crisis, regardless of their nature, have always led to fundamental changes in society. They have changed the domestic policies of states as well as international policies (Gilpin, 1981; Scheve and Stasavage, 2016).

Consumer behavior changes significantly during crises, driven by self-protection and conservation instinct (Jordà, Singh and Taylor, 2022). For example, during the COVID-19 crisis, consumers stockpiled food to reduce shopping trips and protect themselves. Similarly, the use of protective masks was widely adopted by consumers for the same purpose.

Numerous studies on consumer behavior were conducted before the onset of the most recent significant global crisis, the COVID-19 pandemic. These studies showed that changes in consumer behavior were driven by personal reasons and by the rules imposed by authorities (Wen, Huimin and Kavanaugh, 2005). The way authorities and the population respond to a crisis situation depends on the perception of the threat. The arguments and information presented about the possible threat can influence political decisions, but the response of civil society determines whether the population will adopt safety measures or not (Lipsy, 2020).

The risk perception of consumers during a crisis situation is the result of their evaluation of threats (Rogers, Cacioppo and Petty, 1983), and the possible consequences that may arise (Weinstein, 1988). This decision-making process is influenced by the level of risk exposure, costs, damages, and benefits, that consumers may accept (Dowling and Staelin, 1994).

The COVID-19 pandemic has strongly influenced global consumer behavior and disrupted the demand and supply chain of retailers. During regional and global health emergencies, certain agro-food and food products may not be as readily available as in normal periods (Sarkis et al., 2020). Thus, because of what happened, people needed to adopt changes for better functionality of alimentary and agri-food systems in these moments (Luckstead, Nayga Jr and Snell, 2021). The retailers and the distributors of some local services have become aware of their social responsibility (Pantano et al., 2020), but and the possible significant growth of their incomes through speculating these moments.

This article proposes to contribute to the study of consumer behavior of agro-food products during crises situation through three research directions. The first direction is about the specifics of the COVID-19 crisis and its influence on society, and also the consumers buying behavior when the COVID-19 pandemic began. The second direction of this study is the methodological part. The methodology involves a linear regression with binary variables. This analysis studies the consumer behavior changes in agro-food products depending on their gender, during the lockdown caused by the COVID-19 pandemic (March – June 2020), in Romania. The last part of this article are conclusions.

1. The specifics of the COVID-19 crisis and its influence on society

Human and consumer behavior is very affected directly or indirectly by the effects of epidemics and pandemics. The Black Death epidemic of the Middle Ages, or the Spanish Flu at the beginning of the 20th century, has shown how much it affected human and consumer behavior (Reeves et al., 2020). Humans have faced health crises similar to the COVID-19 pandemic throughout history, but no crisis had the same intensity.

The SARS epidemic in 2004 was an important warning. In 2020, the disease was caused by the same virus, SARS-CoV. That demonstrated how interconnected and interdependent is our society in the 21st century. It also showed how large industries, such as retail, tourism, or even global economic stability, can be severely impacted in a short period of time (Mackenzie et al., 2004).

A significant event that has once again caused changes in consumer behavior is the COVID-19 pandemic. At the end of December 2019, no one considered the threat of what was happening in China to be pertinent. Three months later, the entire planet was in lockdown (Lipsy, 2020).

The COVID-19 pandemic has remodeled all social networks between people, the way we work, how we study, consumer purchasing, and the management of free time. This has succeeded in changing consumers' ethics through their basic needs and has had a positive impact on social responsibility (He and Harris, 2020).

From an economic perspective, the Great Depression of the 1930s did not have the same effect on society as the COVID-19 pandemic has had (Euronews, 2020). The coronavirus pandemic has created a significant global recession since 2020, and the world economy is suffering greatly (Arita et al., 2022).

The percentage of material resources allocated by consumers for expenditures on food and agro-food products has increased by 5-7% in more economically developed countries. In less economically developed countries, these expenditures on food and agro-food products have increased by 50-60% (Reinhart, 2020).

The COVID-19 pandemic has its characteristics. This is very different from other health crisis situation or from other epizootic pandemics. The COVID-19 pandemic did not affect the final product as it happened during the epidemics of bird flu, swine fever, or the devastating locust attack in East Africa (Reinhart, 2020). This has affected future production due to its consequences on workers in the food industry and related branches, such as distribution, handling, and transportation of products. (Laborde et al., 2020).

