

# Was There an Alteration on Consumers Pattern with COVID-19 Pandemic? A Pre and Post-Pandemic Research on Consumers Behavior

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## ABSTRACT

The actual pandemic crisis caused substantial changes; on the economies around the world, the routines of individuals, the methods of working and consumption needs. The present research aims to determine how consumers have changed their consumption habits and which factors most influenced their behavioral patterns during the COVID-19 pandemic. Through the use of quantitative methodology, an online questionnaire was performed, intending to collect information regarding consumers behavior. Comparatively to the phase preceding the pandemic, the results obtained show that, amongst the seven variables under analysis, the available income to satisfy consumption needs and the innovation of goods and services were the constructs that consumers consider most relevant when meeting their needs during the pandemic phase. The present research contributes to the development and clarification of scientific knowledge, and provides insights to companies and policy makers about consumer behavior during the COVID-19 pandemic. Indeed, through a multidimensional statistical analysis, we found significant consumption changes conditioned by consumers' income level and the supply of innovative products and services. By knowing the behavior of consumption, it is possible to determine socio-economic development strategies to avoid a significant rupture in the economy.

**Keywords:** Consumer behavior; COVID-19; Society; Consumption; Marketing.

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## 1. INTRODUCTION

The behavioral pattern of the consumer society presents numerous differences compared to previous decades. In the late 1990s, significant changes in consumer habits were noted, such as a loss of appetite for consumption, a loss of interest in brands, increased attention to prices and a reduction in impulse purchases. At the end of the 20th century, industrialization and technological advances brought a different consumer society, more demanding and with massive consumption patterns (Gomez-Corona et al., 2016; Hawkins & Mothersbaugh, 2016).

According to Zwanka & Buff (2021) and Ong et al. (2021), the progression of society towards tertiarization has created an absolute and permanent parallelism between two growing phenomena: production and consumption. Since outsourcing corresponds to the process of directing employment to the tertiary sector, the massification of production and consumption increased in such a way that the weight of the primary and secondary sectors has stagnated, creating a path to the growth of services, the weight of employment and gross added value of the tertiary sector in the most developed economies.

Constant technological advances gave way to jobs mostly directed to the service sector and less directed at activities in the primary sector (Brynjolfsson & McAfee, 2011). Being so, by the beginning of the 21st century, the emergence of further jobs aimed the tertiary sector, this is also an era of information that brought greater dominance to consumers, profoundly altering the way that individuals satisfy their needs. As the access to information became increasingly easier, companies needed to diversify their offer, pushing consumers to spend more time purchasing goods or services, and search and collect information (Ioană & Stoica, 2014).

Consumer behavior is affected by several economic and extra-economic factors. Household available income, new trends, advertising and the price level of goods are examples of some variables that have been changing society's consumption patterns and interfering in the way consumers make their choices and satisfy their needs (López-Fernández, 2020; Zhao et al., 2014).

From another perspective, the pandemic situation caused by COVID-19 has shaken the world since the end of 2019 and completely changed the lives of individuals. According to Donthu and Gustafsson (2020), the change in routines, the emergence of teleworking in large scale, distance learning and social isolation in a significant part of the planet caused profound changes in consumption habits. The exponential increase in online shopping, the preference for safer and more hygienic goods and services and the demand for quality were some of the consequences that the pandemic has caused in consumers (Hesham et al., 2021; Settersten et al., 2020).

In this context, studying consumer' behavior is complex and difficult to understand, as it relates to the perception of thoughts, feelings and actions that lead individuals to adopt certain consumption attitudes. The manners through which individuals satisfy their needs have been changing due to the continuous improvement of services, which increased the level of trust placed in companies by consumers, making their behavioral study more difficult (Mihic et al., 2013; Zhao et al., 2014).

The objective of the present research is to determine how consumers changed their consumption habits and what factors most influenced behavioral patterns during the COVID-19 pandemic. In order to compare consumers behavior timely, an online questionnaire was prepared, from which 237 validated responses were collected, after which an investigation of the variants that consumers considered most important were analyzed in two different intervals; before the pandemic and during the COVID-19 pandemic. The intention was to verify if there are significant discrepancies in the two moments under analysis which may be capable of altering consumers behavior.

This research is original, as there is no information available on the changes in consumers behavior during the COVID-19 pandemic in the Portuguese environment. This paper also contributes to the development and clarification of scientific knowledge, companies and policy makers about consumer behavior during the COVID-19 pandemic. When knowing the behavior of consumption, it is possible to determine socio-economic development strategies, to avoid a complete rupture in the economy.

Regarding the findings of this research, it should be noted that income, innovation, new trends and advertising were the variables that consumers considered most important to meet their consumption needs when comparing the period before and during COVID-19 pandemic.

The present paper is organized as follows: the first part consists of an introduction to the research and its academic relevance, with a brief background on consumers behavior before and during the pandemic. In the second part, an extensive literature review is presented, which verifies the state of the art on the subject under analysis. The third part describes the methodology followed. In the fourth part, the results of the questionnaire are presented, discussed and compared with the existing literature. Finally, in part five, the conclusions of the research are presented as well as the practical implications, limitations and suggestions for future lines of investigation.

## **2. LITERATURE REVIEW**

### **2.1. The evolution of the consumer society**

The concept of consumer society appears to be allied to the contemporary era, characterized as the era of the masses. It first appeared in the United States of America after the second world war, at a time when the need to restructure countries after a major conflict, led to the adoption of measures capable to rebuild economies. As the priority was manufacturing in volume, industrial development gave rise to a series production of durable and standardized goods, which after a certain time became difficult to sell, causing an excess supply for the needs of consumers. (Firat et al., 2013; Sheth, 2020; Ong et al., 2021).

According to Boso et al. (2019), due to the excessive offer in the market, companies have developed aggressive and seductive marketing strategies to persuade consumers, whereas the incentive to purchase was so aggressive that individuals develop constant consumption needs. The scarcity of income by part of families led financial institutions to create credit lines, thus, financing consumption quickly, easily and effectively (Gilaninia et al., 2011; Zwanka & Buff, 2021).

The trend towards consumerism took place after the industrial revolution, at a time when modern and capitalist societies began mass production. As the main objective of companies was profit and economic development, individuals were influenced daily by the media through short and direct messages. Irrational consumption brought social, economic and environmental consequences such as the manipulation of individuals feelings, the indebtedness of families, environmental degradation and the irrational use of resources (Afflerback et al., 2013; Kucuk, 2016).

By the end of the 20<sup>th</sup> century, the progressive advancement of technologies gave way to excessive consumption, unable to distinguish the necessary from the desirable. With the increase of purchasing power due to the easiness of financing, individuals began to consume impulsively, drastically changing their behavioral patterns. At a time when globalization and the reduction of economic barriers were substantially expanding, technological developments of the late 20th century were so significant that individuals were conditioned to accept them (Hesham et al., 2021; Sheth, 2020).

For Wang (2014) and Ong et al., 2021, the technological progress has completely changed the flow of information to consumers. The way companies communicated has evolved considerably, due to the transfer of control to consumers. This was confirmed by the increased access to information that emerged at the beginning of the 21st century, which made individuals more demanding and informed. As such, organizations were forced to readapt the form of communication, valuing aspects such as reputation, appreciation and loyalty of customers (Ioană & Stoica, 2014).

The current behavioral pattern of individuals is very different from the previous decades. In an era dominated by quality and continuous improvement in services, new binding opportunities were developed between companies and customers. As competition between organizations is increasing, the evolution of proximity between stakeholders aims to build relationships of trust and long-term proximity (Gomez-Corona et al., 2016; Hesham et al., 2021).

