

# CONSUMERS' ORIENTATION TOWARDS E-COMMERCE DURING DISRUPTIVE TIMES: ENTREPRENEURSHIP IMPLICATIONS

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## Abstract

Our study approaches consumers' orientation towards e-commerce during disruptive times, taking the COVID-19 pandemic, the most prominent recent disruptive event, as a reference. The analysis of the phenomenon was targeted at two differently developed European countries, Romania and Germany, which were investigated. Considering the time span from January 2020 to January 2022, Google Trends was used to track the search volumes associated with the main e-commerce platforms in the analysed countries, serving as a proxy measure for gauging consumers' orientation towards e-commerce. Based on sound sentiment and quantitative analyses, our study revealed no statistically significant correlation between consumers' orientation towards e-commerce and the negativity of news in the media reporting on COVID-19 topics. In contrast to that, the investigation revealed statistically significant positive correlations between consumers' orientation towards e-commerce and the incidence of COVID-19 cases and deaths in Germany and only partially in Romania. Moreover, consumers' orientation towards e-commerce was influenced by regulatory interventions, such as the enforced lockdown measures. Particularly during the initial surge of COVID-19 cases, a strong consumer orientation towards e-commerce coincided, from a temporal perspective, with the imposition of lockdown measures. Framed by consumer behaviour literature, our study outlines different behavioural characteristics of consumers during disruptive times – in our case, health crises – and derived typologies of consumers with direct influence on entrepreneurial practice.

**Implications for Central European audience:** Theoretically placed in the field of consumer behaviour research, our study adds to the literature as it reveals insights about consumers' orientation towards e-commerce during disruptive times. Focusing on the most recent prominent disruptive phenomenon, the COVID-19 pandemic, our paper also has practical implications of entrepreneurial relevance. By outlining invaluable insights into consumers'

behaviour and their orientation towards e-commerce during the pandemic, our study might set starting points in designing entrepreneurial strategies for survival or development during disruptive times (e.g., health crises).

**Keywords:** E-commerce; consumer behaviour; Europe; sentiment analysis; COVID-19 pandemic

**JEL Classification:** D12; L81

## Introduction

At the core of any type of business, consumers represent the driving force of entrepreneurial endeavours. Approaching the terms “customers” and “consumers” in an interchangeable way, there is no business without a paying customer for the goods and/or services provided. Thus, properly targeting customers is a key prerequisite for businesses; one of the most used business models in current practice worldwide, the business model canvas, sets customer segments and customer relationships amid its nine building blocks (Osterwalder & Pigneur, 2010). In addition, acknowledging consumers’ behaviour becomes crucial for all entrepreneurs aiming to succeed on competitive markets. Only by understanding what their consumers need and want can entrepreneurs properly design and develop their offer. Consumers’ behaviour influences the operational activity of an enterprise, from product/service development to its selling strategy, with a direct impact on its overall performance and competitiveness (Mamun et al., 2018). In current times, consumers’ behaviour is constantly evolving, their attitudes change frequently while their preferences expand rapidly (Alldredge & Grimmelt, 2021). Furthermore, during disruptive times, consumers’ behaviour is affected, usually changing and adapting to the crisis-related context (Veselovská et al., 2021).

One of the most prominent disruptive moments with which societies have been confronted worldwide is the COVID-19 pandemic. In a post on the United Nations Development Programme’s website, an interesting statement appeared: “The coronavirus COVID-19 pandemic is the defining global health crisis of our time and the greatest challenge we have faced since World War Two” (United Nations Development Programme, 2022). However, this was not just a health crisis. It evolved into an economic crisis as well, with important challenges being faced at micro, meso and macro levels. Four years after the emergence of COVID-19, a virus spreading at a fast pace, the world still faces unprecedented challenges. Whether this might represent a turning point in the history of humankind, a moment that will probably change the world as stated by Gills (2020), or the beginning of the “great reset” (World Economic Forum, 2020), is unknown. However, one thing is clear: the impact of COVID-19 at all levels – demographic, economic, social, environmental, political – was prominent, and it still is, even in the post-COVID era. For example, just considering the economic perspective, the International Monetary Fund has repeatedly emphasised the magnitude of the negative consequences of the pandemic; some common phrases used in the International Monetary Fund’s releases include “rare disaster”, “worst economic downturn since the great depression”, “great lockdown”, “collapse”, “far worse than the global financial crisis”, “a crisis like no other”, “an uncertain recovery”, “more severe economic fallout than anticipated” (IMFBlog, 2020; International Monetary Fund, 2020). At the individual level,

many changes occur in people's daily activities, affecting their mental and physical health, their lifestyle, their behaviour, etc. In a very particular regard, according to Higuera-Castillo et al. (2023), the pandemic and its effects on health, society and the economy caused modifications in consumers' behaviour in numerous sectors.