More than that, the decisions made by consumers during the beginning period of the COVID-19 crisis were influenced by the quality of news and information received about COVID-19 (Laato, Islam and Laine, 2020). People had easy access to both proper and improper information about COVID-19 due to social networks and the internet. This fact differentiates the consumer behavior adopted at the beginning of the COVID-19 crisis from other crises (Abd-Alrazaq et al., 2020; Farooq, Laato and Islam, 2020).

However, this exposure of individuals to different online sources of information during the pandemic was a threat to their health. Moreover, it caused some people to develop a condition called cyberchondria (Laato, Islam and Laine, 2020).

Cyberchondria is caused by prolonged online searches made by stressed, anxious people about their health. This disease is fueled by anxiety, stress, and fear. Cyberchondria causes suffering and a very harmful mental state (Starcevic and Berle, 2013), which can lead to bad decisions and improper behavior towards oneself.

Due to the manifestation of this disease in the first months of the COVID-19 pandemic, many people are now victims of depression and anxiety (Robinson and Robinson, 2022).

2. Consumer buying behavior at the beginning of the COVID-19 pandemic

The initial moments of the COVID-19 pandemic led to a change in some consumers' habits (Pantano et al., 2020), as people tend to act more firmly and decisively when ambiguity and unpredictability are high (Brug, Aro and Richardus, 2009).

Consumers worldwide have reacted to lockdowns by stockpiling food, such as flour or pasta, as the COVID-19 pandemic rapidly spread beyond China (Mallory, 2021). This consumer habit manifested in that period appeared because of consumer emotions. When the COVID-19 pandemic first emerged, some supermarkets and stores in certain countries had to ration the purchase of certain products and implement new store programs to adapt to the situation (He and Harris, 2020).

The stockpiling behavior adopted by consumers due to panic in any situation can significantly affect the supply of agro-food products and cause abrupt changes in the supply chain (E. Upton and W. J. Nuttall, 2014). The local and global markets of agro-food products can be easily destabilized if consumers are driven by fear and start buying large quantities of products, which can interrupt the supply chain process (Peels et al., 2009). The effect of purchases made out of fear can be more detrimental to the market than the effect of any normal purchase. Such behavior can increase consumers' anxiety and disrupt the supply process (Allon and Bassamboo, 2011).

The motivation behind consumers' adoption of stockpiling behavior during the COVID-19 pandemic is quite interesting. Their behavior was not primarily driven by concerns about possible price increases or a decrease in the quality of agri-food products. Rather, the probability of infection and the need for isolation measures played a key role in driving the adoption of this behavior by consumers (Ngoc Long and Khoi, 2020).

The preferences of consumers have changed due to the rules imposed to prevent the spread of COVID-19. The purchasing of agro-food and food products had been steadily increasing between 2010 and 2020 (Harris et al., 2017), but the rate of increase exploded during the COVID-19 lockdown (Pantano et al., 2020). Although the price of agro-food products was initially not a significant factor, the COVID-19 pandemic, directly and indirectly, caused spikes in food prices (Reinhart, 2020).

The high demand and low supply determined the increase in the cost of transporting goods and the spikes in food prices. The COVID-19 pandemic determined the appearance of high inflation which contributed to the rise of food prices.

The consumers of agro-food products have adhered to the rules implemented by the authorities to combat the spread of COVID-19. They have taken specific actions against merchants, such as favoring those who promote and follow the rules while penalizing those who don't (He and Harris, 2020; Kirk and Rifkin, 2020). As a result of the pandemic, consumers started to use e-commerce in March 2020 and are more likely to patronize stores with automated processes that protect them (Jo, Shin and Kim, 2021). Furthermore, even older people and those with limited digital abilities have begun to appreciate the advantages of online shopping (Prihantoro, Satria and Hartoyo, 2018). The pandemic has accelerated this trend (Eger et al., 2021).

3. Methodology

This research aims to observe and analyze consumer behavior towards agro-food products in Romania during the COVID-19 lockdown period from March to June 2020.