Taking into account the literature review regarding the consumer society, the following research hypotheses were formulated:

***Hypothesis 1:*** *Since the habits of the consumer society have been changing in recent decades due to numerous external factors, it is assumed that the pandemic has awakened new needs and demands in consumers.*

***Hypothesis 2:*** *Taking into account the progressive advance of technologies, it is assumed that the pandemic has awakened the need to develop new business models capable of meeting consumers' needs.*

## **2.2. State of the art on consumers behavior**

The study of consumers behavior is a recent discipline which consists of analysis processes to understand when individuals choose, buy or use products or services to satisfy their needs and desires. The comprehension of consumption patterns obliges

companies to develop strategies to identify the true motivations and desires of consumers, consequently, assisting organizations in the development of new products, new forms of communication and distribution (Hawkins & Mothersbaugh, 2016; Sharabati et al., 2014).

The individual's behavior is influenced by their motivations, feelings and thoughts, but it can also have external influence. Internal stimuli can be associated to personal desires, such as traveling, visiting a monument or purchasing a certain good or service, on the other hand, external stimuli are related to advertisements and advertising messages, with the purpose to influence consumers in their marketing process and buying decision (Hall et al., 2011; Zhao et al., 2014).

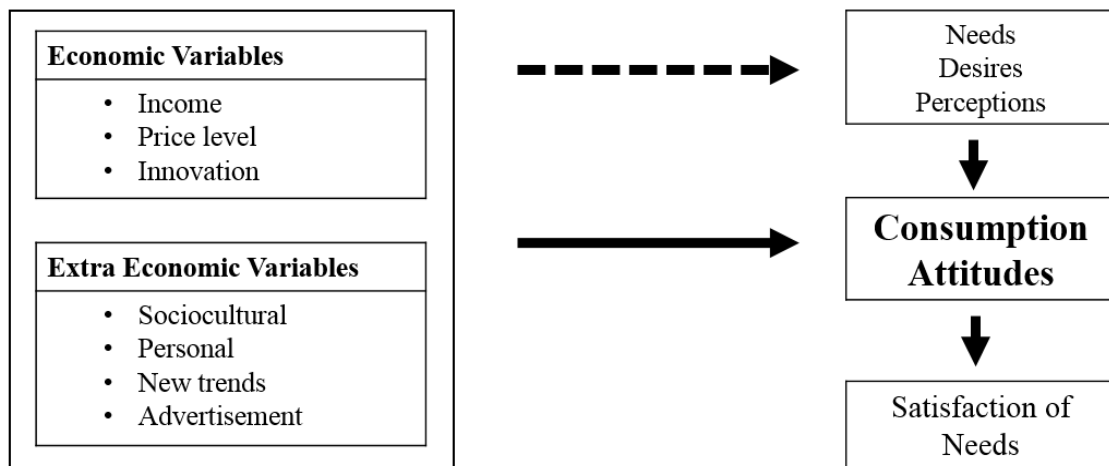
According to Zwanka & Buff (2021) and Hall et al. (2011), the development of external stimuli by part of companies, aims to create new needs that consumers did not have until then. Being so, if the stimulus causes internal changes in individuals in terms of their motivations and feelings, there is a discrepancy between the two circumstances – the desired condition and the real condition.

For Oliver (2014) and Zwanka & Buff (2021), these two circumstances overlap with two different types of needs; the needs of expression and the utilitarian needs. The needs of expression are related to the desires that consumers observe around them, whether by cultural, social or personal influence. They are associated with visual needs, interconnected to the image, which may influence individuals in the process of integration into society. In the other aspect, utilitarian needs correspond to the desires to satisfy basic daily needs, such as, purchasing food items, buying clothes, amongst others. (Zhao et al., 2014).

Maslow's theory of needs, developed in the 1940s, reveals that there are five categories of human needs: physiological, security, relationship, esteem and personal fulfillment all arranged in a pyramid shape (Koltko-Rivera, 2006; Tikkanen, 2007). The basic or physiological needs, such as eating, drinking and breathing are in the base of the pyramid. Next, are the security needs such as stability and protection. The needs for social relationships that correspond to the need for affection and social integration are located at the third level. At the penultimate level, are the needs of esteem, which correspond to the desire of individuals to be confident, dignified and respected. Finally, in the fifth level, are the needs for personal fulfillment that include the development of

personal characteristics such as creativity, spontaneity, problem solving and the absence of prejudice (Sharabati et al., 2014; Sheth, 2020; Ong et al., 2021).

The multiplicity of needs, desires and perceptions developed by consumers has a direct impact on their consumption attitudes. In fact, current consumption patterns today differ significantly from previous decades, as they are conditioned by multiple economic and extra-economic variables that directly and indirectly influence their attitudes when deciding to satisfy their needs (Sheth, 2020; Ong et al., 2021; Ajzen, 2015). Figure 1 refers to a conceptual model that relates the previously mentioned concepts.



**Figure 1.** Conceptual model

According to Sheth (2020) and Ong et al. (2021), economic variables correspond to all economic factors that have a direct implication on the consumption habits of individuals, either positively or negatively. As a result, the context of countries in parameters such as employment, access to credit, wages and market supply, are important an economic stimulus that condition the behavior of individuals. In this way, several authors consider three economic variables that influence and condition their consumption patterns; the income available to families, price level in the market and emergence of innovative goods and services (Ajzen, 2015).

The family's available income corresponds to the monthly monetary amount that households have for their expenses intended for consumption or savings. As consumption represents a function of income, it is possible to predict that a change in the available income will be reflected in household consumption habits. Being so, and

although the needs may be unlimited, the available wages for consumption can be an obstacle to the satisfaction of the individual's desires. (Hall et al., 2011; Meyer & Mok, 2019).

In another perspective, and according to Hesham et al. (2021) and Sheth (2020), the variation in the price level is a constant phenomenon in economy. If, on one hand, a general increase on the price level – inflation, foresees a decrease in the purchasing power of consumers, on the other hand, a general decrease on the price level – deflation, presumes an increase in the purchasing power of consumers. As a result, the level of consumer consumption depends directly on the price level of goods and services to which the market obeys. (Sharabati et al., 2014).

The increase on demand for innovative products and services is essentially due to the new capabilities and features associated with the goods. The option to purchase innovative products is not widespread, since it is necessary to identify which consumers may be open to its use. Aspects such as price and financial adequacy are essential factors in the acquisition of innovative products and services (Ong et al., 2021; Kindström & Kowalkowski, 2014).

In this context, the following research hypothesis was formulated:

***Hypothesis 3: Consumers consider that economic variables (income, price level and innovation) affect consumption in the same manner, before and during the COVID-19 pandemic.***

For Simões et al. (2016), extra-economic variables influence consumption transversally to the economic variables. The literature reinforces four extra-economic variables that condition consumers behavior (sociocultural variable, personal variable, fashion and advertising). Therefore, the society in which individuals are included, their personal tastes, adherence to new trends and the influence of marketing, are extra-economic examples that change society's behavioral patterns. (Sharabati et al., 2014).

Sociocultural aspects have the most profound influence on the consumption patterns of individuals. Due to its inclusion in certain social groups, the standardized development of consumption behaviors affects consumers' attitudes when they satisfy their consumption needs. The distance between cultures and the creation of personal habits and routines, means that there are cultural discrepancies at various levels (Routray et al., 2015; Simões et al., 2016).



Although individuals belong to certain social and cultural groups, behaviors as consumers are not exactly the same, and may vary from individual to individual. This variation is explained by several factors such as personal needs, age, gender, education, occupation and available income (Hesham et al., 2021; Sheth, 2020; Ong et al., 2021; Sharabati et al., 2014).

According to O'Cass & Siahtiri (2013), the new trends correspond to a sociocultural phenomenon that expresses certain habits and mores at a given moment. They can be shared in various forms and channels, such as advertising or through innumerable individuals, like digital influencers. Consequently, the new trends refer to various goods and services that, once adopted by consumers, create a generalized consumption trend (Simoes et al., 2016).

