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The Impact of the COVID-19 Pandemic on Online Consumer Behavior: Applying the Theory of Planned Behavior

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Abstract: The present study applied the theory of planned behavior (TPB) to examine consumers' intention to shop online during the COVID-19 pandemic and its influence on purchasing behavior. The fear of shopping in a physical store due to COVID-19 was added to the model's key factors, which included attitudes towards e-shopping, subjective norms, and perceived behavioral control. The study involved 406 participants aged over 18, who were all residents of the Regional Unit of Thessaloniki. The findings indicated that during the pandemic, the factors that influenced online purchase intention differed from those that would affect future purchase intention, with the fear of shopping in a physical store being the most influential. In particular, the results revealed that attitudes towards e-shopping, subjective norms, perceived behavioral control and fear of shopping at a physical store positively affected the intention to make online purchases during the pandemic. In contrast, only attitudes toward e-shopping and perceived behavioral control affect future purchase intention. Furthermore, as expected, the intention to shop online influences actual online purchase behavior.

Keywords: online consumer behavior; e-shopping; theory of planned behavior; COVID-19; fear of shopping

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1. Introduction

On 31 December 2019, an infectious disease, subsequently named COVID-19 [1], was detected in Wuhan, China, and quickly spread throughout the world. On 11 March 2020, it was declared a pandemic, as it had spread simultaneously in many countries worldwide [2]. By 25 February 2021, confirmed COVID-19 cases numbered 112,209,815 worldwide, while deaths officially attributed to the disease stood at 2,490,776, and the number of countries it had spread to amounted to more than 223 [3]. Apart from health problems, the outbreak of the pandemic had serious financial ramifications [4–6], and caused significant changes in consumers' lifestyles and behaviors.

Due to the COVID-19 pandemic, consumer behavior has shifted, with an exponential increase in e-shopping. With the advent of the internet, businesses have become more familiar with selling products online, while consumers are attempting to make sound decisions about how and where to purchase a diverse array of products from a wide range of online stores. Consumers can buy products from online stores at any time and on any day, they want, without leaving their homes, and they can choose from a wide range of products [7]. Consumers also have free access to information about products or services and the ability to compare product/service features and prices [8], saving time and money [9]. Making online purchases is easier, faster [10], and more convenient [11,12]. On the other hand, e-shopping also hides several risks such as security of payments [13], lack of contact with the product, and inability to conduct product testing before making a purchase [8]. Complaints about e-shopping in Greece totaled 1396 in 2019, while 2770 were lodged in the first ten months of 2020, representing a 25.80% increase.

Several theories have been used to predict consumers' online behavior, such as the theory of reasoned action (TRA), the theory of planned behavior (TPB), and the technology acceptance model (TAM). The current study employs the theory of planned behavior [14] to describe the impact of the COVID-19 pandemic on Greek consumers' online purchasing behavior. According to Ajzen (1991) [14], TPB is applicable in many contexts, and hence we use it to predict consumer intention and online purchase behavior during and after the pandemic. The model's three determinants [14]—attitudes toward online shopping, subjective norm, and perceived behavioral control—have been used in a few studies to predict intention to shop online [15,16]. Several researchers, however, have examined them in conjunction with other factors [8,17–24] to explain which one influences intentions and behaviors in online shopping. Factors studied include perceived risks, perceived consequences, innovation, trust, confidentiality issues, and reliability, among others.

A study by [25] focusing on the adoption of e-banking has shown that the extended TPB model predicts intention better than the basic model. Taking this stream of research, we seek to sufficiently understand and predict consumers' intent to make online purchases. It's also intriguing to see how the theory relates to e-shopping during the global pandemic crisis. Thus, the current study employs the main components of the planned behavior theory [14]—attitudes toward online shopping, subjective norm, and perceived behavioral control—and the fear of shopping in a physical store. According to [26] (p. 2), the later factor is "a potential conditional factor that impact on purchase behavior, especially during the COVID-19 pandemic". In the present study, the dependent variables are the intention to shop online during and after the pandemic and the actual online behavior. The present study extends the literature on the theory of planned behavior to the understanding of online shopping by showing that amid a pandemic the factor "fear of shopping at a physical store" is very important for providers and consumers. Additionally, the outcomes of this research can be helpful for sale managers and executives as it provides a framework of customer behavior during pandemic (present or future).