Research use of a survey. The survey is a quantitative method of research. A survey is used during research to obtain and explore new perspectives on that subject. The research tool used in this survey it was the questionnaire. An online questionnaire had used in this survey. The online questionnaire has been distributed on social media. This was an anonymized questionnaire. The participants of this research were voluntary. Participation in this research did not involve any risks or benefits for respondents. The participants always had the option to quit participation without any consequences. The participants had agreed to use and process their personal information by completing the questionnaire. All received information from respondents was confidential, by ethics norms for high-quality research from the whole world. The data were collected anonymized through Google Forms.

The questionnaire aimed to collect information about consumers' behavior towards agro-food products during the lockdown from March to June 2020, caused by the COVID-19 pandemic.

The people who participated in this survey live in Romania and are over 18 years. This research could not address all Romanian populations because of material considerations. The research has a sample of 422 persons for this survey and just 95,7% / 404 of responses were eligible and taken into account. The survey had realized between April to June 2022. The survey was aimed at individuals over 18 years of age who lived in Romania. Due to material considerations, the research could not cover the entire Romanian population.

Some survey information was obtained and analyzed using linear regression with binary variables.

Regression analysis allows you to study the linear relationship between a dependent variable measured with a metric scale and two or more independent variables measured with any scale (Cătoiu et al., 2009; Jemna, 2017). Regression analysis is commonly used for two purposes. The first purpose is to make predictions and forecasts (Cook and Weisberg, 1982). The second purpose is to determine the causal relationship between the dependent and independent variables (Freedman, 2005). When conducting a regression analysis, it is important to be careful about the data used in the analysis and the reporting of variables in (Jemna, 2017).

The regression equation with binary variables is a simple linear regression where the independent variable is coded into two categories. Binary variables are qualitative variables composed of two opposite values (such as yes/no or present/absent) (Cătoiu et al., 2009).

The name 'binary variable' comes from encoding the values of an independent variable into variables divided into two categories by assigning a code of 0 and 1, or 1 and 2, etc., depending on what they represent. Encoding by 0/1, 1/2, etc., allows these variables to be used in procedures designed for higher levels of measurement (ordinal, interval) (Cook and Weisberg, 1982; Freedman, 2005).

This regression aims to analyze the consumer behavior of agro-food products during the COVID-19 pandemic lockdown (March - June 2020), taking into account the consumer's gender (male or female). The objective of the regression is to determine which category of consumers increased their spending on agro-food products during the lockdown period.

The regression variables are the dependent variable: the increase in the degree of allocation of material resources for agri-food products during the COVID-19 pandemic lockdown (March 2020 – June 2022). This is represented by Question 11 of the survey questionnaire.

The independent variable is an independent binary predictor: gender, as represented by Question 23 of the questionnaire. The gender variable is coded into two categories: male gender (1) and female gender (2). These two categories are also binary variables used in the analysis.

In this research situation, the researcher, when making the decision to enter these indicators into the regression equation formulates two hypotheses to predict which of the binary variables, male gender and female gender, increased the degree of allocation of material resources for purchasing of agri-food products from the lockdown period (March - June 2020) caused by the COVID-19 pandemic.

Hypothesis 1: Male gender has a greater effect on the degree of allocation of material resources to buy agri-food products during the lockdown (March 2020 - June 2022) caused by the COVID-19 pandemic than female gender.

Hypothesis 2: Female gender has a greater effect on the degree of allocation of material resources to buy agri-food products during the lockdown (March 2020 - June 2022) caused by the COVID-19 pandemic than male gender.

Only Hypothesis 1 will be analyzed in this study because the regression equation is a simple one, with only one independent variable.

The dependent variable, as shown in Table I, is a numeric variable measured on a 5-point Likert scale, where 1 represents "totally disagree" and 5 represents "totally agree". The independent variable, consumer gender, as shown in Table I, is a binary variable measured on a nominal scale, where 1 represents male gender and 2 represents female gender.

The data were analyzed using SPSS version 28.0.1.1 (14).