Advertising emerges as a dissemination strategy that seeks to encourage consumers to follow certain behaviors. Its main objective is to promote products and services in different types of media and platforms. Advertising is present in the daily lives of individuals and plays an important role in society's consumption options (Hesham et al., 2021; Sheth, 2020). That said, we are able to formulate the last research hypothesis:

***Hypothesis 4: Consumers consider that extra-economic variables (sociocultural, personal, new trends and advertising) affect consumption equally before and during the COVID-19 pandemic.***

Recent studies point the pandemic to digital innovation, sustainability, the exponential increase in remote working and significant changes in consumer behavior. In the same vein, millions of people have opted for digital channels to make their purchases, making it clear that online commerce is here to stay (Zwanka & Buff, 2021; Hesham et al., 2021). In turn, according to Sheth (2020) and Ong et al. (2021), companies continue to invest and develop e-commerce strategies in order to better interact with consumers and offer a good shopping experience. At a time when the physical proximity between companies and consumers has gone into the background, small details such as product innovation, monitoring of new trends and communication with the customer have become fundamental to the purchase decision.

In Table 1 we can discern a summary of the definitions and variables under study as well as the questions developed for the questionnaire applied to consumers.

**Table 1.** Variables under investigation and questionnaire questions

<b>Variable</b>	<b>Definition</b>	<b>Author</b>	<b>Questions</b>
Income	Household income corresponds to the monthly monetary amount that households have for their expenses related to consumption or savings. As consumption is a function of income, it is possible to predict that a change in household disposable income will be reflected in their consumption habits.	Hall et al. (2011); Meyer and Mok (2019)	1) The level of income directly affects the level of consumption. 2) Part of my income goes to savings and / or investment. 3) I managed to allocate my income according to the consumption needs.
Price level	The variation in the price level is a constant phenomenon in economy. A general increase in price level (inflation) foresees a decrease in the purchasing power of consumers. On the other hand, a general decline in the price level (deflation) presumes an increase in consumers' purchasing power. In short, the level of consumption of consumers depends directly on the price level of goods and services.	Einav et al. (2010); Sharabati et al. (2014)	4) The price level of a certain good or service influences my purchase decision. 5) When loyal to a particular brand, the existing price level has little, or no influence in my consumption. 6) The price level of a certain good or service could affect my income level, which sometimes led me to make choices.
Innovation	The growing demand for innovative products is mainly due to the new capacities and features associated with the goods. The option to purchase an innovative product is not widespread, since it is necessary to identify which	Aurich et al. (2010); Kindström	7) Innovation is a fundamental factor in the purchase decision process. 8) The purchase of innovative goods

	consumers may be open to its use. Aspects such as price and financial availability are essential factors in the acquisition of innovative products and services.	and Kowalkowski (2014)	or services stimulated a greater financial effort, which, in certain times was an obstacle to purchase. 9) As a consumer, I tried to purchase innovative goods, due to their added value.
Sociocultural	Sociocultural aspects have the most profound influence on the consumption patterns of individuals. Due to its inclusion in certain social groups, the standardized development of consumption behaviors affects consumers' attitudes when they satisfy their consumption needs.	Routray et al. (2015); Simoes et al. (2016)	10) My behavior as a consumer was influenced by socio-cultural factors. 11) In the society to which I belong, the widespread communication is equally distributed. 12) The power of socio-cultural influence is greater when it comes to visible goods.
Personal	Although individuals belong to certain social and cultural groups, behaviors as consumers are not exactly the same, and may vary from individual to individual. This variation is explained by several factors such as personal needs, age, gender, educational qualifications, occupation and disposable income.	Hall et al. (2011); Sharabati et al. (2014)	13) My behavior as a consumer differed from another consumer belonging to the same social group. 14) Factors such as age, gender and other personal variables, created unique and specific characteristics when meeting consumption needs.

			15) My personal desires were identified by the needs of society.
New trends	<p>The new trends correspond to the characteristic behaviors of a social group, in a given period. It refers to several goods and services that, once adopted by consumers, create a generalized consumption trend.</p> <p>Fashion can be shared through various forms and channels such as advertising, and by innumerable individuals such as digital influencers.</p>	O'Cass and Siahtiri (2013); Simoes et al. (2016)	<p>16) The new trends have influenced my act of consumption.</p> <p>17) The new trends were an asset in the process of integration in society.</p> <p>18) I believe that digital influencers are individuals who followed and transmit the new trends to society.</p>
Advertisement	<p>Advertising emerges as a dissemination strategy that seeks to encourage consumers to follow certain behaviors. Its main objective is to promote products and services in different media and platforms. Advertising is present in the daily lives of individuals and plays an important role in society's consumption options.</p>	Hall et al. (2011); Moore and Lee (2012)	<p>19) Advertising influenced my behavior as a consumer.</p> <p>20) I believe that the impact of advertising has made the process of loyalty to a certain brand difficult.</p> <p>21) The way digital influencers communicated with the public is a type of non-intrusive and consumer-friendly advertising.</p>

### **3. METHODOLOGY**

For the present research, a quantitative methodology was used. This methodology is the most suitable for the present study as it provides more conclusive solutions to the questions developed. As the data is gathered and analyzed according to an adjusted methodology, the reliability of the collected responses is high. Moreover, the advantages of the quantitative method are the possibility to generalize the collected data, taking into account the sample size (Choy, 2014; Queirós et al., 2017; Rahman, 2016).

The questionnaire applied in the present research was mostly developed following the literature review (table 3). Since the literature on consumer behavior presented some gaps on the comparison level with other variables that affect consumer behavior, it was decided to promote a questionnaire that addresses the other variables under study and compare them in two different periods; before the pandemic and during the COVID-19 pandemic. The questionnaire consisted of 42 questions, 21 questions to assess consumer behavior before the pandemic, and another 21 questions to assess consumer behavior during the COVID-19 pandemic. For all questions we used a 7-point likert scale, where 1 corresponded to "strongly disagree" and 7 to "strongly agree".

Following its conception, the questionnaire was applied online and the responses were collected through the social network Facebook (convenience sampling). The questionnaire was sent to 3000 people present in university student groups and 237 valid responses were received. Hence, the response rate was 7.9%. The collection of responses started on 2020/10/21 and ended on 2020/12/06.

Afterwards, the collected data was exported and organized in Microsoft Excel and a GNU PSPP software was used for data analysis. To evaluate and compare the results obtained, we used the T-Student statistical test for paired samples, Descriptive Statistics and also Factor Analysis, thus allowing to analyze the existing contrast between the averages of the 7 variables under analysis before and during the pandemic (Nunes et al., 2015; Sto-Tomas et al., 2019).

#### **3.1 Sample Description**

Table 2 represents the characteristics of the collected sample considering; gender, age, education qualifications, occupation, income, nationality and district. Regarding the first item, from the 237 responses collected, 51.9% were female and 48.1% male. As for the average age, the value obtained is 28.54 years, with a standard deviation of 9.72. The youngest respondent is 16 years

old and the oldest 58 years old. The third parameter under analysis, refers to education qualification, 37.13% have a master's degree, followed by 33.75% undergraduate. Regarding the occupation of respondents, the majority, 67.5% are employed and the remaining 32.5% are students. As for the level of monthly income, 43.88% of respondent's earn between 600 € and 1200 €. Finally, the collected responses are entirely from the Portuguese mainland, Porto is the district with the largest number of responses collected, 52.73%.