2. Literature Review

2.1. Theory of Planned Behavior

Ref. [27] described the theory of planned behavior (TPB) as a framework for the conception, measurement, and empirical determination/identification of factors that determine behavior and intentional behavior (p. 544). The theory can help us understand what leads consumers to take a particular action [14,28]

The theory of reasoned action (TRA) is the basis for the creation of TPB, which was developed about 35 years ago by [29]. Ref. [14] states that the TPB's core is the intention.. This is determined by attitudes, subjective norms, and perceived behavioral control. Attitude toward a behavior refers to an individual's favorable or unfavorable evaluation or appreciation of a specific behavior. Subjective norm is an individual's perception of specific behavior that is affected by the opinions of significant others (e.g., friends, family, or media). Behavioral control refers to how easy or difficult a particular behavior appears to an individual. The latter is also a distinction between the two theories because it is not included in TRA and aims to investigate behaviors over which people do not have complete control [14]. The more positive the intention factors are, the more likely the individual is to be engaged in the behavior [30].

TPB has been used to understand consumers' intentions to visit green hotels [31] and to purchase consumer grocery products [32], as well as consume sustainable food [27] and make different food choices [32,33]. TPB has been also employed as the basis for studies related to physical activity/exercise [34], understanding behavioral intentions in a work environment [35], and searching for jobs [36]. Finally, studies on the prediction of health-related behaviors [37], information systems [38,39], m-commerce [40], intention to use e-banking [25,41,42], have been interpreted through the TPB.

2.2. Theories on E-Shopping

According to several studies [41,43,44], the theory of reasoned action (TRA), the theory of planned behavior (TPB) and the technology acceptance model (TAM) are the most appropriate to predict e-shopping. All three models emphasize intention, which is influenced by attitudes and beliefs.

According to [29], TRA is a socio-psychological model that concerns behaviors, which the individual wishes to exhibit, i.e., they are under his/her control. The focus is on the intention that has two antecedents: attitudes toward behavior and subjective norms. These are determined by behavioral and normative beliefs, respectively. TRA has not been used alone to predict intention to shop online, but it has been combined with other theories [45].

The TRA is the basis of TAM, which was developed about 35 years ago and has been used mainly in the field of informatics [46,47]. The two dimensions of the model–perceived usefulness and perceived ease of use–influence attitudes towards adopting a novel technology, which in turn affects intention [46,48]. Hong, Thong, and Tam [49] (p. 1822) explicitly state that the intention to adopt technology is a good predictor of its actual use. In online shopping, perceived usefulness describes the degree to which an individual believes that using the internet will improve their performance in e-shopping [50]. TAM has been used as a basis in studies to understand the factors that influence consumers' intention to shop online, in conjunction with other factors, such as the legal framework, trust, the cultural environment, and the perceived risks [51], and has been combined with consumer confidence and perceived control in Taiwan [52]. Another study comparing online consumers in Canada and Pakistan used TAM in conjunction with trust and perceived risks [53]. Other researchers such as [50,54], combined TAM and TPB to examine their variables in terms of intention and online purchasing behavior.

All three of the theories mentioned above have been studied in the context of online shopping to better understand the intention to shop. With the addition of perceived behavioral control, TPB can better predict and understand behavior [14]. Ref. [32] compared TRA and TPB, concluding that the latter is the best for predicting consumer behavior for online grocery shopping. There are also a few other studies that agree that TPB better predicts consumer behavior in e-shopping [23,55]. Thus, it appears that TAM and TPB predict online consumer behavior more successfully.

According to [56], the TPB also better and more accurately explains consumers' online behavior, whereas TAM is better for predicting the adoption of novel technology on the internet. Finally, [41] agree that TPB better explains the intention to shop online, as it includes the subjective norm and the perceived behavioral control, which are not parts of TAM. Therefore, based on a review of the other theories, TPB was considered more appropriate for predicting the intention to make online purchases.

3. Research Hypotheses

3.1. Attitudes

The first antecedent of intention is the attitude toward the behavior [14]. Behavioral beliefs influence attitude toward the behavior. It is important to note that it refers to the attitude toward the behavior and not to objects, people, or other things [29]. It is also related to emotions [9] and many studies have indicated that it affects the intention [57,58].