The effects of the pandemic also contributed to a reorganisation of how activities are done at all levels, with digitalisation gaining increased visibility. Even if the internet has played a significant role in both consumers' and businesses' activity in the past decades, this seems to have expanded to unprecedented dimensions during the COVID-19 pandemic. Especially due to measures imposed by governments worldwide, such as lockdowns, the internet has become an important part of daily life, with many activities, work included, being easily carried out in the online environment. In the same vein, shopping is not an exception to the previously outlined scenario. A study developed by KPMG (2021) revealed that the pandemic affected consumers' behaviour; almost half of the participants in the survey considered that the main connection with brands would take place in a digital environment. The pandemic and its associated measures imposed by local governments determined the growth of e-commerce: "the number of respondents who shopped online at least once per week increased nearly five-fold between fall 2019 (11.6%) and spring 2020 (51.2%)" (Young et al., 2022, p.162). Even more, it is considered that the pandemic had a huge potential to become a catalyst for e-commerce (Beckers et al., 2021).

Because of different restrictions and measures taken by local governments worldwide during the pandemic, consumers lost their confidence in the traditional forms of commerce, reorienting themselves to e-commerce (Hamid et al., 2023), generating this way a huge increase in this type of trade that takes place in the online environment. Thus, in a broader view, the evolution of e-commerce during the COVID-19 pandemic raised scholars' interest in investigating the phenomenon, leading to a growing number of studies in the scientific literature focusing on different aspects related to consumer behaviour, businesses or various approaches at the meso or macro levels (Guo et al., 2020; Dannenberg et al., 2020; Hao et al., 2020; Tran, 2021; Cavallo et al., 2020; Guthrie et al., 2021; Ghita et al., 2022). However, according to Salem et al. (2023), "most of the recent efforts focused on investigating the impact of COVID-19 on consumers' behaviour towards online shopping".

In such a context, the present paper aims to investigate consumers' orientation towards e-commerce during the COVID-19 pandemic, the most prominent disruptive phenomenon in recent times. In a more specific regard, following an initial research direction outlined in Starosta (2022), our main objective is to investigate how news presented in the media, as well as the incidence of COVID-19 cases, related deaths and lockdown periods, affected consumers' orientation towards e-commerce in Germany and Romania between January 2020 and January 2022. To reach this objective, we further develop the paper by presenting the theoretical background of our research and the fundamental methodological aspects of our study. Afterwards, we present the results of our study and their main implications. We end the present paper with a series of final considerations, all systematically presented in the conclusion section.

# 1 Theoretical Background and Hypotheses

In line with the topic approached in the present paper, the focus of this theoretical framework is represented by consumers' behaviour during the COVID-19 pandemic, the most representative disruptive moment in recent times. The COVID-19 pandemic led to different changes in consumer behaviour. As indicated by Pantano and Willems (2022), these might be both positive and negative, ranging from irresponsible buying behaviour to more sustainable choices. Considering the first category, Lehberger et al. (2021) found a huge increase in the purchases of non-perishable foods in Germany during the pandemic, which could be linked to the panic created by the idea of possible unavailability of such a supply at the same time, highlighting consumers' desire to decrease the number of visits to shops. Intensive buying of different products in huge quantities was mainly associated with panic buying, or even compulsive buying, as this was repetitive, usually as a primary response to the negative feelings (Faber & O'Guinn, 1992) induced by the pandemic. Furthermore, this type of behaviour also reflects impulsivity, a characteristic strongly linked to compulsive buying (Davenport et al., 2012). This type of behaviour manifested by some consumers also had a direct effect on other consumers, especially by creating scarcity in supply and inducing fear (Pantano & Willems, 2022).

In contrast to that, Pantano and Willems (2022) showed that the pandemic also made people reflect more on their lives, reconsider their values and priorities, and, at the same time, change their consumption behaviour towards more sustainable choices. An example in this sense might be represented by consumers' increasingly leaning on e-commerce in favour of traditional commerce that takes place in brick-and-mortar shops. Besides being a sustainable option for commerce (Fichter, 2008), the use of e-commerce became a safe alternative to buying goods and/or services during the pandemic, reflecting different aspects associated with consumers' behaviour, such as, for example, crisis-coping shopping or therapeutic shopping (Zulauf & Wagner, 2022), in many cases related to depression (Di Crosta et al., 2021); exposure risk susceptibility or severity, risk of formal penalties – as the ones derived from breaking the lockdown rules (Alhaimer, 2022) or risks associated with leaving homes (Soares et al., 2023), usually related to safety reasons (Andruetto et al., 2023); shopping frequency or shopping patterns (Salem et al., 2023); anxiety and fear (Di Crosta et al., 2021).