**Table 2.** Sample characterization

<b>Gender</b>	Male (%)	114 (48,1%)
	Female (%)	123 (51,9%)
<b>Age</b>	Average	28,54
	Standard deviation	9,72
	Minimum-Maximum	16-58
<b>Education</b>	Primary level (%)	2,11%
	Professional level (%)	7,18%
	Secondary level (%)	17,30%
	Undergraduate (%)	33,75%
	Master (%)	37,13%
	PhD (%)	2,53%
<b>Occupation</b>	Student (%)	32,5%
	Employee (%)	67,5%
<b>Income</b>	Till 600€ (%)	29,12%
	600€ - 1200€ (%)	43,88%
	1200€-1800€ (%)	15,61%
	1800€-2400€ (%)	6,75%
	Above 2400€ (%)	4,64%
<b>District</b>	Aveiro	1,69%
	Braga (%)	17,71%
	Castelo Branco (%)	0,42%
	Coimbra (%)	0,42%
	Faro (%)	0,42%
	Leiria (%)	2,11%
	Lisboa (%)	16,45%
	Porto (%)	52,73%
	Santarém (%)	0,84%
	Setúbal (%)	2,94%
	Viana do Castelo (%)	2,11%
	Vila Real (%)	1,27%
	Viseu (%)	0,84%

### 3.2 Statistical Analysis T -Student and Descriptive Statistics

The T test for paired samples allows inferring on the equality of means of two independent samples, the observed values in one sample are independent from the values observed in the other sample. In this case, the hypothesis to be tested will be the equality of means between the two pairs of observations. As each case is analyzed twice - before the pandemic and during the pandemic - pairs of observations are formed, the differences are tested via GNU PSPP statistical software (Nunes et al., 2015; Sto-Tomas et al., 2019).

The statistical hypotheses to be tested are:

$$H_0 : \mu_1 = \mu_2 \quad \& \quad H_1 : \mu_1 \neq \mu_2$$

Assumptions: normal population or sufficiently large sample size.

As the sample size is  $n = 21 < 30$ , then we can only apply the T test for paired samples if the results obtained before and during the pandemic are normal.

In the same manner, an exploratory analysis of the results obtained was also performed and inserted in the descriptive statistics. The averages of the obtained classifications, the variance, the standard deviation, the maximum value and the minimum value were addressed.

In the first variable under analysis, it was verified whether the level of income of individuals affected the level of consumption during the pandemic. In addition, since the pandemic has developed new consumption needs, consumers were also asked about savings / investment and the ability to manage their income according to their needs, as shown in Table 3.

**Table 3.** Descriptive Statistics and T Test - Variable Yield

	Average	Standard Deviation	Variance	T Student Test	P-value
Consumption Level (Before)	5,19	1,55	2,39	-7,89	0,000
Consumption Level (During)	6,03	1,37	1,87		
Savings / Investment (Before)	5,19	1,52	2,32	-4,06	0,000
Savings / Investment (During)	5,59	1,60	2,56		
Needs Management (Before)	5,67	1,42	2,02	2,58	0,011
Needs Management (During)	5,43	1,41	1,99		

Regarding the level of consumption, since  $t = -7.89$  with a significance level of 5%,  $H_0$  is rejected. Thus, through statistical analysis, it was concluded that, with 95% of confidence level, the impact of income on the level of consumption was not the same before and during the pandemic on the level of consumption.

In another aspect, in savings / investment, as  $t = -4.06$  with a significance level of 5%,  $H_0$  is rejected. Thus, through statistical analysis, it was concluded that, with 95% of confidence level, the available income of individuals for savings and / or investment was not the same before the pandemic and during the pandemic.

Finally, in managing income according to personal needs, such as  $t = 2.58$  with a significance level of 5%,  $H_0$  is not rejected. Consequently, through the statistical test, it was possible to verify that, with 95% of confidence level, individuals were able to manage their income according to their consumption needs in the two moments under analysis.

Throughout the second variable, individuals were asked whether the price level influenced their consumption decisions during the pandemic. In the same manner and taking into account the other effects of the pandemic, factors such as loyalty and the influence of income were also addressed, taking into account price fluctuations, as shown in Table 4.

**Table 4.** Descriptive Statistics and T-Test - Variable Price Level

	Average	Standard Deviation	Variance	T Student Test	P-value
Consumer Decision (Before)	5,79	1,47	2,16	-1,22	0,223
Consumption Decision (During)	5,92	1,23	1,51		
Consumer Loyalty (Before)	4,16	1,75	3,05	1,21	0,227
Consumer Loyalty (During)	4,01	1,73	3,01		
Income Influence (Before)	5,39	1,49	2,23	0,41	0,685
Income Influence (During)	5,35	1,36	1,85		

With regards to consumption decision, taking into account the result of the statistical test  $t = -1.89$ , with a significance level of 5%,  $H_0$  is rejected. Thus, with 95% of confidence level, it was possible to observe that the impact of the market price level on consumption decisions was not the same before and during the pandemic.

When addressing to consumers loyalty, since  $t = 1.21$ ,  $H_0$  is not rejected with a significance level of 5%. Definitely, through statistical analysis, it was concluded that, with 95% of confidence level, consumer loyalty has not undergone major changes before and during the pandemic.

Finally, with regards to the influence of income on price fluctuation, as the result of the t-test = 2.58, with a significance level of 5%,  $H_0$  is not rejected. Thus, it was concluded that with 95% of confidence level, the influence of income taking into account the price fluctuation did not fluctuate in the two moments under analysis.



Addressing the third variable under study, individuals were asked about the importance of this factor when meeting consumption needs before and during the COVID-19 pandemic. Therefore, through table 5, it was necessary to ascertain whether the acquisition of innovative goods and services stimulated a greater financial effort and whether the option of choosing products with innovative characteristics was due to their added value.

**Table 5.** Descriptive Statistics and T Test - Innovation Variable

	Average	Standard Deviation	Variance	T Student Test	P-value
Consumer Decision (Before)	4,88	1,52	2,30	-0,20	0,838
Consumption Decision (During)	4,86	1,46	2,13		
Financial Effort (Before)	4,60	1,55	2,41	-4,49	0,000
Financial Effort (During)	5,05	1,50	2,26		
Aggregate Value (Before)	4,35	1,69	2,85	-0,79	0,428
Aggregate Value (During)	4,41	1,64	2,68		

Regarding the consumption decision, since the result of the t-test = -0.20, with a significance level of 5%, H<sub>0</sub> is rejected. Definitely, with 95% of confidence level, it was concluded that the decision to consume innovative goods and services was not the same before and during the pandemic.

Therefore, with regards to the financial effort for the acquisition of innovative goods, considering the t test = -4.49, H<sub>0</sub> is rejected with a significance level of 5%. In fact, it can be perceived through statistical analysis that the financial effort to acquire these same assets was not the same before and during the pandemic, with a confidence level of 95%.

Finally, when addressing the added value of innovative goods, the result of the t-test = -0.79, with a significance level of 5%, H<sub>0</sub> is rejected. Thus, with a confidence level of 95%, It was possible to confirm that the acquisition of innovative goods differed in the two moments under analysis.

With regards to the socio-cultural variable, respondents were asked whether their behavior as consumers was influenced by socio-cultural factors. In addition, they were also asked whether the communication spread equally in the two moments under analysis and whether the socio-cultural aspect had a greater influence on visible goods, as can be seen from table 6.

**Table 6.** Descriptive Statistics and T Test - Sociocultural Variable

	Average	Standard Deviation	Variance	T Student Test	P-value
Consumer Behavior (Before)	4,16	1,62	2,62	-1,68	0,094
Consumer Behavior (During)	4,32	1,62	2,64		
Standardized Communication (Before)	4,09	1,50	2,26	0,89	0,373
Standardized Communication (During)	4,01	1,35	1,83		
Visible Goods (Before)	4,79	1,54	2,38	-2,15	0,033
Visible Goods (During)	4,99	1,40	1,95		

Regarding the influence of the socio-cultural aspect on consumer behavior, taking into account the result of the t-test = - 1.68, with a significance level of 5%, H<sub>0</sub> is rejected. Consequently, with 95% of confidence level, we can conclude that the impact of the socio-cultural aspect on consumer behavior was not the same before and during the pandemic.