In this study, attitude is defined as an overall assessment of the feasibility of a possible transaction with a specific online retailer [59] (p. 241). The more positive the attitude, the stronger the intention to behave in this way, and the stronger the exhibition of the specific behavior [60]. According to various studies, attitude positively affects the intention to make online purchases [15,18,19,61–65] Hence, the following hypotheses have been formulated:

H1: *Attitude toward online shopping has a positive effect on the intention to shop online during the COVID-19 pandemic.*

H2: *Attitude toward online shopping has a positive effect on the intention to shop online in the future (after the pandemic).*

3.2. Subjective Norm

Subjective norm is the second most important antecedent of intention that is determined by normative beliefs, i.e., beliefs about how much other important people (e.g., friends or family) believe they should or should not perform certain behaviors [14,28,29]. Ref. [14] (p. 188) defines the subjective norm as the perceived social pressure to perform/execute the behavior (or not). Family, friends, colleagues, and mass media are some of the groups that influence consumers' behavior [8,10,66–68]. Little is known about how each of these groups will influence online purchasing intentions [69]. Our social circle's attitudes toward online shopping, for example, can influence our online purchases by pressuring us to conform to their expectations; [59]. Ref. [70] demonstrated that people are initially influenced by others, especially when they have never used this specific method to purchase a product. When reference groups like friends and family approve of online shopping, the intention to shop online increases [71]. Ref. [64] also found a positive relationship between the subjective norm and the intention to make online purchases. Hence, the following hypotheses are proposed:

H3: *Subjective norm has a positive effect on the intention to shop online during the COVID-19 pandemic.*

H4: *Subjective norm has a positive effect on the intention to shop online in the future (after the pandemic).*

3.3. Perceived Behavioral Control

TPB was developed by incorporating perceived behavioral control into TRA [72], and applies to situations where individuals do not have complete control over their behavior [14,73]. It reflects an individual's perception of how much control he or she has over certain behaviors; it is typically measured by evaluations of the ease/difficulty of performing the behavior" [74] (p. 394). It refers to the perceived and the actual control over the behavior [29]. Perceived behavioral control has both a direct and indirect effect, through intention, on behavior [18].

In e-shopping, perceived behavioral control is defined as the consumer's perception concerning the control of a potential transaction [59] (p. 241). This variable reflects an individual's level of control over online transactions [8,75]. Perceived behavioral control is a significant factor in determining consumers' intentions to make online purchases [76–79], especially during a volatile time for e-commerce.

Several studies have shown that perceived behavioral control positively influences the intention to shop online [80,81] and behavior [18,23]. Hence, the following hypotheses can be extracted:

H5: *Perceived behavioral control has a positive effect on the intention to shop online during the COVID-19 pandemic.*

H6: *Perceived behavioral control has a positive effect on the intention to shop online in the future (after the pandemic).*

3.4. Fear of Shopping in a Physical Store

Feelings of anxiety arise when people experience some threat [82]. Regarding the initial outbreak of the COVID-19 pandemic, the absence of a vaccine created insecurity and fear among consumers [26,83,84] resulting in a change in their behavior [85]. Fear is a negative emotion accompanied by a high level of arousal [86] (p. 591). Ref. [4] claim that the traffic bans imposed during lockdowns led consumers to empty the store shelves of certain essential products such as toilet paper. Markets change in scope, time, and volume [5]. Ref. [87] points out that the fear of transmission of COVID-19 has changed e-commerce.

Consumers appear to be reluctant to buy groceries while COVID-19 infection rates are rising [88]. Ref. [89] concluded that consumers were not happy with their in-store purchases because of the possibility of virus transmission. According to [90], Londoners'

shopping habits have changed primarily because most of them now work from home and do not go shopping in city center supermarkets daily, as they did before COVID-19. They turn to local stores for their purchases, thus reducing the turnover of the city stores. Therefore, the fear of shopping in a physical store during a pandemic is commensurate with feelings about consumer protection.