In a more specific regard, when approaching the direct effects of the variables specific to the pandemic on consumers' online shopping behaviour, Gao et al. (2020) revealed that "the share of confirmed COVID-19 cases increased the possibility of consumers purchasing food online" in China. However, they clearly emphasised that "this is more likely to be the case for young people having a lower perceived risk of online purchases and living in large cities". This might not be surprising, as persons over the age of 50 usually have a lower level of digital literacy compared to younger ones (Dragusin et al., 2015). Along the same lines, Chang and Meyerhoefer (2020) investigated the impact of the pandemic on the demand for online food shopping services. Basing their practical research on the largest agri-food e-commerce platform in Taiwan, their findings revealed that "an additional confirmed case of COVID-19 increased the number of customers by 4.9%" (Chang & Meyerhoefer, 2020, p. 448). In such a context, we set the first hypothesis (H1) of our study as follows:

*H1: Consumers' orientation towards e-commerce increases as the number of COVID-19 cases and associated deaths increase.*

Considering another variable specific to the pandemic, this time related to the measures imposed by local governments – specifically, lockdowns – a study carried out by Oliveira et al. (2021) on the importance of e-commerce during the pandemic, from customers' perspective, implying a questionnaire-based survey amid “306 individuals who shopped online at least once”, revealed that “since the quarantine of the COVID-19 pandemic, most of the individuals have started to use e-commerce more often”. Along the same line, Srivastava and Bhanot (2022), based on a study on 328 Indian consumers that aimed to investigate their mental and purchase behaviour, described that due to the imposed lockdowns, online purchases increased amid the investigated subjects. Also, similar findings were reported by Guthrie et al. (2021). Their study found that “online orders significantly increased in February (+14.2%) and throughout the lockdown period in March (+23.8%), April (+34.6%) and May (+35.4%)”, considering the case of French consumers. Thus, we formulate the second hypothesis (H2) of our study:

*H2: The lockdown periods made consumers increasingly lean on e-commerce.*

Besides the variables specific to the pandemic, such as the number of cases and associated deaths, or the measures taken by local governments to ensure social distancing – lockdowns, for example – an important aspect had a strong effect on changing consumers' behaviour during the pandemic: the media. News coverage represents “the most important information source for the public” (Chen et al., 2022) and “extensive news coverage of health issues has often been shown to influence consumer behaviour” (Li et al., 2008). Furthermore, news negativity affects consumers' confidence in an unfavourable manner by reducing it (Hollanders & Vliegthart, 2011) and “fake news during crises can heighten negative behavioural responses in consumers, such as irrational panic buying”, as happened during the COVID-19 pandemic (Bermes, 2021). In addition, “concerns about COVID-19 engender uncertainty, and exposure to fake news amplifies this effect” (Pomerance et al., 2022). Considering the previously mentioned information, the last hypothesis (H3) of our study is established:

*H3: The larger the media coverage on topics about the pandemic and the higher its negativity, the stronger consumers' orientation towards e-commerce.*

## 2 Methodological Aspects

Through the research presented in the present paper, we aim to investigate consumers' orientation towards e-commerce during disruptive times, focusing on the COVID-19 pandemic as the most prominent recent disruptive phenomenon. We developed the research starting from the following research questions (RQ):

*RQ1: Is consumers' orientation towards e-commerce influenced by the number of COVID-19 cases and associated deaths?*

*RQ2: Did regulatory interventions – represented by the enforcement of lockdown periods – affect consumers' orientation towards e-commerce in any way?*

*RQ3: How did consumers' orientation towards e-commerce manifest in juxtaposition with the negative media reporting on COVID-19?*

In a more specific regard, following an initial research direction outlined in Starosta (2022), we targeted the following research objectives (O):

O1: Analysing how the incidence of COVID-19 cases and related deaths affected consumers' orientation towards e-commerce.

O2: Studying how regulatory interventions (analysed through the lens of lockdown periods) affected consumers' orientation towards e-commerce.

O3: Analysing how media coverage on topics about the pandemic – especially its negativity – affected consumers' orientation towards e-commerce.

Our analysis examines the time span from January 2020 to January 2022, focusing on two differently developed European countries: Germany and Romania. We have chosen these two countries as they are highly representative of the categories of the most developed countries (Germany) and least developed countries (Romania) within the European Union. They are two opposite European Union Member States in terms of economic development, social characteristics, healthcare system, etc.

The methodology on which we constructed the present paper consists of four steps, as further described. A similar approach was developed by Starosta et al. (2020), where a more detailed overview, especially of the algorithms behind the developed sentiment analysis, can be identified.

## **2.1 Information retrieval and data sources**

Consumers' orientation towards e-commerce, the incidence of COVID-19 cases and deaths, media coverage (share of news) on topics related to the pandemic and the negativity in COVID-19 media reporting were the main aspects investigated in the study put forward by the present paper.