For the next factor, it was investigated whether the communication disseminated by the various media remained unchanged in the two moments under analysis. Since the t test = 0.89, with a significance level of 5%, H<sub>0</sub> is not rejected. Thus, it was concluded through statistical analysis that the communication disseminated before and during the pandemic did not change, with 95% confidence level.

Finally, as t = -2.15 with a significance level of 5%, H<sub>0</sub> is rejected. Therefore, through the statistical test, it was possible to verify with 95% of confidence level that the power of socio-cultural influence on visible goods was not the same before and during the pandemic.

Regarding the personal variable, individuals were asked about the existence of behavioral differences between individuals in the same social group before and during the COVID-19 pandemic. In addition, as can be seen from Table 7, we discussed how the unique characteristics may influence the satisfaction of needs and whether the personal desires of individuals are equal to the needs of society.

**Table 7.** Descriptive Statistics and T-Test - Personal Variable

	Average	Standard Deviation	Variance	T Student Test	P-value
Behavioral Differences (Before)	4,69	1,50	2,24	-1,97	0,050
Behavioral Differences (During)	4,88	1,37	1,88		
Unique characteristics (Before)	5,38	1,29	1,65	1,13	0,259
Unique characteristics (During)	5,28	1,30	1,68		
Equal Needs (Before)	4,10	1,44	2,08	0,05	0,957
Equal Needs (During)	4,09	1,42	2,01		

Regarding behavioral differences and taking into account the result of the statistical test  $t = -1.97$ , with a significance level of 5%,  $H_0$  is rejected. In this way, it was possible to verify that the behavioral differences between individuals of the same social group are not the same before and during the pandemic.

When, addressing the unique characteristics that meet personal needs, since  $t = 1.13$ ,  $H_0$  is not rejected with a significance level of 5%. Thus, through statistical analysis, it was concluded with 95% of confidence level, that unique characteristics at the time of meeting the needs did not undergo significant changes in the two moments under analysis.

Finally, as the result of the t-test = 0.05, with a significance level of 5%,  $H_0$  is not rejected. Thus, with 95% of confidence level, it was confirmed that the equality of needs did not fluctuate significantly in the two moments under analysis.

In the sixth variable under analysis, it was intended to ascertain how the new trends influenced the level of consumption. In the same sense and taking into account table 8, individuals were asked if this variable helped in the integration process in society and if digital influencers followed and transmitted the new trends in the two analyzed moments.

**Table 8.** Descriptive Statistics and T-Test - New Trends Variable

	Average	Standard Deviation	Variance	T Student Test	P-value
Consumption Level (Before)	4,44	1,79	3,21	2,85	0,050
Consumption Level (During)	4,16	1,59	2,53		
Society integration (Before)	4,15	1,67	2,79	-0,04	0,966
Society integration (During)	4,15	1,62	2,61		
Digital Influencers (Before)	4,72	1,65	2,71	1,63	0,104
Digital Influencers (During)	4,82	1,48	2,20		

Regarding the effect of new trends in the level of consumption, and since the result of the t test = 2.85, with a significance level of 5%,  $H_0$  is not rejected. In this sense, with a 95% confidence level, it can be seen that the impact of new trends on the level of consumption was the same before and during the COVID-19.

Therefore, with regards to new trends as a relevant factor of integration into society and considering the t-test = -0.04,  $H_0$  is rejected with a significance level of 5%. Actually, it can be seen through statistical analysis that the impact of new trends in the process of integration in social groups was not the same before and during the pandemic, with 95% of confidence level.

Finally, when considering the digital influencers as individuals who followed and transmitted the new trends, since the result of the t-test = -1.73, with a significance level of 5%,  $H_0$  is rejected. Thus, with 95% of confidence level, the way digital influencers transmitted the new trends differed in the two moments under analysis.

In the last variable under analysis, advertising, the sample collected intended to determine whether advertising influenced consumer behavior. In this sense, individuals were also asked whether the impact of advertising hindered the process of loyalty to a particular brand and whether the way in which digital influencers communicated and transmitted new market trends was a type of non-intrusive and consumer-friendly advertising, as shown in table 9.

**Table 9.** Descriptive Statistics and T-Test - Advertising Variable

	Average	Standard Deviation	Variance	T Student Test	P-value
Consumer Behavior (Before)	4,32	1,64	2,69	0,35	0,724
Consumer Behavior (During)	4,29	1,60	2,54		
Loyalty Process (Before)	3,97	1,69	2,87	-2,06	0,041
Loyalty Process (During)	4,17	1,59	2,54		
Digital Influencers (Before)	4,49	1,53	2,34	-0,26	0,796
Digital Influencers (During)	4,51	1,61	2,58		

When addressing to the influence of advertising on consumer behavior, and since the result of the statistical test  $t = 0.35$ , with a significance level of 5%,  $H_0$  is not rejected. In this sense, with 95% of confidence level, it can be seen that the influence of advertising on consumer behavior was the same before and during the pandemic.

As a follow-up, and considering that advertising hindered the consumer loyalty process, such as  $t = -2.06$ ,  $H_0$  is rejected with a significance level of 5%. Thus, through statistical analysis, it was concluded with 95% of confidence level, that the way by which advertising influenced the consumer loyalty process was not the same in the two moments under analysis.

Ultimately, the way in which digital influencers communicated with the public was analyzed and whether it was a type of non-intrusive and consumer-friendly advertising. As the result of the test  $t = -0.26$ , with a significance level of 5%,  $H_0$  is rejected. In this way, it was proved with 95% of confidence level, the way digital influencers communicated with the public, considering aspects such as non-intrusive communication and inviting consumption, were not the same before and during the pandemic. Table 10 synthesizes the results obtained with T-Test.

**Table 10.** Summary of the T-Test Results

Variable	Conditioning	H0 ( $\mu_1 = \mu_2$ )	H1 ( $\mu_1 \neq \mu_2$ )
Income	Consumption Level	Rejected	Not Rejected
	Savings / Investment	Rejected	Not Rejected
	Needs Management	Not Rejected	Rejected
Price level	Consumer Decision	Rejected	Not Rejected
	Consumer Loyalty	Not Rejected	Rejected
	Income Influence	Not Rejected	Rejected
Innovation	Consumer Decision	Rejected	Not Rejected
	Financial Effort	Rejected	Not Rejected
	Aggregate Value	Rejected	Not Rejected
Sociocultural	Consumer Behavior	Rejected	Not Rejected
	Standardized Communication	Not Rejected	Rejected
	Visible Goods	Rejected	Not Rejected
Personal	Behavioral Differences	Rejected	Not Rejected
	Unique characteristics	Not Rejected	Rejected
	Equal Needs	Not Rejected	Rejected
New trends	Consumption Level	Not Rejected	Rejected
	Society integration	Rejected	Not Rejected
	Digital Influencers	Rejected	Not Rejected
Advertisement	Consumer Behavior	Not Rejected	Rejected
	Loyalty Process	Rejected	Not Rejected
	Digital Influencers	Rejected	Not Rejected

## 4.2 Factor Analysis

In order to analyze consumer behavior before and during the pandemic, a factor analysis was performed using components with varimax rotation. Pre-tests were also performed, such as the determinant of the correlation matrix, Cronbach's alpha coefficient, KMO (Kaiser-Meyer-Olkin) of sample adequacy and the Bartlett sphericity test to confirm the possibility to carry out a factor analysis.

According to Yong & Pearce (2013), factor analysis varies between zero and one and can be considered more reliable as the KMO statistic approaches one. In the same manner, the factor analysis is performed on all the data collected and the data interpretation takes into account the value of the KMO statistic obtained.