As can be deduced, consumer behavior has changed significantly due to isolation and insecurity. The traditional way of making purchases (in a physical store) has given way to online shopping. Ref. [91] showed that during the COVID-19 pandemic, 27% of consumers shopped online for the first time. Generally, familiarity with the internet and the COVID-19 pandemic increased electronic purchases. In 2019, online shopping covered 60% of total shopping in the [92]. The Ref. [93] reported that Amazon, the largest online retail store in the world, increased its workforce from January to October 2020 by 427,300 employees, indicating that online shopping has grown during the pandemic [93].

In a similar vein, high consumer demand and staff shortages to deliver products purchased through online shopping were observed in Canada's food supply chain [94]. Another country that had to deal with the shift of businesses and consumers to e-commerce was India, which experienced a significant increase in cases [95]. Walmart USA, the world's largest multinational retailer, saw a 79% increase in e-commerce sales in the third quarter of 2020 [96]. TESCO, the UK's largest supermarket chain, saw profits rise in the first half of the pandemic as more customers turned to the internet to make purchases. Londoners increased their online shopping by 62 percent, and 44 percent plan to continue shopping online even after stores reopen in the post-COVID period. Hence, the following hypotheses are formulated:

H7: *Fear of shopping in a physical store due to the COVID-19 pandemic positively affects the intention to shop online during the pandemic.*

H8: *Fear of shopping in a physical store due to the COVID-19 pandemic does not affect the intention to shop online in the future (after the pandemic).*

3.5. Purchase Intention and Its Relation to the Actual Purchase

The intention is central to TPB, thanks to which behavior can be better predicted and fulfilled [50,97]. Behavioral intent is defined as the cognitive representation of an individual's willingness to exhibit given behaviors and is considered a direct precedent for actual behavior [98] (p. 41). The individual must decide, on his/her initiative, whether or not to perform the behavior; therefore, the exhibition of a particular behavior is determined by how intense the intention to exhibit it is [14]. It has to do with how much people desire ([57] and how much effort they make [14,29] to perform the behavior. Intention to make online purchases refers to individuals' intention to shop online [99–101]. Hence, the following hypothesis is formulated:

H9: *The intention to shop online during the COVID-19 pandemic has a positive effect on the actual online purchasing behavior.*

The extensive research model based on the theory of planned behavior is presented in Figure 1.

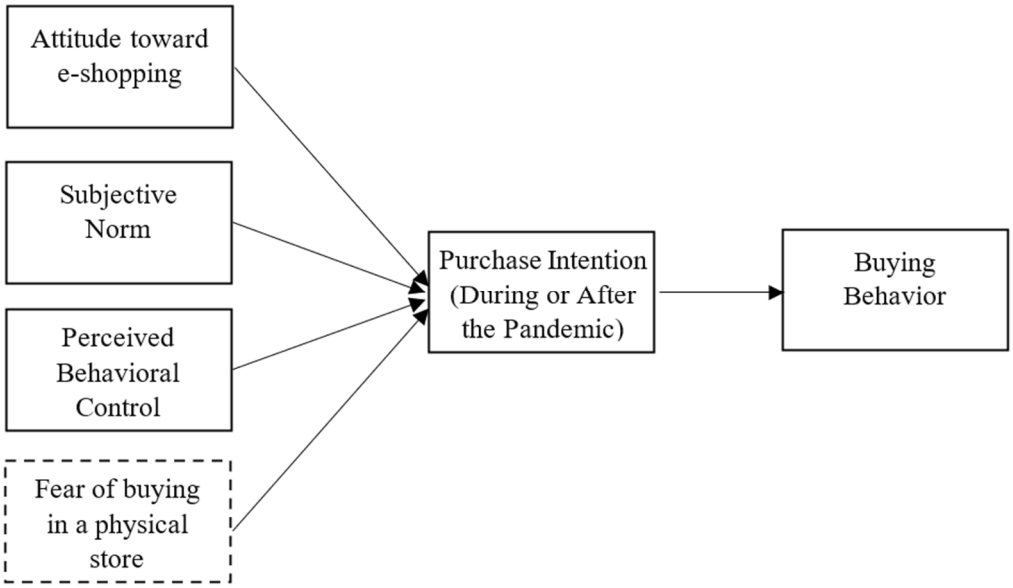

Figure 1. Research Model.