As “online purchase intent positively affects online shopping” (Soares et al., 2023), we investigated consumers' orientation towards e-commerce by looking at their intentions. These were analysed through the lens of Google Trends, focusing on the search for the most representative online shops in the analysed countries as a proxy. These are Amazon in Germany and emag in Romania. A similar approach was found in the works of Lei and Liu (2022) and Wu and Mu (2023). For example, Lei and Liu (2022) investigated moving intentions using Google Trends data, while Wu and Mu (2023) analysed Google Trends data on online grocery shopping, along with grocery-related tweets, to tackle the impact of the pandemic on online grocery shopping.

Consumers' orientation towards e-commerce, as shown by Google Trends, is analysed in our study with reference to different variables related to the pandemic. Two of them refer to the incidence of COVID-19 cases and deaths, data in this regard being collected from the World Health Organization (2022) for the period January 2020 – January 2022. In addition, the influence of regulatory interventions in both countries under analysis – specifically, the lockdown phases – on consumers' orientation towards e-commerce was also the object of

our investigation. Table 1 displays the lockdown periods during the time span under observation.

**Table 1 | Lockdown periods**

Country	Lockdown periods	Sources
<b>Germany (DE)</b>	22 March 2020 – 6 May 2020 16 December 2020 – 23 April 2020 (in most cities) Partial lockdown: 23 April 2020 – 11 June 2020	Tagesschau, 2020; Bundesregierung, 2020a, 2020b
<b>Romania (RO)</b>	16 March 2020 – 14 May 2020	Economica.net, 2020

Source: Developed by the authors

Furthermore, besides the variables directly linked to the pandemic, such as the cases, deaths or lockdown phases, we aim to investigate consumers' orientation towards e-commerce during the COVID-19 pandemic through the lens of media-related sentiments. To analyse media sentiments and media coverage, we collected news reports from publicly accessible news streams in Germany and Romania (Table 2). The news streams encompassed a range of subjects akin to those typically featured in daily publications.

**Table 2 | Data on COVID-19 news**

Country	Total news reports	COVID-19 news reports	Share of COVID-19 news
<b>Germany (DE)</b>	470,716	95,376	20.26%
<b>Romania (RO)</b>	83,859	22,768	27.15%

Source: Developed by the authors

In the scientific literature on online consumer behaviour during the COVID-19 pandemic, different research methods and data analysis tools are employed. However, sentiment analysis is not so commonly tackled, and the articles based on such an approach focus more on consumers' sentiment analysis using comments/consumer reviews posted on social media, especially on Twitter or Facebook (Aulawi et al., 2021; Lodni et al., 2021; Tufail et al., 2022). Through our study, we bring a different perspective, outlining a media-related sentiment analysis, which is further presented.

## 2.2 Sentiment analysis

A machine-learning application using a supervised learning algorithm carried out the sentiment analysis in this study. The supervised learning algorithm uses training data – in this case, positive and negative news articles – to learn the characteristics of these article types and to build a model. This research uses a long short-term memory (LSTM) artificial neural network, as described in Starosta et al. (2020). While the LSTM is a robust approach to classify the valence in news articles as either positive or negative, the methodology in Starosta et al. (2020) also asserts that the language models used are comparable across different languages. To train the LSTM, we created training data analogous to Starosta (2022) in quality and quantity, i.e., we used 3,000 positive and 3,000 negative news pieces for each language, totalling 12,000 trained news pieces.

With this large number of training data, we could ensure the quality of the analysis. Thus, we could also validate the cross-language performance and the cross-language coherence of the models with cross-validation as described in Starosta et al. (2020) and Starosta (2022). Our overall results for both languages – German and Romanian – showed that the applied methodology leads to 88.7% accurate classifications in the cross-validation. Additionally, we did manual sampling inspections of the out-sample performance, which signalled a high accuracy of the models as well.

The results of this sentiment analysis step are valence scores, i.e., how positive or negative each article in the news corpus under observation is. These valence scores are then used to build the sentiment indices in the following step.

### 2.3 News sentiment indices

Machine-learning news sentiment indices provide a view of sentiment changes over time. With the help of these indices, the development of positivity and negativity in the news can be viewed as a time series similar to stock indices. Working with time series has a big strength: these indices can be directly approached in comparison with consumers' orientation towards e-commerce and the COVID-19-related metrics with correlation analysis.

We focused on negativity to create the sentiment time series in this study. The time series simply aggregates the fraction of negative news for the teaching period as described in the equation below.

$$Negativity_t = \left( \frac{N_t^{negative}}{N_t^{positive} + N_t^{negative}} \right) \quad (1)$$

### 2.4 Correlation analysis

The correlation analysis was developed following the approach of Starosta et al. (2020), who used ordinary least squares (OLS) but with a Newey-West corrected standard error to adjust for heteroscedasticity and autocorrelations in the time series, as shown in the equation below.

