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# ECONOMIC BEHAVIOR OF STUDENTS IN E-COMMERCE IN THE LIGHT OF SEMIOTICS DURING THE COVID-19

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## Abstract

This study evaluates the consumption relations of low-income postgraduate students from Baixada Fluminense in Rio de Janeiro during the Covid-19 pandemic and the impact on economic behavior in the e-commerce environment. We conducted interviews in-depth to collect answers, coded and analyzed by semiotics. We separated them into ten themes inspired by other authors, and these themes are: Financial Education; E-commerce; Data Security; Consumption during the pandemic; Payment Methods; Employability during the pandemic; Economy during the pandemic; Shopping compulsion; Social isolation; E-commerce expectations after the pandemic. Next, we

separated these topics into three blocks (Consumption, Financial Level, and Emotions) for more significant interview dynamics. We find that the pandemic impacted people's economic behavior, especially concerning awareness of health protection and social isolation, migrating a large part of consumption to e-commerce; there has been a significant development in the delivery service; and data security is still a relevant issue for customers. We also expect that online shopping will continue to rise because of the pandemic, stimulating and developing e-commerce. This interdisciplinary approach, linking behavioral economics, digital commerce, and semiotic analysis, introduces a unique lens for understanding students' economic behaviors in the context of e-commerce during the pandemic.

**Keywords:** e-commerce in the pandemic; online shopping; e-commerce expectations; low-income students; Brazilian postgraduate students.

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## INTRODUCTION

Commercial transactions undergo frequent changes according to the technological possibilities and needs of the time. Initially done by barter and physically, trade evolved into physical stores where customers could visit and choose which products, services, or both to purchase (Diniz, 1999). According to Moraes (2016), the first e-commerce was in 1979 when Michael Aldrich used a telephone line and an adapted television to create the first online shopping system.

With the onset of globalization, it was possible to start global electronic commerce. In the 1980s, in the United States, large retailers and the automobile industry made the first non-physical purchase provided by the Electronic Data Interchange (EDI). From this achievement, the entire supply chain adopted the new modernization (Cruz, 2021-a).

E-commerce purchases are defined by Borges (2021, p.2) as "a type of commercial transaction carried out through electronic data transactions," that is, purchases through non-physical environments. It had humble origins in the mid-1990s, grew significantly until 2000, but stagnated until 2003. As a result, despite the 2008 crisis, e-commerce was less affected than most economies (Gnatiuc, 2018).

In Brazil, e-commerce began with the internet release for commercial use in 1995, and the first companies were Booknet, Americanas, eBay, Amazon, and Mercado Livre (Cruz, 2021-a). This way, buying several products online was possible without leaving the house. Furthermore, globalization and informational development have contributed to the insertion of online purchases, removing the obstacle of distance for the product or service to reach the final consumer.

The pandemic caused by the Coronavirus (Covid-19) led to social isolation, where many establishments had to close their doors, reducing the movement of people on the streets to just the essentials (Tavares and Silva, 2020). Many merchants migrated to the digital environment to continue their sales and existence, working with delivery, creating applications, building websites, and intensifying virtual advertising to continue reaching their consumers.

At the beginning of the pandemic in Brazil, in March 2020, the increase in consumption by delivery was notorious, mainly in food and hygiene products. However, according to Webshoppers (2021), Brazil's main e-commerce report, sales revenue has been growing, even during the pandemic. In the first half of 2021, e-commerce reached its highest sales level ever, totaling more than R\$53 billion, which indicates a growth of 31% compared to the previous semester.

The buyer quickly adapted to the new consumption method by order, and due to its practicality and safety concerning health, it continued to be the most used means during the pandemic (Boueri et al., 2021).

Graduate students have a higher level of education and, therefore, their attitudes should reproduce a greater level of responsibility and maturation of reflections concerning society, reflecting in their aggregated knowledge. During a pandemic, people with higher educational levels demonstrate attitudes corresponding to what should be the most appropriate and guiding behavior, especially those who study management theories.

Under this new context of the global economy, we aimed to verify, in an innovative way, how Covid-19 impacted the economic behavior of e-commerce consumption of low-income postgraduate students at Baixada Fluminense in Rio de Janeiro, considering each of the ten areas (Financial Education, E-commerce, Data Security, Consumption in the pandemic, Payment Methods, Employability in the pandemic, economy in the pandemic, Shopping compulsion, social isolation, Expectations of e-commerce after the pandemic).

For this, as a general objective, we sought to understand the consumption behavior in virtual environments in the pandemic period of students at the University in a poor area in Rio de Janeiro, and as specific objectives: 1) Understand the profile consumer of master's and doctoral students in online shopping; 2) Check if there has been any change in the quantity or frequency of purchases during the pandemic period; 3) Identify the psychological impacts concerning consumption observed regarding the purchases and investigate possible changes in the financial and indebtedness level in the period of Covid-19.

Studies on consumer behavior during the Covid-19 pandemic have aroused the interest of various fields. However, already consolidated works address a few topics within the same sample, principally in Brazil. Therefore, this research sought to bring together ten topics (Financial Education, E-commerce, Data security, consumption during the pandemic, Payment Methods, Employability during the pandemic, economy during the pandemic, Shopping compulsion, social isolation, Expectations of e-commerce after the pandemic) to analyze the behavior and preferences of respondents in each of these areas, contrasting with the isolated results described by the works, giving a connotation of innovation.