4. Methodology

4.1. Data Collection

The survey methodology was used in this study to collect primary data; respondents were asked to answer questions in a structured questionnaire. The research was conducted by telephone as well as online and was designed to gather information in the Regional Unit of Thessaloniki, Greece about consumers' intentions to make online purchases. As regards this study's ethical considerations, it was explicitly and fully explained to the potential participants that their participation was voluntary and anonymous.

4.2. Population and Research Sample

Population: households in the Regional Unit of Thessaloniki.

Population unit: a household of the Regional Unit of Thessaloniki.

Sampling unit: a male or female household member in the Regional Unit of Thessaloniki, over 18 years of age.

Area: the geographical boundaries of the Regional Unit of Thessaloniki.

Time: December 2020–January 2021.

Sampling Framework: The most recent unified telephone directory in 2020 of the Regional Unit of Thessaloniki.

Sample size: 515 questionnaires were collected, of which 73 were conducted via telephone and 442 via the internet. During the telephone study, simple random sampling was followed. The snowball method was used for the digitally collected questionnaires.

Of the 515 participants, 35.1% (181 respondents) were men, and 64.9% (334) were women. The survey was open to everyone, except those who stated that they did not make an online purchase during the COVID-19 pandemic, and who could only fill out their demographic information. Bearing this in mind, Table 1 lists the demographic characteristics collected, divided into those who made online purchases during COVID-19 the pandemic (Yes) and those who did not (No). It is important to note that 73 responses came from the telephone survey while 442 came via the internet. The statistical software package SPSS 25.0 has been used for this study's statistical analysis (demographics analysis, correlation analysis and regression analysis).

Table 1. Sample characteristics.

		Online Shopping		No Online Shopping	
Variables	**Category**	**Frequency**	**Percentage%**	**Frequency**	**Percentage%**
Gender	Male	133	32.8	48	44
	Female	273	67.2	61	56
Age	18–22	29	7.1	9	8.3
	23–28	126	31	7	6.4
	29–34	54	13.3	14	12.8
	35–40	61	15	8	7.3
	41–46	52	12.8	14	12.8
	47–52	45	11.1	18	16.5
	53–58	26	6.4	12	11
	59–64	7	1.7	12	11
	65+	6	1.5	15	13.8
Education	Primary school/Middle school/ High school	70	17.2	62	56.9
	Vocational institution	53	13.1	17	15.6
	College	4	1	1	0.9
	Degree	187	46.1	24	22
	Master	86	21.2	4	3.7
	Doctorate	6	1.5	1	0.9

Municipalities of Western Thessaloniki: Ampelokipoi–Menemeni, Oraiokastro, Kordelio-Evosmos, Chalkidonos, Volvi, Neapoli-Sykies, Lagkada, and Delta. Municipalities of Eastern Thessaloniki: Thermi, Pylaia-Chortiatis, Thermaikos, and Kalamaria. Center of Thessaloniki: Thessaloniki.

4.3. Research Questionnaire

Given that the survey was conducted both by telephone and online, the questionnaire did not contain many questions (which may have been an inhibiting factor). The questions were drawn from previous studies; a pilot study had preceded the final configuration of the questionnaire. Questions 1–5 generally addressed consumers' online shopping behavior during the COVID-19 pandemic. Initially, respondents indicated whether or not they had made an online purchase during the pandemic (Question 1). If they answered negatively, only their demographic data was recorded in Section 3. If they answered positively, they could continue to the other parts of the questionnaire: they were required to state how many times they made online purchases during the pandemic (Question 2), the types of products they bought (Question 4), and how they paid for them (Question 5). The aforementioned questions were drawn from the research of [8]. Furthermore, Question 3 was also added to indicate how much money they spent on their online purchases, to have an approximate idea of how much money they were spending during the pandemic.

Respondents were then asked questions related to the research model, which was designed according to TPB, in order to understand how intention was affected in making online purchases: one question was related to their actual online behavior, one question to their intention to make online purchases during the pandemic [102], one on the subjective norm [23], one on the perceived behavioral control [103], three questions on their attitude towards online shopping [104], one on the intention to buy in the future [104] and one concerning the fear of buying in physical stores. These questions were measured on a 5-point Likert scale (1 = Strongly disagree/5 = Strongly agree). Questions 7–10 regarding demographic characteristics included gender, age, education level, and area of residence. On the questionnaire's cover page it was explicitly mentioned that the gathered questionnaire data was anonymous and coded. Further it was stressed that the participant could resign from the research whenever he/she wanted. The communication time spent on completing the questionnaire did not exceed 3.5 min.