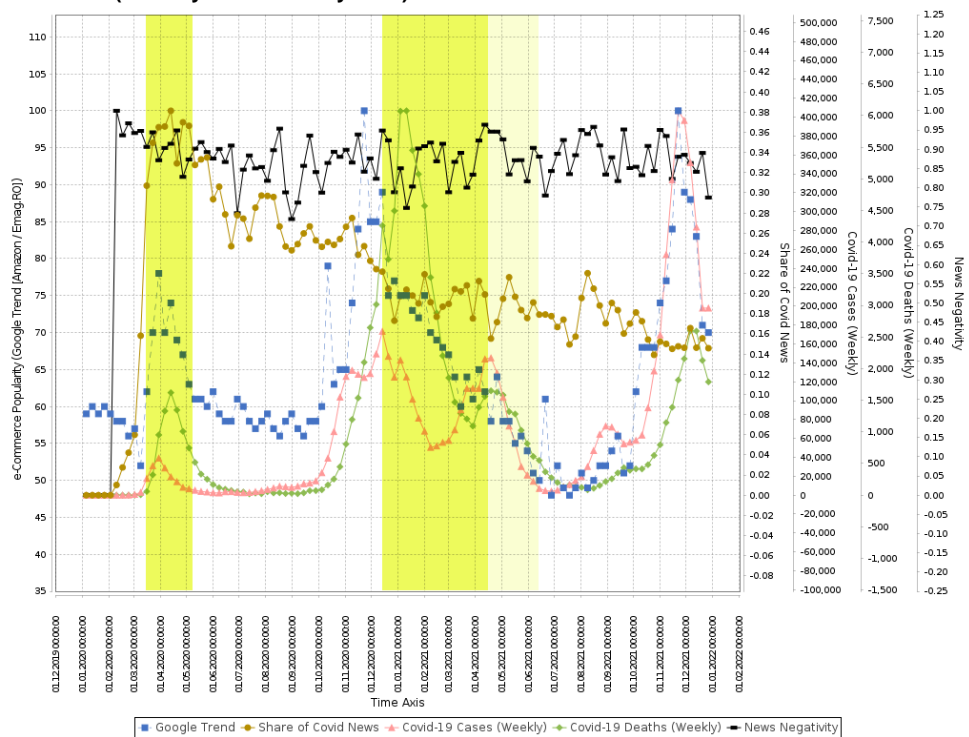
$$y = \beta_0 + \text{Idx}_t \beta_1 + \varepsilon \quad (2)$$

## 3 Results and Discussion

We first outline, in an illustrative manner, the evolution of the analysed aspects – namely, consumers' orientation towards e-commerce, COVID-19 cases and deaths, news negativity and news on COVID-19 (as shared in all analysed news) – in Germany and Romania between January 2020 and January 2022. Figure 1 illustrates the investigation for the case of Germany, while Figure 2 is for the case of Romania. Both figures show consumers' orientation towards e-commerce as indicated by Google Trends (represented on the left y-axis) in connection with the incidence of COVID-19 cases and deaths, with the news negativity and with the share of the news on COVID-19 in all news under observation (all represented on the right y-axis). In the same vein, the overlays in the figures show the lockdown phases.



**Figure 1 | Consumers' orientation towards e-commerce in Germany in COVID-19-related framework (January 2020–January 2022)**