Observing consumer behavior in online purchases is relevant for several sectors, such as shopkeepers and merchants, as they will be able to understand the profile of their consumers, diversify their service and offer options closer to their customers' needs; for marketing professionals as they will be able to improve their strategies to draw attention to delivery and direct their resources; for the field of psychology, as they will be able to analyze the new trend of economic behavior and the factors that contribute to decision-making; for the economy, to understand and monitor changes in commercial transactions and, finally, for academia, as it will add content and new perspectives on a topic that is on the rise.

This research contributes to the already developed knowledge about e-commerce, collaborating to identify the behavior and consumption projections of low-income students with more time dedicated to research and knowledge production (in postgraduate programs).

We divide the work into five parts: In the first part is the introduction contextualizing the economic scenario until the pandemic; the second part is the theoretical framework, where we show the evolution of e-commerce and studies carried out on this subject; the third part is the methodology, which describes the processes carried out for the construction of this research; the fourth part is composed of the results, showing the main behaviors of graduate students related to their e-commerce purchases during the pandemic; and finally, the fifth part brings the verified conclusions on the subject.

## **THEORETICAL FRAMEWORK**

### **The Evolution of E-commerce**

Since the emergence of the internet, the main highlight being the dispute over technological advances between the United States and the Soviet Union during the Cold War, it has been possible to identify the intensification of globalization, which has gained access to the

world wide web, reduction of distances between different people, quick access to information, in addition to the imminent advancement of communication (Silva, 2017).

Still in this context, Silva (2017) highlights the emergence of ARPANET, developed by the United States Department in 1969 as the first operational computer network, interconnecting military bases and American government departments, thus being the precursor of the internet.

With the internet's formation, development, and effectiveness, the virtual environment began to be seen by companies as a space of great use to explore and a place to have agility and practicality for business. According to Turchi (2019), in the 1980s, large companies in the industrial and retail sectors carried out commercial transactions electronically, with Electronic Data Interchange (EDI) and Electronic Funds Transfer (EFT – Electronic Funds Transfer) for sending documents (purchase and payment orders), to streamline logistics and supply chain operations.

Between the 1990s and 2000s, with the so-called "Internet evolution" and the development of techniques and security, sales operations began to be carried out over the web, thus boosting the market more and more, contributing to new entrants. Galdino (2020) states that the potential offered by the internet led companies to act more broadly and include e-business strategies in their marketing plans. This comprehensive concept refers to using technology (hardware and software) to create a high-performance business model.

The operations of buying and selling products and services over the internet, the so-called e-commerce, also have derivations such as: m-commerce (mobile commerce – commerce through mobile devices), t-commerce (television commerce – commerce through television), social commerce (commerce influenced by social networks), among others. Borges (2021) comments that through these technologies, the market becomes more robust and thus broader and more equal for all companies in the face of the possibilities in various negotiations.

Turchi (2019) also states that with the strengthening of exchanges of information and influence on social media, a new term has emerged, cited for the first time in 2011 by the Harvard Business Review, called BtoN, described below:

“BtoN, or Business to Network: in current times, when selling a product or service to a customer, the company must consider this transaction not just with a person but with the network to which it belongs, as this consumer may impact, in an according to his attitudes, the future sales of that company, that is, if he is well served and satisfied, he will be able to disseminate information that will favor the company”. (Turchi, 2019, p.13).

According to Exame Magazine (2011), e-commerce began to gain much strength in the US around 1994, with the emergence of Amazon.com. At the same time, other companies in the retail sector began to invest in this new business model, realizing the advantages they would have over time.

A point to be observed and worrying in the evolution of e-commerce can be remembered in the break of the "bubble of opportunity" in 2000, seen in the American Stock Exchange, causing many companies in this web branch to go bankrupt. According to Turchi (2019, p 12), the fact happened because “many investments and values related to companies in the digital world did not have a real foundation to support them, and this came to light in 2000, when these values, in a way illusory, were put in check and many companies ended up going bankrupt.”

Companies that continued to invest in this type of marketing seeking to develop online operations managed to establish themselves and stand out in the segment. According to Revista Exame (2011), this was the case of Amazon and Submarino (current B2W, formed by the merger of Submarino with Americanas.com and Shoptime) in Brazil.

Cruz (2021-a) verifies that after this bubble period worldwide, e-commerce maintained continuous and consistent growth over the years at an accelerated pace, causing new technologies to be implemented not only in the virtual system but also in new forms of payment, negotiation, and security.

According to SEBRAE (2021), in Brazil, “invoicing jumped from 8.4 billion reais in 2011 to 26.4 billion in 2019. However, it cannot be denied that the coronavirus crisis has contributed considerably to the increase in the search for products and services through the Internet”.

Teixeira (2021) also points out that Brazil has approximately 70.6% (about 149 million people) of society with internet access. Furthermore, when he compares 2000 and 2012, the author notes an increase of approximately 1,500% in the number of people on the web in Brazil.

Brazil leads e-commerce in Latin America, representing approximately 41% of sales, of which 85% of purchases are made by local companies, demonstrating a threat to new international entrants (Turchi, 2019). Compared with other countries, Puerto Rico, where 95% of purchases come from outside Latin America, it is possible to see that all this activity is due to cultural reactions and commercial ones. It is also interesting to point out that international websites have lately conquered space in Brazilian e-commerce, offering lower prices than local commerce and products yet to be available in Brazilian stores.