Regarding the variable yield, and addressing to the Bartlett test, the null hypothesis is rejected. Since  $KMO = 0.622$ , it is considered an average value for statistical treatment and since Bartlett's test is 282,700 and  $p\text{-value} = 0.000$ , it is possible to perform factor analysis at scale. In the same sense, through the varimax rotation, it was observed that two factors were obtained resulting

from the factor analysis, which explain 61.152% of the total variance from all data. The first factor explains 38.791% of the data and the second factor 22.391%.

In factor 1 "Income and Savings / Investment", the factor analysis grouped the following variants - income management according to consumption needs and savings and / or investment fulfilment, both variants at the two moments under analysis. Thus, through factor analysis, in factor 1 it was possible to group two constructs: income management and the realization of savings / investment, taking into account the disposable income for consumers, remained unchanged in both constructs.

In factor 2 "Consumption Level", it was possible to verify that the variant level of consumption remained isolated from the rest of the two moments under analysis - before the pandemic and during the pandemic. Thus, through factor analysis, it appears that in the income component, factor 1 groups income management and savings / investment and factor two isolates the variant level of consumption (table 11).

**Table 11.** Yield Component Matrix

	Components	
	Factor 1 Income and Savings / Investment	Factor 2 Consumption level
2.3) I managed to allocate my income according to the consumption needs.	0,804	
1.3) I managed to allocate my income according to the consumption needs.	0,744	
2.2) A part of my income goes to savings and / or investment.	0,711	
1.2) A part of my income goes to savings and / or investment.	0,670	
1.1) The level of income directly affected the level of consumption.		0,854
2.1) The level of income directly affected the level of consumption.		0,762
Bartlett's Test (Significance)	282,700 (0,000)	
KMO	0,622	
Percentage of Variance (%)	38,791	22,361

With regards to the variable price level and taking into account the Bartlett test, the null hypothesis is rejected. As  $KMO = 0.493$  it is necessary to mention that it is a low value for statistical treatment. Although it is not a good construct, it can be considered as a result. Therefore, since the Bartlett test is 46.412 and  $p\text{-value} = 0.000$ , it is possible to perform factor

analysis at scale. In the same follow-up, through the varimax rotation, it is possible to observe that two factors were obtained that result from the factor analysis, explaining 80.847% of the total variance of all data. The first factor - Loyalty - explains 47.448% and the second factor - Income affection - 33.400% of the data.

In factor 1 "Loyalty", it is possible to group the same variant before and during the pandemic, the existing price level has little or nothing influenced the consumption of individuals, when considering consumer loyalty. Consequently, for factor 1 and taking into account the variation in the price level in the two moments under analysis it is possible to conclude that customer loyalty remained stable, isolating itself from the other variants.

In factor 2 "Income", it appears that there is only one isolated variant - price level, that affects the level of income of consumers during the pandemic. Consequently, through factor analysis, it is possible to identify that loyalty and the allocation of income according to the price level were presented in different factors (table 12).

**Table 12.** Price Level Component Matrix

	Components	
	Factor 1 Loyalty	Factor 2 Income
2.5) When loyal to a particular brand, the existing price level has little, or no influence in my consumption.	0,847	
1.5) When loyal to a particular brand, the existing price level has little, or no influence in my consumption.	0,836	
2.6) The price level of a certain good or service could affect my income level, which sometimes led me to make choices.		0,994
Bartlett's Test (Significance)	46,412 (0,000)	
KMO	0,493	
Percentage of Variance (%)	47,448	33,400

With regards to the innovation variable, and according to the Bartlett test, the null hypothesis is rejected. Since  $KMO = 0.756$ , is considered an average value for statistical treatment and since the result of the Bartlett test = 539,628 and  $p\text{-value} = 0.000$ , innovation is considered a good construct, and it is possible to perform factor analysis at scale. Additionally, through varimax rotation, it was observed that only one factor was obtained from the factor analysis, which justified 53.727% of the total variance.

In the only factor resulting from the factor analysis "Financial Effort and Aggregate Value", all the variants under analysis are present: acquisition of innovative goods due to their added value,

innovation as a fundamental factor in consumption and the financial effort for the acquisition of innovative goods. Therefore, the contents from table 13, prove that the innovation variable is a good construct for factor analysis, since it groups all the variants under study in the two moments under analysis.

**Table 13.** Innovation Component Matrix

	<b>Component</b>
	<b>Factor 1</b> Financial Effort and Aggregate Value
2.9) As a consumer, I try to acquire innovative goods, due to their added value.	0,811
1.7) Innovation is a fundamental factor in the purchase decision process.	0,806
1.9) As a consumer, I tried to acquire innovative goods, due to their added value.	0,766
1.7) Innovation was a fundamental factor in the purchase decision process.	0,744
1.8) The purchase of innovative goods or services stimulated a greater financial effort, which at times was an obstacle to purchase.	0,626
2.8) The purchase of innovative goods or services encourages greater financial effort, which is sometimes an obstacle to purchase.	0,618
Bartlett's Test (Significance)	539,628 (0,000)
KMO	0,756
Percentage of Variance (%)	53,727

With regards to the socio-cultural variable, the null hypothesis is rejected taking into account the Bartlett test. Since KMO = 0.704, is considered an average value for statistical treatment and since Bartlett's test is 375,325 and p-value = 0.000, it was possible to perform factor analysis at scale. According to the varimax rotation, it was observed that two factors were obtained that result from the factor analysis, which explains 66.286% of the total variance of all data. The first factor explains 43.972% of the data and the second factor 22.314%.

In factor 1 “Visible Goods and Sociocultural Factors”, through factor analysis it was possible to group two variants before and during the pandemic; the sociocultural influence on visible goods and the influence of sociocultural factors on consumer behavior. Therefore, through factor 1, it appears that the behavioral patterns of individuals and visible goods are influenced by socio-cultural factors before and during the COVID-19 pandemic.

In factor 2 “Standardized Communication”, there is only one isolated variant - widespread communication. Thus, from table 14 data, it is possible to conclude that the standardization of communication in the second factor was isolated from the behavioral patterns and visible goods of the first factor.



**Table 14.** Sociocultural Component Matrix

	Components	
	Factor 1 Visible Goods and Sociocultural Factors	Factor 2 Standardized Communication
2.12) The power of socio-cultural influence is greatest when it comes to visible goods.	0,796	
2.10) My behavior as a consumer is influenced by socio-cultural factors.	0,793	
1.12) The power of socio-cultural influence was greater when it came to visible goods.	0,752	
1.10) My behavior as a consumer was influenced by socio-cultural factors.	0,735	
1.11) In the society to which it belongs, the widespread communication was equally distributed.		0,875
2.11) In the society to which it belongs, the widespread communication is distributed equally.		0,822
Bartlett's Test (Significance)	375,325 (0,000)	
KMO	0,704	
Percentage of Variance (%)	43,972	22,314

In the personal variable, the null hypothesis is rejected according to the Bartlett test. Bearing in mind that  $KMO = 0.489$ , it is considered a low value for statistical treatment. Although not a good construct, as the Bartlett test is 202.936 and  $p\text{-value} = 0.000$ , it was possible to perform factor analysis at scale. Approaching the varimax rotation, it was observed that two factors were obtained resulting from the factor analysis, explaining 77.905% of the total variance of all data. The first factor explains 46.663% of the data and the second factor 31.242%.

In factor 1 “Personal Desires”, through factor analysis it was possible to group the same variant before and during the pandemic - the personal desires of the respondents identified with the needs of society. In this sense, through the first factor it appears that the personal desires of consumers appear united in the same factor in the two moments under analysis, isolating themselves from the other variants.