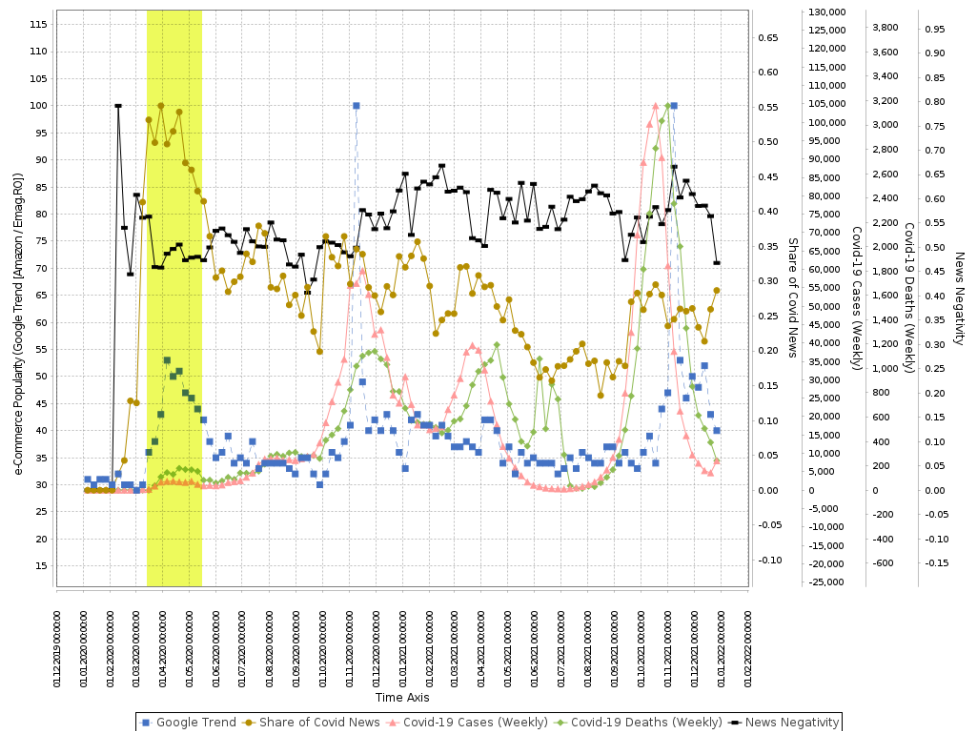


Source: Developed by the authors

Figure 1 demonstrates an association between the increase in consumers' orientation towards e-commerce and the increase in the incidence of COVID-19 cases and deaths in Germany; similar trends can be observed. Also, the figure illustrates how the regulatory interventions (in this case, represented by the forced lockdowns) affect consumers' orientation towards e-commerce. Intensive Google searches of the most known online shop in Germany (Amazon) manifested in the middle of the first lockdown phase.

This is also valid for Romania, especially when the initial surge of the pandemic (February–June 2020) is considered. In the case of the second wave, which started in the autumn of 2020, the picture is different; consumers' orientation towards e-commerce, as indicated by Google Trends, was not so related anymore to the other investigated aspects specific to the pandemic (Figure 2).

**Figure 2 | Consumers’ orientation towards e-commerce in Romania in COVID-19-related framework (January 2020–January 2022)**



Source: Developed by the authors

After this illustrative presentation, we will focus on providing an overview of how consumers’ orientation towards e-commerce correlates with the incidence of COVID-19 cases and deaths and news negativity in COVID-19 media reporting. More precisely, in Table 3, we highlight the correlation coefficients specific to each explaining variable and their specific significance values.

**Table 3 | Correlation between consumers’ orientation towards e-commerce and analysed explaining variables characteristic of COVID-19**

Country	Cases of COVID-19		Deaths associated with COVID-19		Negativity in news	
	r	p	r	p	r	p
Germany (DE)	0.5185	0.001*	0.3713	0.001*	0.0028	0.402
Romania (RO)	0.1343	0.001*	0.0526	0.010	0.0336	0.0347

Note: \* = significance value,  $p < 0.05$

Source: Developed by the authors

When approaching consumers’ orientation towards e-commerce in relationship to variables specific to the pandemic, our study presents interesting facts. Firstly, by linking consumers’ orientation towards e-commerce to the incidence of COVID-19 cases, statistically significant

positive correlations arise for the two countries under analysis, but with different strengths. For example, Germany shows a good correlation of 0.5185. In contrast to that, the correlation is weaker in the case of Romania, this being only 0.1343. Although the relationship between consumers' orientation towards e-commerce and the incidence of COVID-19 cases is significant from a statistical point of view for Romania, its importance is very small and it does not explain the variance in scores in the test (Larson-Hall, 2010). Even more, in the case of Romania, there is no correlation between the deaths associated with COVID-19 and consumers' orientation towards e-commerce during the analysed period. Thus, in the case of Romania, it can be assessed that there is a very low to no connection between the incidence of COVID-19 cases and deaths and consumers' orientation towards e-commerce, measured through searches on Google for "emag", the key e-commerce platform in Romania, as shown on Google Trends. The finding might indicate a typology of consumers that did not let the pandemic – through its specific parameters, such as cases and deaths – influence their orientation towards e-commerce.

However, the situation is different in Germany. Besides showing a good positive correlation between consumers' orientation towards e-commerce and COVID-19 cases (0.5185), this also displays a positive correlation when deaths are considered; however, of a weaker intensity (0.3713). Thus, it can be stated that, in Germany, rising incidences of COVID-19 cases and associated deaths correspond to a rise in consumers' orientation towards e-commerce, measured through searches on Google for "Amazon", as shown on Google Trends. Our finding might reflect a typology of a consumer who turns towards e-commerce as a safer option in the context of the pandemic, especially when compared to traditional commerce in brick-and-mortar shops, as an effect of a behaviour disrupted by panic, fear and/or anxiety, especially when considering safety-related issues, as reflected by Di Crosta et al. (2021), Alhaimer (2022), Andruetto et al. (2023), or even to cope with crisis-related mental and behavioural issues (Zulauf & Wagner, 2022). Our finding is in line with one emphasised by Gao et al. (2020), namely: "The share of confirmed COVID-19 cases increases the possibility of consumers purchasing food online". Also, our finding supports those of Chang and Meyerhoefer (2020), who reflected how an extra authentication of a COVID-19 case is positively correlated with heightened levels of online sales and an increased influx of online clients. In such a context, the first hypothesis of our study (H1: Consumers' orientation towards e-commerce increases as the number of COVID-19 cases and associated deaths increase) is totally confirmed for Germany. In the case of Romania, this might be only partially confirmed, but with low representativeness and importance, considering the very low influence of COVID-19 cases on consumers' orientation towards e-commerce and the nonexistent relationship with the deaths.