The megatrends directly impact the final consumer. Companies know this and are highly punctual in applying their electronic business techniques. Ludovico (2018) points out that the impact of technological advances is continuously perceived, verifying that the negotiation time through the internet has decreased considerably, expanding the possibilities of better planning, coordination and making decision-making faster.

Companies have invested in knowledge and new technologies and ways of disclosing products and services that are different from those used in the past with the web application and new market trends. Belche (2014), thus, states that these trends in social media received new entrants from companies, modifying ideas, sharpening the entrepreneurial spirit of institutions, and creating new models of negotiating in the market. In this way:

“Electronic commerce is the evolution of commerce itself, one of the oldest practices in society, which began many centuries ago with the exchange process. Commerce contributed heavily to discovering new worlds as merchants needed to seek out new suppliers and consumer markets”. (Assunção, 2019, p. 13)

Assunção (2019) adds that electronic commerce is any commerce relationship using electronic means, but with the internet as a means of transaction. Thus, commercial digitization will not end, continuing to be a primary means of global expansion as there will be new entrants from supplier companies and different customers as long as offers are available on the networks.

## **The Semiotic Theory**

According to the Michaelis dictionary (2022), semiotics manifests the general theory of signs and how their expressions (linguistic or non-linguistic). In addition, it can also be understood as the art and science of commanding maneuvers, so-called military, through gestures and signals, without considering the performance of the voice. Finally, in the legal environment, it is the study of changes in meaning in words used in legal language through applied interpretation.

Semiotics is the science that studies the signs of language (including colors, gestures, words, and spaces), which we consider syntax, semantics, and pragmatics based on many studies. In language, the sign is composed of a signifier and a signified (Bechara, 2015). Therefore, whoever writes, the author is doing an exercise in semiotics, as he not only articulates the meanings (ideas and feelings he wishes to place in the texts), but he must also choose and articulate the signifiers (words, phrases, text relations) that he expresses with greater or lesser



intensity, the desired meanings. However, those who read carry out an opposite process, a path of discovery of meanings through signifiers. Therefore, the search for meaning and meaning is not a domain of semiotics but of semantics.

The semiotic or structuralist analysis starts by appreciating the linguistic structures developed in different texts (Santaella, 2018). The written text comprises a system of relations that develops an effect, with a method applied in narratives, with discursive elements. Historically, from photography and cinema, the emergence of the press and their respective images, the electronic revolution, radio and television, and today with the digital revolution, the world has received new signs on a large scale.

The elaboration of the idea of Semiotics, until the end of the 19th century, coincided with the evolution of language technologies, being a continuous evolution that requires the linguistics of different countries to interpret reality in objective texts that express the world. In this way, semiotics provides us with different types of signs and meanings, thus developing different methodological strategies for the reading and analysis of empirical processes of signs, such as, for example, through music, images, radio, advertisements, videos, and others.

As Barros (2012) points out, semiotics is seen in narrative, discursive, and logical-narrative texts, widely used concerning the evolution of actions and roles; in the characterizations of various textual elements (actors, time, places); and the value that each one presents. It is also put to the logic and, in many cases, underlying the organization of the text. Finally, the analysis of structures seeks to explore the meaning of the text to which the developed research was made explicit.

Santaella (2017), from this analysis, other derivations emerged, such as deconstructionism and criticism of the reader's response. The function of deconstructionism is to explore the concept that the linguistic and literary system of the author and the reader is limited to the decisive way, thus determining the meaning of the text. The criticism of the response is due to emphasizing the reader's role in constructing the meaning of the text, varying according to their perception.

For this research, the analysis of all the information collected was carried out through semiotics, as an interpretation of signs in the form and linguistic manifestations of the entire set of interviews was verified, confronting it with data from the literature in their specific social and cultural contexts for each situation during the study. According to Gibbs (2008), coding can be analyzed interpretatively based on the interviewees' reports.

## **The Pandemic and its Impact on Consumer Behavior**

The Covid-19 pandemic was a milestone in economic and technological development, as it promoted, in a short time, intense transformations in the population's new mode of consumption. However, due to social isolation, to prevent the spread of the virus, people had to adapt to e-commerce, that is, through non-face-to-face environments. As a result, some social concerns began to appear and be studied by several authors.

Galdino (2020) sought to understand consumer behavior in virtual environments amid the Covid-19 pandemic in João Pessoa/PB (Brazil). Through a questionnaire, the authors collected 116 responses that allowed observing a change in consumption habits on the internet. Driven by safety/health concerns, online purchases have increased, particularly in the delivery food sector. Furthermore, the author verified that, even after the pandemic, the consumer should continue with online purchases, giving rise to increased investment in e-commerce.

Borges (2021) analyzed consumer vulnerability in online shopping during the pandemic. She found that internet access increased significantly during 2020 and 2021, enabling new consumers to enter the digital market and increasing purchases by active consumers, mainly due to massive advertising and marketing appeal. However, in general, the author realized that e-commerce consumption is subject to some risks due to the lack of information on the part of many

buyers regarding the abusive commercial practices practiced by some institutions, such as charging gym fees during the lockdown period.

Cruz (2021-a) analyzed the growth of e-commerce in Brazil and noted that its expansion took place in three moments: popularization of the internet, widespread use of smartphones, and the impacts of the Covid-19 pandemic. He noted that, although there is a substantial economic shortage, high unemployment rates, and homes without internet access, by solving these problems, there is an excellent possibility of expanding the Brazilian e-commerce market.