In factor 2 “Behavioral Differences”, the same situation as described above occurs. The behavioral variant appears in the same factor before and during the pandemic. In short, through factor analysis, it was possible to identify that consumers' personal desires are inserted in factor one and the behavioral differences between individuals of the same social group appear in factor two, creating an antagonism between personal desires and behavioral patterns (table 15).

**Table 15.** Personal Component Matrix

	Components	
	Factor 1 Personal Desires	Factor 2 Behavioral Differences
1.15) My personal desires were identified by the needs of society.	0,907	
2.15) My personal desires are identified by the needs of society.	0,894	
2.13) My behavior as a consumer differed from another consumer belonging to the same social group.		0,868
1.13) My behavior as a consumer differed from another consumer belonging to the same social group.		0,837
Bartlett's Test (Significance)	202,936 (0,000)	
KMO	0,489	
Percentage of Variance (%)	46,663	31,242

With regards to the new trends variable, the null hypothesis according to the Bartlett test is rejected. Since  $KMO = 0.731$ , it is correct to say that this is an average value for statistical treatment and since Bartlett's test is 548.273 and  $p\text{-value} = 0.000$ , it was possible to perform factor analysis at scale. According to the varimax rotation, it was observed that two factors were obtained resulting from the factor analysis, which explain 71.399% of the total variance of all data. Thus, the first factor explains 53.052% of the data and the second factor 18.348%.

In factor 1 "Integration and Consumption", through factor analysis it was possible to group two variants before and during the pandemic - new trends help the process of integration in society and new trends influence consumption. Thus, in this factor, it appears that the new trends as a form of integration and consumption appear isolated from the other variants, creating a parallel between them.

In factor 2 "Digital Influencers", there was only one isolated variant before and during the pandemic - digital influencers are individuals who are aware of the new trends. Therefore, through table 16, it was possible to conclude that the first factor includes the variants of integration in society and consumption and in the second factor, digital influencers appear as individuals who are aware of new trends.

**Table 16.** New Trends Component Matrix

	Components	
	Factor 1 Integration and Consumption	Factor 2 Digital Influencers
2.17) New trends are an asset in the process of integration into society.	0,819	
2.16) The new trends influence my consumption.	0,806	
1.17) The new trends were an asset in the process of integration into society.	0,784	
1.16) The new trends have influenced my act of consumption.	0,754	
1.18) I believe that digital influencers were individuals who followed and transmitted the new trends in society.		0,883
2.18) I believe that digital influencers are individuals who monitor and transmit new trends in society.		0,874
Bartlett's Test (Significance)	548,273 (0,000)	
KMO	0,731	
Percentage of Variance (%)	53,052	18,348

Regarding the last variable, advertising, the null hypothesis according to the Bartlett test is rejected. Taking into account that  $KMO = 0.715$ , it is considered an average value for statistical treatment. Thus, as the Bartlett test is 527,163 and  $p\text{-value} = 0.000$ , it was possible to perform factor analysis at scale. Approaching the varimax rotation, it was observed that two factors were obtained that result from the factor analysis, which explain 70.304% of the total variance of all data. Thus, the first factor explains 50.608% of the data and the second factor 19.696%.

In factor 1 "Behavior and Loyalty", through factor analysis, it was possible to group two variants before and during the pandemic - advertising influences the behavior of individuals and hinders the process of loyalty. In this sense, through the first factor it was concluded that the behavior and loyalty of individuals taking into account advertising appear united in the same factor in the two moments under analysis, isolating themselves from the remaining variants.

In factor 2 "Digital Influencers", there was only one isolated variant in the two moments under analysis - the advertising spread by digital influencers is characterized as non-intrusive and inviting to consumption. Thus, in table 17, it was possible to conclude that behavior and loyalty fall into the first factor one and the advertising spread by influencers appears in factor two, creating an antagonism between, on the one hand, behavior and loyalty and, on the other hand, communication disseminated by digital influencers.

**Table 17.** Advertising Component Matrix

	Components	
	Factor 1 Behavior Loyalty	Factor 2 and Digital Influencers
2.19) Advertising influences my behavior as a consumer.	0,810	
1.20) I believe that the impact of advertising has made the process of loyalty to a certain brand difficult.	0,795	
2.20) I believe that the impact of advertising makes the process of loyalty to a certain brand difficult.	0,756	
1.19) Advertising has influenced my behavior as a consumer.	0,746	
1.21) The way digital influencers communicated with the public is a type of non-intrusive and consumer-friendly advertising.		0,905
2.21) The way digital influencers communicate with the public is a type of non-intrusive and consumer-friendly advertising.		0,888
Bartlett's Test (Significance)	527,163 (0,000)	
KMO	0,715	
Percentage of Variance (%)	50,608	19,696

## 5. DISCUSSION

In the first variable under analysis, income, with the exception of managing consumption needs, the level of consumption and savings / investment increased during the pandemic. Effectively, the level of consumption increased from 5.19 to 6.03, savings / investment had a variation from 5.19 to 5.59 and the capacity to manage the consumption needs of individuals decreased from 5.67 to 5.43. According to Hall et al. (2011) and Meyer & Mok (2019), since consumption and savings are two functions related to income, any change on these functions will influence the way individuals manage the available income according to their needs. Consequently, during the pandemic, individuals consumed more and made more savings / investments than before the pandemic.

In identical manner, when looking to the variable price level, with the exclusion of consumption decisions, consumer loyalty and the income influence on the market, price level decreased during the pandemic. According to the results obtained, the manner by which the price level influenced consumption decisions increased from 5.79 to 5.92, proving that during the pandemic the price of goods was a factor of attention for consumers. Furthermore, individuals' loyalty dropped from 4.16 to 4.01 and the influence of income on the price level had a slight decrease from 5.39 to 5.35.

Finally, according to Einav et al. (2010), since the variation in the price level is a constant phenomenon in economy, whether in a period of inflation or deflation, the purchasing power of consumers will undergo significant changes. When looking to the current situation, price level was the most important factor when meeting consumer needs. Nonetheless, the pandemic led to a significant reduction in the loyalty of individuals, and also a slight reduction in the influence of income on price fluctuation. (Sharabati et al., 2014).

In the third variable under study, innovation, with the exception of the decision to consume innovative goods, the financial effort to acquire these goods and their aggregate value increased during the pandemic. The biggest growth was registered in the financial effort from 4.60 before the pandemic to 5.05 during the pandemic, this means that individuals consider that they need a greater financial effort to acquire innovative goods during the pandemic COVID-19. Also, the aggregate value of innovative goods increased slightly from 4.35 to 4.41 and the decision to purchase this type of goods suffered a slight decrease from 4.88 to 4.86. According to Aurich et al. (2010) e Kindström & Kowalkowski (2014), since the demand for innovative products and services is essentially due to the new capacities and features associated with the goods, it is possible to conclude that, as the financial effort associated with these features increase the purchasing power of consumers decreases.

Regarding the socio-cultural variable, with the exception of standardized communication, the influence of the socio-cultural aspect on consumer behavior and the power of the influence of this aspect on visible goods, increased during the pandemic. When approaching the results obtained, the greatest variation occurred in the power of socio-cultural influence associated with visible goods, registering an evolution from 4.79 before the pandemic to 4.99 during the pandemic. Basically, the interviewed individuals considered that during the pandemic, the influence of the socio-cultural variable on visible goods is greater than the moment before the COVID-19 pandemic. In the same logic, the influence of the socio-cultural aspect on consumer behavior also increased to a lesser extent, varying from 4.16 to 4.32. Additionally, individuals considered that the widespread communication was more standardized before the pandemic, since the results obtained proved a decrease in this parameter from 4.09 to 4.01.

Taking into account the studies from Routray et al. (2015) and Simões et al. (2016), socio-cultural aspects significantly influence the consumption patterns of individuals. Since the pandemic emerged by the end of 2019, the influence of the socio-cultural aspect instigated the

attitudes and behaviors characteristic of consumers to change, consequently, developing new habits and routines.