Even though an explanation for the correlation between consumers' orientation towards e-commerce and the incidence of COVID-19 cases and deaths resides in collinearity, the deaths increase with a time lag after a rise in the number of cases. Moreover, an increase in COVID-19 cases and deaths often prompted the imposition of lockdown measures and the closure of non-essential retail shops. Thus, the analysis of the influence of regulatory interventions through the enforced lockdowns on consumers' orientation towards e-commerce becomes relevant. This way, the second hypothesis of our study (H2: The lockdown periods made consumers increasingly lean on e-commerce) is also confirmed.

Table 4 shows the top periods of searches related to the key e-commerce platforms in the analysed countries during the surges of the pandemic in 2020 and 2021 and the corresponding lockdown periods.

**Table 4 | Consumers’ orientation towards e-commerce in relationship with enforced regulatory interventions, specifically lockdowns**

Country	Intensive searches (peaks) on Google of Amazon and emag, as shown by Google Trends	Peak emergence during lockdown
Germany (DE)	30 March 2020	x
	23 November 2020	-
	22 November 2021	-
Romania (RO)	6 April 2020	x
	9 November 2020	-
	8 November 2021	-

Notes: “x”: the peak was during lockdown; “-”: the peak was not during lockdown

Source: Developed by the authors

The primary observation delineated in Table 4 indicates synchronous peaks in Romania and Germany, almost at the same time, considering specific time intervals: 30 March– 6 April 2020, 9–23 November 2020 and 8–22 November 2021. This result is particularly notable given the divergent economic landscapes of the investigated countries. In terms of the connection between the peaks of e-commerce platform-related searches and the regulatory interventions (e.g., enforced lockdowns), there is a direct relationship during the initial wave of the pandemic, more precisely in the period from February to June 2020. This reveals that consumers’ orientation towards e-commerce surged during the lockdown period, confirming this as the second hypothesis of our study. This reveals that the measures imposed by local governments to ensure social distancing – in this particular case, lockdowns – influenced consumers’ behaviour and made them orient towards e-commerce. This might be due to the fact that traditional brick-and-mortar shops were closed. However, it might also reflect consumers’ fear for their health and life, linked to their perceived risks associated with leaving their homes (Soares et al., 2023) or the risks of formal penalties, such as for breaking the lockdown rules (Alhaimer, 2022). Thus, our finding might support the ideas expressed by Shaw et al. (2022), who stated that “the COVID-19 pandemic brought about an increase in online shopping because of government-imposed restrictions and consumer anxiety over the potential health risk associated with in-store shopping”. Furthermore, this finding might reflect a typology of consumers who obey rules, are afraid of breaking them and are also concerned for their health and lives.

However, when the second wave of the pandemic approached, the situation was totally different: no relationships can be observed between the two investigated aspects, as presented in Table 4. In Germany and Romania, November 2020 and November 2021 were months when consumers were highly oriented towards e-commerce; intensive searches for the most popular e-commerce platforms in the analysed countries (Amazon and emag) were registered by Google Trends. Notably, these were months when there were no lockdowns and when all the shops were open, not only those selling essential goods. Other reasons behind the high Google searches during November for the key e-commerce platforms in the analysed countries are as follows. One of them might be related to the most relevant sales events in the year: Black Friday and Cyber Monday. This might indicate that consumers react

strongly to such sales campaigns, reflecting a typology of consumers sensitive to prices and promotional campaigns.

After analysing the influence of the COVID-19 variables on consumers' orientation towards e-commerce in Germany and Romania from January 2020 to January 2022, we shifted our attention to the influence of news negativity. Our investigation indicates that this did not react strongly to the other variables, and, in addition, it did not have a significant correlation, from a statistical perspective, with consumers' orientation towards e-commerce in either of the two countries under study. Thus, there was no connection between the searches on Google for the main e-commerce platforms in the analysed countries, as revealed by Google Trends (the proxy through which we have expressed consumers' orientation towards e-commerce) and the news negativity. In such a context, our last hypothesis (H3: The larger the media coverage on topics about the pandemic and the higher its negativity, the stronger consumers' orientation towards e-commerce) is rejected. One possible explanation might be revealed by the work of Starosta et al. (2020), who found that news negativity was not correlated with the real incidence of COVID-19 cases, with specific decreases or even with the lockdown periods. The negativity in media reporting observed within the analysed European countries remained unresponsive to fluctuations in the incidence of the mentioned variables. The persistence in depicting a strongly negative narrative, regardless of factual developments, indicates a detachment from reality within media reporting in the analysed countries. However, our analysis reveals a fact that is in contradiction with other findings of the studies belonging to the specialised literature that advocate the role of news as important influencers and shapers of consumers' behaviour, especially in times of crisis. Even if, for example, Aljanabi (2023) states that information overload leads to threat development amid consumers with direct effects on their behaviour, our study reveals no correlation between consumers' orientation towards e-commerce and media coverage and news negativity in COVID-19 media reporting. This finding might reveal two consumer typologies: (1) one that is checking for the veracity of the information presented in the media from other sources to protect themselves from fake news and does not panic just by reading some newspaper articles, and (2) one that simply is not interested in the news shown in the media and does not let this influence their behaviour.