Cardoso (2021) conducted a case study analyzing the e-commerce of healthy foods in Goiânia/GO (Brazil) in the organization "Com Saúde Léla Ltda" during the pandemic period. He found that, although a reduction in salary income, reaching an increase of 41% in poverty and 14.6% in extreme poverty, it was possible to observe an increase in healthy food consumption through delivery.

Cruz (2021-b) carried out qualitative research with multiple case studies to identify the e-commerce consumption behavior of residents of Salvador during the pandemic. The author divided the period into three phases: 1) Before the pandemic; 2) the First quarantine, where shops were closed; 3) the Reopening of commercial activities. He looked at different age groups, income stability, purchases of physical goods, and digital services. The author found that the pandemic influenced the behavior of respondents; there was also a change in emotions caused by isolation, triggering compulsive shopping and anxiety. In general, online purchases increased during the period when stores were closed. There is an expectation that they will continue consuming via e-commerce, but with a smaller amount, as many prefer to choose the products physically.

Based on the Brazilian context of the pandemic and the content seen in the literature review, this work seeks to understand the consumption behavior in e-commerce of students from Baixada Fluminense, analyzing ten topics involving the online shopping process - line, risk, and psychological factors. Some articles and research cover one or another topic addressed in this research, but it is essential to bring works that cover the fields raised, thus having a distinctive character.

## **METHOD**

As for the technical procedure, according to Gil (2017), bibliographic research was adopted, from a secondary source, as indirect documentation, based on consultation with books on the subject and similar articles that could guide the research, to gain an understanding of consumer behaviors during the pandemic period; documentary research was also used, according to Marconi and Lakatos (2018), where includes primary source statistics with information compiled from private files, such as the graphics presented by Webshoppers (2021). One can also identify as a research technique the use of extensive direct observation when implementing forms to guarantee a better understanding of the fact in its concrete reality.

We conducted qualitative research to identify how the pandemic caused by COVID-19 impacted e-commerce consumption. According to Leavy (2017), the qualitative approach values the depth of meaning and people's subjective experiences and processes of constructing meanings. As a result, they present greater detail in the meanings of activities, situations, circumstances, people, and objects that people attribute to their lives.

In qualitative research, the important thing is the details of the answer and the number of respondents according to data saturation. Therefore, we observed the responses to maintain a trend in lines that previous respondents had already addressed, reaching saturation (Leavy, 2017). Leavy (2017) states that the search for themes facilitates understanding in a focal way, dividing the problem of the general study into smaller parts, solving them, and reaching a more effective conclusion about the totality of the subject in question. In this way, some problems the population faces can be better understood and create possible solutions in the face of the evidence raised.

Pereira (2019) points out that it is necessary to indicate the reasons for choosing themes that justify the problem discussed in the research study. Thus, along with the literature review, understanding will be verified using topics discussed and removed during the interviews to answer the main questions.

Fifteen master's and doctoral low-income students in administration, residents of Baixada Fluminense and surroundings, were selected for convenience to be asked about their behavior and consumer preferences before and during the pandemic. We made the interviews in-depth, during March 2022, through Google Meet (recorded), with the prior authorization of the participants, and transcribed them for better analysis. The interviews lasted, on average, 40 minutes.

It is possible to justify the number of 15 interviews by the saturation of the theme and similarity in the responses found in the students from the course in Baixada Fluminense. This similarity of thought and meeting of themes is also justified because they are people from the same area of study, aligning with the same type of thinking in general. According to Leavy (2017), this can occur when one applies semiotics, understanding that sign processes are any activity, conduct, process, or anything else that communicates something to the interpreter of the themes studied and pointed out.

We coded the responses to identify comparison aspects and separated them into ten themes inspired by other authors but brought together unprecedentedly. These themes are: 1) Financial Education; 2) E-commerce; 3) Data Security; 4) Consumption during the pandemic; 5) Payment Methods; 6) Employability during the pandemic; 7) Economy during the pandemic; 8) Shopping compulsion; 9) Social isolation; 10) E-commerce expectations after the pandemic. Next, we separated these topics into three blocks (Consumption, Financial Level, and Emotions) for more significant interview dynamics. For each of them, the description, the inclusion and exclusion of the target audience, the typical and atypical factors, and what seems to be but is not.

We analyzed the collected information through semiotics, which presents a code regarding interpreting signs in the form and linguistic manifestations in their specific social and cultural contexts for each situation presented during the study. As presented by Gibbs (2008), the codification is treated and analyzed in an interpretative way based on the interviewees' reports.

We divide the questionnaire into four parts: 1) Initial questions or ice breakers; 2) Consumption profile identification phase; 3) Questions about risk involving financial level and indebtedness; 4) Questions about emotional factors linked to consumption and the pandemic phase.

## FINDINGS AND DISCUSSION

As stated by Levy (2017), the analysis of the collected material involves the initial immersion in the content. To get a sense of the general picture and determine an analysis of the problem units, it is necessary to apply "coding," analysis, and interpretation to absorb the content, general impressions, and ideas of how to deal with the codification.

When we analyzed the interviews, we raised ten main themes, called "coding," to facilitate the interviewees' notes and thus adjust the thoughts on each theme. In this way, some problems the population faces can be better understood and create possible solutions in the face of the evidence raised.