Concerning the personal variable, with the exclusion of behavioral differences between consumers of the same social group, the influence of unique characteristics when meeting needs, and the equality of needs decreased during the pandemic. The most pronounced decrease occurred in the influence of unique characteristics when meeting needs, from 5.38 before the pandemic to 5.28 during the pandemic. In this manner, individuals considered that factors such as age, gender and other personal variables had a lower weight when meeting needs during the pandemic. Within the same logic, equal needs decreased slightly from 4.10 to 4.09 and behavioral differences between individuals in the same social group increased from 4.69 to 4.88, proving a distinct difference between behaviors during the pandemic. According to the studies by Sharabati et al. (2014) and Hall et al. (2011), although individuals belong to certain social and cultural groups, behaviors as consumers may vary from individual to individual, taking into account aspects such as personal needs, age, gender, literacy, occupation and available income.

In the new trend's variable, the aspect of integration into society remained unchanged in the two periods, standing at 4.15 in the two moments under analysis. In another aspect, the influence of new market trends on the level of consumption dropped considerably from 4.44 to 4.16, with regards to digital influencers as individuals who transmitted and followed new trends, respondents considered that during the pandemic there was a greater communicative effort on the part of these individuals, justifying their positive oscillation from 4.72 before the pandemic to 4.86 during the pandemic.

Studies by O'Cass & Siahtiri (2013) and Simões et al. (2016), consider that new trends express certain habits and customs at a given time, digital influencers were in part responsible for sharing these new customs during the pandemic. Since they shared new products and services through their digital channels, during the pandemic, they created a generalized consumption trend, assisting companies in the process of customer retention.

In the last variable under analysis, advertising, with the exception of influence of advertising on consumer behavior, the difficulty of the loyalty process and the way influencers communicated with the public increased during the pandemic. The biggest growth occurred in the difficulty on the loyalty process from 3.97 before the pandemic to 4.17 during the pandemic. Basically, as a consequence of the impact of advertising, it was more difficult for consumers to build customer

loyalty during the pandemic than before the pandemic. In the same logic, the way digital influencers communicated with the public slightly increased from 4.49 to 4.51 and the impact of advertising on consumer behavior decreased from 4.32 to 4.29 in the two periods under analysis. Taking into account that advertising goes through a dissemination strategy that seeks to encourage consumers to follow certain behaviors, it is evident that during the pandemic this was present in the daily lives of individuals, whether through digital influencers or through other channels. Therefore, it is correct to mention that it assumes an important role in society's consumption options and hinders the process of consumer loyalty to brands Hall et al. (2011) and Moore & Lee (2012).

## 6. CONCLUSIONS

In the present research, the factors that most influenced the behavior of individuals in the current pandemic situation were analyzed. According to Hawkins & Mothersbaugh (2016) and Sharabati et al. (2014), the study of consumers behavior is a complex field and difficult to understand due to the constant change in the way individuals satisfy their needs, hence the lack of study and constant analysis. The current research is based on the formulation of four research hypotheses:

***Hypothesis 1:*** *Since the habits of the consumer society have been changing in recent decades due to numerous external factors, it is assumed that the pandemic has awakened new needs and demands in consumers.*

***Hypothesis 2:*** *Taking into account the progressive advance of technologies, it is assumed that the pandemic has awakened the need to develop new business models capable of meeting consumers' needs.*

***Hypothesis 3:*** *Consumers consider that economic variables (income, price level and innovation) affect consumption in the same manner, before and during the COVID-19 pandemic.*

***Hypothesis 4:*** *Consumers consider that extra-economic variables (sociocultural, personal, new trends and advertising) affect consumption equally before and during the COVID-19 pandemic.*

With the emergence of the COVID-19 pandemic, the habits and routines of individuals significantly changed (Sheth, 2020; Ong et al., 2021). The emergence of large scale teleworking, distance learning and isolation caused visible changes in terms of consumption (Zwanka & Buff, 2021; Hesham et al., 2021). Businesses needed to reshape their business models and consumers were able to meet most consumer needs without moving (Sheth, 2020; Coibion et al., 2020).

From the seven variables under analysis, only performance and innovation had different results before and during the pandemic, registering different averages in all the factors analyzed. In another perspective, and according to the factor analysis test, it is important to emphasize that the best construct was in the innovation variable, and the second-best construct was in the new trend's variable.

Taking into account the hypotheses formulated through the literature review, it is important to mention that only hypothesis 1 and hypothesis 2 were accepted. In this sense, it is accepted that the pandemic has aroused new needs and demands in consumers and also that new business models have been developed to meet new consumption needs. Both hypotheses 3 and 4 were rejected due to the statistical results obtained through the developed questionnaires. Since different results were obtained before and during the pandemic, it is not possible to accept that the economic and extra-economic variables affected consumption in the same way. In this sense, to accept that the economic variable influenced consumption equally, all its constructs (income, price level and innovation) could not have varied significantly. It was enough for one of the constructs to vary significantly for the hypothesis to be rejected. The same applied to the extra-economic variable and its respective constructs (sociocultural, personal, new trends and advertising), thus justifying the rejection of hypotheses 3 and 4.

### **6.1. Practical and theoretical implications**

The main purpose to develop a questionnaire survey aimed at consumers, was to confirm whether the theoretical implications collected through the various studies were occurred in practice. In the same sense, the use of statistical tests allowed to create a relationship between theoretical data and data observed in the real world, thus, reaching the objective conclusions based on scientific knowledge. (Heale & Twycross, 2015).

The results suggested that the pandemic has changed consumption habits. Since most individuals remained in lockdown during the beginning of the year 2020, enabling online commerce to increase exponentially. In the same sense, and taking into account the results from the sample, amongst the 7 factors that influenced consumers in the pandemic phase, it was considered that income, innovation, new trends and advertising were the variables that suffered the most changes. Being so, the available income for consumption, demand for innovative goods and services, effect of new trends in the pandemic period and even communication directed at consumers were the variants that most influenced consumption during the COVID-19 pandemic.



The present research also aims to determine whether the pandemic changed the consumption habits of individuals and also what variables consumers considered crucial when meeting their consumption needs. It is important to note that has developed new consumption habits. The way people live, think and satisfy their needs has changed considerably, making companies adapt to new requirements and, in certain cases, readjust their business models.

The results from this research contribute to the development and clarification of scientific knowledge and provides insights for companies and policy makers about consumer behavior during the COVID -19 pandemic. Knowing the behavior of consumers, allows to determine socio-economic development strategies, in order to avoid a complete rupture in the economy.

## **6.2. Research limitations and future lines of investigation**

The limitations of the research are essentially related to the sample size. Since the sample contains only 237 validated responses and was applied in mainland Portugal, as the pandemic is still active, makes it difficult to collect a larger number of valid responses. In addition, the sample was only collected through social network Facebook, not including other individuals who do not have social networks. As a final limitation, it was also considered that the individuals' income remained unchanged in the two periods under analysis: before and during the pandemic.

As for future lines of investigation and taking into account the geographical limitation of the study, we propose to continue this investigation and expand the sample of participants. In the same sense, it is advisable to use of other methods of data collection, as well as the execution of different questionnaires, with a different scale, addressing different variables and quoting the following questions: Will high online consumption continue after the pandemic COVID-19? In terms of value, did consumer income increase or decrease during the pandemic? What are the biggest consumer expenditures in the pandemic phase? Taking into account the current situation, what are the essential characteristics that consumers look for when meeting their needs? According to the results obtained, to which specific sector could we frame this consumer behavior? How did companies adapt to new consumer demands? Have companies managed to maintain partnerships with their digital influencers? How have digital influencers adapted to new consumer realities? How did digital influencers communicate during the pandemic?

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