## Conclusions

Our study investigated consumers' orientation towards e-commerce during disruptive times, referring to the COVID-19 pandemic as the most prominent recent disruptive phenomenon. Our analysis examined two European countries, Germany and Romania, and it was developed for the period from January 2020 to January 2022. We approached consumers' orientation towards e-commerce through a proxy based on Google Trends data, focusing on the searches for the most representative e-commerce platforms in both countries, namely Amazon (in Germany) and emag (in Romania). In our study, based on both sentiment and correlation analyses, we tackled consumers' orientation towards e-commerce during the COVID-19 pandemic in relationship with media-related sentiments, the incidence of COVID-19 cases and deaths and the lockdown periods.

One of our findings referred to the fact that the rise in the incidence of COVID-19 cases and associated deaths led to an increase in consumers' orientation towards e-commerce in Germany, considered based on the searches on Google for "Amazon", as indicated by

Google Trends. However, in the case of Romania, the rise in COVID-19 cases showed a very low influence on consumers' orientation towards e-commerce, almost unimportant, and an nonexistent influence on the associated deaths. Furthermore, considering the initial surge of the pandemic, the lockdown periods determined a high orientation of consumers towards e-commerce in Germany and Romania. In contrast to that, when referring to the later waves, a high orientation of consumers towards e-commerce was registered during November 2020 and November 2021 in both countries under analysis, periods that were not associated with lockdowns nor with other measures imposed by the governments to deal with the pandemic, but more with the most representative selling events in the year, namely Black Friday and Cyber Monday. Also, neither media reporting on COVID-19 nor news negativity had any influence on consumers' orientation towards e-commerce from January 2020 to January 2022 in Germany and Romania.

Opposite to our expectations, our study reflects that media coverage and its negativity did not affect consumers' orientation towards e-commerce in Germany and Romania during the pandemic. On the one hand, our study might reveal an educated consumer who does not take for granted the news in the media and checks the veracity of the information to protect themselves from fake news and does not panic just by reading some newspaper articles. On the other hand, there might be the case of another type of consumer as well. This might be one who is simply not interested in the news shown in the media and does not let this influence their behaviour. Furthermore, considering the validation of the influence of the COVID-19 variables on consumers' orientation towards e-commerce in Germany, it might be deduced that consumers reacted to real facts, not to news. Fear for their health and lives made them turn towards safer means of commerce in the context of the pandemic. In contrast to that, consumers in Romania did not react either to the news or to the real facts concerning their orientation towards e-commerce, indicating, probably, a lack of trust or interest. However, when governmental measures were enforced and lockdowns were imposed, consumers in both countries turned towards e-commerce, reflecting a typology of consumers that obey rules, being afraid of breaking them. Even more, our study also identifies another typology of consumers: those that are highly sensitive to prices and promotional campaigns, considering their high orientation towards e-commerce during November, the month of the Black Friday and Cyber Monday selling events. However, to better confirm these ideas, which might result in future research hypotheses, further studies are necessary. These might be either qualitative or quantitative in nature, focusing on consumers' behaviour in relationship with cultural aspects as well, and they might bring more invaluable insights into consumers' feelings and thoughts, providing this way a detailed overview of their consumption and/or buying behaviour during disruptive times.

This paper adds to the literature on consumer behaviour during disruptive moments, outlining consumers' orientation towards safer means of commerce in times of health crises. Furthermore, our research might be approached by entrepreneurs to better understand their consumers' orientation towards e-commerce during disruptive times. Acknowledging consumers' behaviour during disruptive times is essential for businesses. COVID-19 brought a health crisis that led to intensive research into consumers' behaviour during health crises, an under-researched topic before the pandemic. Only by knowing how their consumers act during disruptive times can entrepreneurs adapt their strategies to better respond and react on the market, targeting and reaching their consumers and, at the same time, ensuring their survival or success on the market. Thus, considering the particular case of our findings, even

if further research is necessary to strengthen them, during disruptive moments (e.g., health crises), entrepreneurs can appeal to e-commerce to attract consumers by different means of promotion. E-commerce might be promoted as a safe form of commerce and, at the same time, as a form of therapy for coping with the mental, psychological or even emotional issues induced by the crisis. Furthermore, developing price reduction campaigns, especially for the online commerce side of the businesses, might attract consumers. This recommendation is valid and feasible for non-disruptive times as well.

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