### Financial Education

As Ross (2008) verified, applying financial techniques in companies and domestic life becomes necessary to organize expenses and income and thus acquire health in the short, medium, and long term. This way, it can manage and plan all the resources received daily.

In their totality, the interviewees agree that there is a basic need for lessons regarding financial education that should be taught and passed on to the population. However, we saw that knowledge about resource inflows and outflows, domestic finance, simple analysis of costs and



expenses, family resource reservation, and new learning on the subject is essential for the current understanding of the market (such as inflation and price increases), as well as adaptation of each one's finances with the current scenario witnessed by all during the pandemic.

“Financial education should come from basic education, showing the importance of money, the economy, and creating a culture. Many people will only come across the financial situation when they start working, earning money, and many times they do not know what to do when they start earning. You do not have that notion of separating a part to invest or save. Having an idea of saving, without spending for nothing, dealing with finances”. (Interviewee05)

This theme proved to be of extreme importance to everyone, highlighting that there is a great need to have control over private finances, avoid problems such as indebtedness due to unnecessary purchases or compulsion, replacement of current thinking (short term) with medium and long projections spending deadlines, concern about the rise in market prices compared to the contributions received monthly (income x expense), ensuring quality and positive financial health during and after the pandemic.

## **E-commerce**

All respondents reported that they make or have made some purchases online. In the current pandemic context, we observed an increase in consumption via e-commerce due to the imposition of social isolation, notably the purchase of food from restaurants and articles related to clothing. Cardoso (2021) noted that, despite the wage income reduction during the pandemic, there had been an increase in food consumption by delivery.

There was also an interest in new digital technologies such as mobile phone applications for entertainment, diversification of similar store applications for price comparison, and searching for new items related to online shopping (national and international).

In a second moment, we verified the importance of practicality in making online purchases due to obtaining lower expenses in the prices of products and services, time to choose when making purchases, flexibility in price research, and lower financial expenses compared to physical stores (expenses with parking, fuel) and the convenience of shopping wherever the consumer is. Cruz (2021-b) found that, in general, online purchases increased during the period when stores were closed due to the pandemic. According to one of the interviewees:

“Advantages: take advantage of the price, and ease of purchase, without leaving home. As well as getting better prices. Convenience. Security of being at home. Save without spending fuel, time, and parking—disadvantages of leaving the house. Staying alone at home can generate anxiety and so on”. (Interviewee04)

Delivery time was another positive point raised by respondents. Agility in delivery during the pandemic was observed, showing logistical and technological improvement by the companies involved, making life easier for end consumers.

## **Data Security**

Concerning bank data, respondents were confident. There is some security on the part of people in exchanging information with banks, knowing that technological evolution and facilitation of services depend on it.

Respondents were concerned about the disclosure of the population's data. They pointed out problems such as hacker invasion of institutional sites, causing problems in several spheres;

disclosure of individual information as a tool for the marketing departments of different companies to obtain research data and create advertising campaigns catering to individual tastes.

In this way, there is still much to be done concerning this topic to solve the problems encountered. Despite the elaboration of the LGPD (General Data Protection Law), the deficiency of the subject has become more evident, causing discomfort and insecurity among people. Moreover, it may affect the market and cause a rupture in the relationship between man and digital technology without an effective resolution.

As Paladini (2012) demonstrated, the quality of actions occurs according to the need indicated by variables. Thus, when various weaknesses emerge, they must be repaired to achieve total service quality.

### **Consumption During the Pandemic**

In a general sense, at first and at the beginning of the pandemic, a compulsive increase in online shopping was observed by three respondents. The others were linear in terms of consumption out of necessity during the pandemic. Over time, people became aware of expenses, highlighting the need for financial control during this period. Ross (2008) points out that personal desires can be worrying when they interfere with bad spending planning. Thus, the more indicated is that all expenses are carried out rationally for financial success.

Consumption has been linked to constant concern with finances in the short, medium, and long term, making everyone more interested in emphasizing necessary products and services and discarding the most superfluous.

“We started to buy practically nothing. Clothing was not used. I had that look about avoiding going out and did not feel comfortable receiving the product at home. Despite the person needing that job, it was not fair for me to outsource the risk. I did not ask for anything or buy anything from the delivery guy or the pharmacy. I was uncomfortable buying anything online; it was an intimate struggle. During the pandemic, my consumption drastically reduced on everything”. (Interviewee03)

Another interesting point is the increase in online consumption during the pandemic of certain products and services such as food (iFood and markets), entertainment, fashion items, and general services (banks, courses).

### **Payment Methods**

Linked to the financial issue, paying in cash (ticket, PIX, or debit) or short-term installments on the credit card was observed. All of them were confident, and users of the modalities indicated, without showing any distrust on the subject. Ross (2008) identifies this method as the best way to settle debts in a planned way without sacrificing the financial reserves saved over time. This way, the person can organize himself strategically, avoid necessary expenses, and liquidate the present needs that may arise.

An important point was the concern with the maximum payment time for credit card installments. All identified the importance of being carried out in the short term, considering interest-free payments and total amounts at the closing of the monthly card bill. In this way, we identified the sample's concern with future finances during the pandemic, reflecting the population's insecurity in evidence.

### **Employability During the Pandemic**

All respondents were not directly affected by the pandemic concerning employability, causing job loss or wage decrease. However, we observed concern with opportunities that the pandemic could bring with new ways of working, such as: home office mode in complete or hybrid

form, aggregation of new knowledge through online courses and training, and facilitating professional learning. Furthermore, as demonstrated by Rocha (2009), work specialization can benefit the organization by better task performance and increase the employee's self-esteem by knowing how to perform activities more efficiently and effectively.