5. Results Analysis

5.1. Correlations

The research continued with the correlation analysis to describe the relationships between the variables, as shown in Table 2. Spearman's test was used to check the correlations, as the variables were ordinal.

Table 2. Correlation analysis.

	Attitude towards Online Shopping	Subjective Norm	Perceived Behavioral Control	Fear of Buying in a Physical Store	Online Purchase Intention during the Pandemic	Online Purchase Intention after the Pandemic
Attitude towards Online Shopping	1.000	–	–	–	–	–
Subjective Norm	0.398 **	1.000	–	–	–	–
Perceived Behavioral Control	0.383 **	0.204 **	1.000	–	–	–
Fear of Buying in a Physical Store	0.239 **	0.222 **	0.196 **	1.000	–	–
Online Purchase Intention During the Pandemic	0.478 **	0.407 **	0.296 **	0.396 **	1.000	–
Online Purchase Intention After the Pandemic	0.508 **	0.252 **	0.335 **	0.194 **	0.392 **	1.000

Note: ** p value < 0.05.

5.2. Regression Analysis

5.2.1. Intention to Make Online Purchases during the COVID-19 Pandemic

We conducted a regression analysis (Table 3) with attitude towards online shopping, perceived behavioral control, subjective norm, and fear of buying in a physical store as independent variables, gender, age, and education level as covariates, and purchase intention during the pandemic as the dependent variable. The R^2 score is 0.383; hence, 38.3% of the variation in the intention to make online purchases during the pandemic is due to the independent variables. In the ANOVA analysis, the p-value < 0.001 of the F-statistic is less than 0.05, thus, the model is statistically significant.

The estimated B coefficients of the variables: age, attitude towards online shopping, perceived behavioral control, subjective norm, and fear of buying in a physical store, are significant at the $p < 0.05$ level. Thus, age (t = −3.71, $p < 0.001$), attitude towards online shopping (t = 5.03, $p < 0.001$), perceived behavioral control (t = 2.44, $p < 0.05$), subjective norm (t = −5.11, $p < 0.001$), and fear of buying in a physical store (t = 6.62, $p < 0.001$) all have a significant effect on the intention to make online purchases during COVID-19. In other words, as age decreases and those of the other independent variables increase, the intention to buy online during the pandemic increases. Hence, H1, H3, H5, and H7 are supported.

In contrast, gender (t = −0.1, $p = 0.922$), and education level (t = 0.07, $p = 0.941$) do not affect the intention to make online purchases during the COVID-19 pandemic.

5.2.2. Intention to Make Online Purchases after the Pandemic

We conducted a regression analysis (Table 4) with attitude towards online shopping, perceived behavioral control, subjective norm, and fear of buying in a physical store as independent variables, gender, age, and education level as covariates, and purchase intention after the pandemic as the dependent variable. The R^2 score is 0.330; hence, 33.0% of the variation in the intention to make online purchases in the future is explained by the independent variables. In the ANOVA analysis, the p-value = 0.001 for the F-statistic is less than 0.05; thus, the model is statistically significant.

Table 3. Regression Analysis–Coefficients (a).

Model		Unstandardized Coefficients		Standardized Coefficients	t	*p*-Value
		B	Std. Error	Beta		
1	(Constant)	3.587	0.381		9.407	0.000
	Gender	−0.245	0.150	−0.081	−1.628	0.104
	Age	−0.015	0.006	−0.123	−2.453	0.015
	Education Level	0.061	0.050	0.061	1.215	0.225
2	(Constant)	0.240	0.408		0.589	0.556
	Gender	−0.012	0.123	−0.004	−0.099	0.922
	Age	−0.019	0.005	−0.159	−3.704	0.000
	Education Level	0.003	0.041	0.003	0.073	0.941
	Perceived Behavioral Control	0.121	0.050	0.108	2.437	0.015
	Attitude towards Online Shopping	0.388	0.077	0.250	5.033	0.000
	Subjective Norm	0.300	0.059	0.228	5.105	0.000
	Fear of Buying in a Physical Store	0.298	0.045	0.279	6.619	0.000

Dependent Variable: Intention to make online purchases during the COVID-19 pandemic.