Table no. 1. Variables Entered/Removed

Model	Variables Entered	Variables Removed	Method
1	The male gender	.	Enter
a. Dependent Variable: Have you allocated a larger part of your income to agri-food products during the lockdown (March 2020 – June 2022) caused by the COVID-19 pandemic?			
b. All requested variables entered.			

Source: author's own processing

The multiple correlation coefficient obtained, as shown in Table II, is .750. This result indicates a strong positive correlation between the dependent and independent variables. The value of R Square / R^2 , which is 56.3%, represents the proportion of the variance in the dependent variable that is explained by the independent variable. Therefore, the binary variable of consumer gender explains 56.3% of the variation in the degree of allocation of material resources for agri-food products purchased during the lockdown period (March - June 2020) caused by the COVID-19 pandemic.

Adjusted R Square, as shown in Table II, is .562, which indicates a good result. Adjusted R Square is a modified version of R Square that takes into account the number of predictors in the model. It is generally considered a better measure of model fit than R Square alone because it penalizes the inclusion of unnecessary predictors in the model. Therefore, the binary variable of consumer gender explains 56.2% of the variation in the degree of allocation of material resources for agri-food products purchased during the lockdown period (March - June 2020) caused by the COVID-19 pandemic, after adjusting for the number of predictors in the model.

The standard error of estimate represents the standard error estimate for this regression and shows the accuracy of the prediction model, as shown in Table II. How much the errors of the estimate are lower, the prediction result is better. The result for the standard error of the estimate is 0.822 in this analysis.

Table no. 2. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.750a	.563	.562	.822
a. Predictors: (Constant), The male gender				

Source: author's own processing

The Coefficients table, see Table III, includes the individual regression coefficient (B), which signifies the degree of contribution of the predictor variable value to the regression line.

Table no. 3. Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	3.654	.048		76.727	<.001

The male gender	-2.117	.093	-.750	-22.764	<.001
a. Dependent Variable: Have you allocated a larger part of your income to agri-food products during the lockdown (March 2020 – June 2022) caused by the COVID-19 pandemic?					

Source: author's own processing

The individual regression coefficient (B), see Table III, has a value of -2.117.

The value of -2.117 means that, on average, male consumers allocated 2.117 units less (on the 1-5 Likert scale) to the purchase of agri-food products during the lockdown period (March-June 2020) caused by the COVID-19 pandemic, compared to female consumers. This suggests that female consumers were more likely to allocate a higher proportion of their income towards agri-food products during the pandemic compared to male consumers.

It's important to note that this result is based on the specific sample used in the study and may not generalize to other populations.

The value of t, as shown in Tabel III, is -22.764. This t present the significance of the difference between the coeficient and 0.

If we want to see if is a liniar relationship between dependent and independent varibale and to determinate this relationship, we need to see the result o from the ANOVA test, see Tabel IV. The F-value obtained in this regression is 518.189, as shown in Table IV, and the significance level is less than 0.05 with Sig. <0.001. These values indicate that the independent variable is significant for estimating the dependent variable, and therefore reject the hypothesis that male consumers allocated a higher share of their income to purchase agri-food products during the COVID-19 pandemic lockdown (March – June 2020).

Tabel IV: ANOVA Test

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	350.291	1	350.291	518.189	<.001 ^b
	Residual	271.748	402	.676		
	Total	622.040	403			
a. Dependent Variable: Have you allocated a larger part of your income to agri-food products during the lockdown (March 2020 – June 2022) caused by the COVID-19 pandemic?						
b. Predictors: (Constant), The male gender						

Source: author's own processing

Conclusions

This analysis can be useful from several perspectives. On one hand, it can provide valuable insights to authorities who can create action plans and safety measures to address the purchasing behavior of women during health crises. On the other hand, it can be useful to agro-food merchandisers and retailers who can develop new marketing and sales strategies during health crisis situations. Although, it is important to note that ethical considerations should be taken into consideration.

The limitations of this research include the number of participants in the survey, their geographic location, and the period when the survey was conducted (April-June 2022), as it does not reflect the lockdown period which occurred two years ago.

Despite its limitations, this research is relevant as it identifies consumer emotions as the main cause of the problem. In the future, I intend to write more on this topic and study the behavior of producers and distributors of agro-food products during the COVID-19 lockdown.

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