Some interviewees also pointed out problems caused by companies in adapting to this new reality. For example, we observed an increase in the execution time of daily activities, causing psychological problems and exhaustion in the collaborators. Thus, it is perceived that the need for institutions to recover their requirements and apply new rules so that the progression of the income of their internal activities to the organizations keeps, without affecting the monthly billing.

### **Economics During the Pandemic**

During the pandemic, respondents reported an increase in the family's concern for saving resources. However, uncertainties about the country's economic future, mainly due to price increases, were the most commented point.

Another reported reason was the issue of a vision of the future, such as possible trips or purchases of products/services after the pandemic period. In this way, saving today can guarantee to conquer of these elements in the future.

“It took much work. Even because my mother was unemployed, I paid for some things. The money ended up being lower, and we felt that the money was lower. Moreover, because of our country, it got worse too. During the pandemic, I felt this too”. (Interviewee01)

Purchasing more affordable values on the internet opens up the possibility of saving more to conquer new objectives and goals proposed and planned for the future. Costa (2011) also observes that when people apply economic strategies with a glimpse into the future, there will always be better rewards, thus justifying the search for better prices, bargains, and negotiations on the current date.

### **Buying compulsion**

Of the fifteen respondents, three reported that they suffered from compulsive shopping at the beginning of the pandemic, perhaps due to anxiety and the social isolation obtained. Another reason was the ease of specific applications on the smartphone, causing this compulsion when faced with promotions. Cruz (2021-b) observed that social isolation due to the pandemic influenced people's behavior, altering certain emotions and triggering compulsive shopping and anxiety.

The other interviewees did not report compulsive buying but identified increased consumption of online purchases, highlighting the purchase of food and fashion-related items. One of the reasons can also be the easy access to company applications related to this type of market.

“I avoid falling into the trap of stress and anxiety a lot. I try to pick up behavior that is good for me, avoiding stress and anxiety; I like to run and meditate”. (Interviewee07)

All interviewees showed the care they have nowadays with this online consumption, revealing a new consumer behavior after the maturation of ideas and daily processes with the manipulation of these digital applications.

## Social Isolation

As a protective measure and for the non-proliferation of the virus, people could not leave their homes for regular activities and socializing with friends and family. Most respondents reported some psychological symptoms caused by social isolation.

“Isolation made me very apprehensive daily, and I could not see friends or family, which was exhausting. My privilege was having my family with me, mother, wife, and children, and I managed to alleviate this suffering. The religious issue was also impacted, as there was no contact with the church, students, or the public. I was affected; I was dying to have contact with people again”. (Interviewee 12)

They reported concerns about crowding and the infections that could occur. In addition, there was initial resistance to leaving home due to illness and a more excellent search for any consumption that could result in a feeling of continuous security.

Online consumption can offer this possibility, bringing momentary comfort and a sense of normality in the face of the abnormality caused by the pandemic. Furthermore, Porter (2004) states that companies can use present moments, such as local and global crises, as an opportunity to create a competitive strategy in organizations. Thus, we found that even in the face of problems, organizations could adapt and offer customers better conditions in the dealings and activities carried out, bringing people momentary satisfaction.

Another exciting point observed was the concern with other factors such as the environment, for having reduced the proliferation of pollution in the world by reducing the emission of polluting gases, and the feeling of empathy with other people who could not isolate themselves to protect their lives and, consequently, the lives of their family members.

The home office made it possible to better adapt to the current scenario, even improving the online consumption of many families when they realized particular daily needs due to isolation, such as purchasing materials for home renovations or even teaching through online courses for the children. Respondents raised these points as possible positive actions during the pandemic.

## E-commerce Expectations Post-Pandemic

Respondents noted increased consumption during the pandemic. This behavior shows that everyone has realized the advantage of online shopping apps, and most would like to continue shopping after the pandemic.

They also pointed out the desire to go back to buying physically in stores to the intimate feeling that the consumer has when holding a product or understanding/perceiving a specific service, which does not occur in online shopping.

With the improvement of online shopping services, highlighting applications, improvement in continuous data security, and logistics/supplies, the encouragement of companies was pointed out as the main factor in the Brazilian practice concerning online shopping. Just as Galdino (2020) found that, even after the pandemic, consumers should continue shopping online, this study also found expectations of increased purchases after the pandemic.

In this way, we observed that even in the face of the pandemic crisis, new opportunities emerged in the IT and logistics sector, leading to an improvement in this sense in the digital electronic commercial market. Despite the disadvantages presented during the study, such as people's lack of physical and sensory perception (sight, touch, smell, and hearing) when shopping in person.

## **CONCLUSIONS**

It was possible to observe in the research that the population's behavior in the face of the pandemic crisis concerning the consumption of products and services underwent considerable changes compared to the moment before the crisis. As a result, it was possible to identify possible solutions and improvements in the consumer market, highlighting the use of systems and applications for e-commerce, thus improving the organizational perspective of entrepreneurs and the population's life.

The interviewees observed the need for isolation due to the spread of the disease and, thus, the replacement of old tasks such as going to the market or in-person shopping in malls for online consumption through commercial applications. As a result, we observed a transient increase in consumption in the first months of the pandemic caused by psychological issues such as anxiety. However, it also normalized over time after verifying computerized systems' security when carried out online.

Respondents also reported notes such as weakness in data security. Emphasis is placed on those considered the primary "registration data" when several companies use and misplace them to understand the consumer market, thus revealing information non-disclosable. In addition, problems such as hacking into various government institutions caused great concern on the part of the population.

Another issue identified in the survey was consumer improvement concerning their finances, called "domestic finances." The interviewees reported that over time they realized that there would be a need to save the resources received in cash during this period through employment contracts, to apply or predict future situations in the face of the problems faced by most of the Brazilian population, such as the increase in prices of products and services, inflation and unemployment.

Management and planning techniques such as logistics models, more advanced software, and behavioral research are essential to meet current demands and needs. Through these actions, it becomes possible to determine population behavior and what psychological impacts the pandemic has caused on the final consumer. Furthermore, because there are uncertainties and risks in e-commerce, applying these tools to make decisions and perpetuate them in the organization is advisable. In this sense, companies continue to work daily to bring better results, delivering services and satisfying the end customer in this pandemic, solving the main problems.

After the pandemic, services offered digitally will continue to grow, making consumers use them increasingly, replacing old services with new ones technologically influenced by e-commerce, thus bringing better results for the consumer market and new work fronts in IT companies.

## **Theoretical and practitioner implications**

The main findings of this study provide valuable insights into the purchasing behavior of these students during the COVID-19 pandemic, both for theoretical understanding and for practical decision-making.

Theoretically, the study contributes to academic literature by exploring the dynamics of economic behavior in a specific and underexplored context, such as postgraduate students in Baixada Fluminense. By adopting a qualitative semiotic approach, the study highlights the importance of interpreting the underlying meanings of the collected data, thus enriching the understanding of the factors influencing students' purchasing decisions in this context.

Moreover, this study's practical implications are equally relevant. The findings can provide useful information for higher education institutions, businesses, and policymakers seeking a better understanding of the needs and behaviors of postgraduate students in terms of consumption during periods of crisis, such as the COVID-19 pandemic. This information can guide the development of more appropriate strategies and policies to support students in this



challenging time, whether through financial assistance programs, adaptation of offered services, or other initiatives.

### **Limitations and future research**

A qualitative semiotic study based on 15 in-depth interviews on the economic behavior of postgraduate students from Baixada Fluminense in Rio de Janeiro during the COVID-19 pandemic presents some limitations that should be considered.

Firstly, the qualitative nature of the approach may limit the generalization of the results. Although in-depth interviews provide rich and detailed insights into participants' experiences, these findings may only be representative of some of the population of postgraduate students from Baixada Fluminense.

Furthermore, the semiotic approach may introduce interpretative biases, as it relies on researchers' interpretations of the underlying meanings of the collected data. Interviewers' perceptions of the signs and symbols present in the interviews can influence the analysis and interpretation of the results, making them potentially subjective.

Another limitation is related to the sample size, which, even when in-depth, may need help to capture the full diversity of experiences and perspectives of postgraduate students in the region. It's important to note that new interviews may reveal additional insights or nuances not addressed in the original interviews, underscoring the dynamic nature of the research.

Moreover, it's crucial to acknowledge that the COVID-19 pandemic is an evolving phenomenon, and students' perceptions and behaviors may have changed over time. The specific timing of the interviews can influence participants' responses and may not necessarily reflect current or future circumstances, highlighting the temporal limitations of the study.

Lastly, the specific geographical location of the sample - Baixada Fluminense in Rio de Janeiro - may limit the applicability of the results to other regions or contexts. The unique socio-economic, cultural, and political conditions of Baixada Fluminense may influence the economic behaviors of postgraduate students in ways that do not necessarily apply to other populations.

As a suggestion for future research, we recommended applying the questionnaire to people from different levels of education to verify whether the level of education is a relevant factor that changes the perception of consumption. Another suggestion would be to expand the location, including people from different places in the same state or from different regions, to identify whether sociocultural characteristics interfere with online consumption.

### **Research ethic statement**

The authors declare that this study no submitted for evaluation in another journal simultaneously with the CBR or previously published in another journal.

### **Author contribution statement**

The authors contributed equally to the paper.

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## References

- Almeida, C. C. D. (2009). *Peirce e a Organização da Informação: contribuições teóricas da Semiótica e do Pragmatismo*. (Unpublished doctoral dissertation). PPGCI- Faculdade de Filosofia e Ciências, UNESP, Marília.
- Assunção, W. D. S., Fagundes, P. F., & Révillion, A. S. P. (2019). *Comércio eletrônico*. Porto Alegre: Editora Sagah.
- Bechara, E. (2015) *Moderna Gramática Portuguesa*. Rio de Janeiro: Editora Nova Fronteira.
- Belche, G. E. Belche, M. A. (2014). *Propaganda e Promoção: Uma Perspectiva da Comunicação Integrada de Marketing*. São Paulo: Editora Amgh.
- Borges, R. S. (2021). *Vulnerabilidade do Consumidor: E-commerce na Pandemia da COVID-19*. *Vulnerabilidade do Consumidor: E-commerce na Pandemia da COVID-19*. <https://conteudojuridico.com.br/consulta/artigos/56681/vulnerabilidade-doconsumidor-e-commerce-na-pandemia-da-covid-19>. Acesso em: 04 nov 2021.
- Boueri, L. E. C., Ferreira, J. B., & Falcão, R. P. D. Q. (2021). Efeitos da satisfação, confiança e seus antecedentes na intenção de recompra online. *READ. Revista Eletrônica de Administração (Porto Alegre)*, 27, 232-264. Disponível em: <<https://doi.org/10.1590/1413-2311.315.104396>>. Acesso em: 26 de jan de 2022.
- Barros, C. M. D., & Café, L. M. A. (2012). Estudos da semiótica na Ciência da Informação: relatos de interdisciplinaridades. *Perspectivas em Ciência da Informação*, 17, 18-33.
- Cardoso, B. P. D. (2021). Estudo da viabilidade de um e-commerce com delivery de alimentação saudável. PUC, Goiânia.
- Costa, L. G. T. A; Limeira, A. F. F; Gonçalves, H. M; Carvalho, U. T. *Análise Econômico-financeira de Empresas*. Rio de Janeiro: FGV.
- Cruz, M. W. L. (2021-a). Crescimento do e-commerce no Brasil: desenvolvimento, serviços logísticos e o impulso da pandemia de Covid-19. *GeoTextos*, 17 (1), 67-88.
- Cruz, I. C. (2021-b). Novas experiências de consumo por e-commerce durante a pandemia em Salvador. Universidade Federal da Bahia, Salvador.
- Diniz, E. H. (1999). Comércio Eletrônico: Fazendo Negócios por meio da Internet. *Revista de Administração Contemporânea*, 3 (1), 71-86.
- Faust, A. (2011). *As histórias do visionário Jeff Bezos na Amazon*. Revista Exame. Disponível em: <https://exame.com/revista-exame/historias-de-um-visionario/>. Acesso em: 11 de janeiro de 2022.
- Galdino, E. S. (2020). Compras na internet: um entendimento do comportamento de consumo em ambientes virtuais em meio à pandemia da Covid-19. *Universidade Federal da Paraíba (UFPB)*, João Pessoa.
- Gibbs, G. (2008). *Análise de Dados Qualitativos*. São Paulo: Editora Bookman.
- Gil, A. C. (2017). *Como elaborar projetos de pesquisa*. São Paulo: Atlas, 2017.
- Gnatiuc, A. L. (2018). *E-commerce: Evolução e revolução no mercado*. (Unpublished doctoral dissertation). FGV, Osasco.
- Leavy, P. (2017). *Research design: Quantitative, qualitative, mixed methods, arts-based, and community-based participatory research approaches*. Guilford Publications.
- Ludovico, N. (2018). *Como preparar uma empresa para o comércio exterior*. Saraiva Educação SA.
- Marconi, M. A.; Lakatos, E. M. (2003). *Fundamentos de metodologia científica*. São Paulo: Atlas.
- Mpraes, T. (2016). *História do e-commerce no Brasil*. Agência e-Plus. Disponível em: <https://www.agenciaeplus.com.br/historia-do-e-commerce-no-brasil/>. Acesso em: 15 de novembro de 2021.

- Nöth, W.; Santaella, L. (2017). *Introdução à Semiótica*. São Paulo: Editora Paulus.
- Paladini, E. P. (2012). *Gestão da Qualidade: Técnica e Prática*. São Paulo: Editora Atlas.
- Pereira, J. M. (2019). *Manual de Metodologia da Pesquisa Científica*. São Paulo: Editora Atlas.
- Porter, M. E. (2004). *Estratégia Competitiva: Técnicas para análise de indústrias e da concorrência*. Rio de Janeiro: Editora: Elsevier.
- Rocha, E.; Rocha, K.; Duran, C. (2009). *Gestão de Pessoas para Concursos*. Rio de Janeiro, Editora: Elsevier.
- Ross, S. A.; Westerfield, R. W.; Jordan, B. D. (2008). *Administração Financeira*. São Paulo, Editora: McGraw-Hill.
- Santaella, L. (2018). *Semiótica Aplicada*. São Paulo, Editora: Cengage Learning.
- SEBRAE. (2021). *O E-Commerce é indispensável para o seu negócio*. Disponível em: <https://www.sebrae.com.br/sites/PortalSebrae/artigos/o-e-commerce-e-indispensavel-para-o-seu-negocio,2502fc64977e9710VgnVCM100000d701210aRCRD>. Acesso em: 11 de janeiro de 2022.
- Semiótica (2022). In Michaelis Dictionary. Retrieved from <https://michaelis.uol.com.br/modernoportugues/busca/portuguesbrasileiro/semi%C3%B3tica/>. Acesso em: 19 Nov 2022.
- Tavares, N. A.; Silva, P. V. J. G. (2020). *O Comportamento do Investidor Brasileiro com seus Investimentos no Contexto da COVID-19*. In: Encontro Nacional de Cursos de Graduação em Administração (ENANGRAD).
- Teixeira, T. (2021). *LCPD e E-commerce*. São Paulo, Editora: Saraiva.
- Turchi, S. R. (2019). *Estratégia de Marketing Digital e E-commerce*. Paulo, Editora: Atlas.
- Silva, A. M. C., Almeida, M. Q., Martins, V. T. P. (2017). *Computação, Comércio Eletrônico e Prestação de Serviços Digitais*. São Paulo, Editora: Almeidina.
- Webshoppers (2022), edição 44. Disponível em: <https://company.ebit.com.br/webshoppers/webshoppersfree>. Acesso em: 26 jan. 2022.