Table 4. Regression Analysis–Coefficients (a).

Model		Unstandardized Coefficients		Standardized Coefficients	t	*p*-Value
		B	Std. Error	Beta		
1	(Constant)	4.479	0.311		14.390	0.000
	Gender	−0.300	0.123	−0.119	−2.450	0.015
	Age	−0.017	0.005	−0.170	−3.435	0.001
	Education Level	0.098	0.041	0.118	2.382	0.018
2	(Constant)	1.588	0.353		4.496	0.000
	Gender	−0.079	0.106	−0.031	−0.748	0.455
	Age	−0.012	0.005	−0.117	−2.622	0.009
	Education Level	0.078	0.035	0.095	2.224	0.027
	Perceived Behavioral Control	0.142	0.043	0.153	3.310	0.001
	Attitude towards Online Shopping	0.519	0.067	0.403	7.772	0.000
	Subjective Norm	0.044	0.051	0.040	0.860	0.390
	Fear of Buying in a Physical Store	0.054	0.039	0.061	1.379	0.169

Dependent Variable: Intention to make online purchases after the COVID-19 pandemic.

The estimated B coefficients of the variables: age, education level, attitude towards online shopping, and perceived behavioral control are significant at the $p < 0.05$ level. Thus, age (t = −2.62, $p < 0.01$), education level (t = 2.22, $p < 0.05$), attitude towards online shopping (t = 7.77, $p < 0.001$), and perceived behavioral control (t = 3.31 $p = 0.001$) all have a significant effect on the intention to make online purchases after COVID-19. In other words, as age decreases and those of the other independent variables increase, the intention to buy online after the pandemic increases. Hence, H2, and H6 are supported. In contrast, gender (t = −0.75, $p = 0.455$), subjective norm (t = 0.860, $p = 0.390$), and fear of buying in a physical store (t = 1.38, $p = 0.169$) do not affect the intention to make online purchases after the COVID-19 pandemic.

5.2.3. Actual Online Behavior during the COVID-19 Pandemic

We conducted a regression analysis (Table 5)with purchase intention during the pandemic as the independent variable, gender, age, and education level as covariates, and actual online behavior as the dependent variable. The R^2 score is 0.141; hence, 14.1% of the variation in the actual online behavior during the COVID-19 pandemic is due to the independent variables. In the ANOVA analysis, the *p*-value = 0.001 of the F-statistic is less than 0.05; thus, the model is statistically significant.

Table 5. Regression Analysis–Coefficients (a).

Coefficients [a]						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	***p*-Value**
		B	**Std. Error**	**Beta**		
1	(Constant)	3.022	0.313		9.643	0.000
	Age	−0.090	0.035	−0.130	−2.588	0.010
	Gender	0.320	0.140	0.112	2.284	0.023
	Education	0.085	0.047	0.091	1.815	0.070
2	(Constant)	2.001	0.333		6.007	0.000
	Age	−0.061	0.033	−0.088	−1.831	0.068
	Gender	0.392	0.133	0.137	2.935	0.004
	Education	0.068	0.045	0.073	1.523	0.129
	Online Purchase Intention During the Pandemic	0.299	0.044	0.319	6.778	0.001

a. Dependent Variable: Actual online behavior.

The estimated B coefficients of the variables for gender and intention to make online purchases during the COVID-19 pandemic are significant, as *p*-value < 0.05. Thus, there is a significant effect in the actual online behavior with gender (t = 2.94, $p < 0.01$) and the intention to make online purchases during the COVID-19 pandemic (t = 6.78, $p < 0.001$). Thus, H9 is supported.

Table 6 presents this research's overall hypotheses testing results.

Table 6. Hypotheses testing results.

Hypothesis	Path	Remarks
H1	Attitude toward online shopping → Intention to shop online during the pandemic	Supported
H2	Attitude toward online shopping → Intention to shop online after the pandemic	Supported
H3	Subjective norm → Intention to shop online during the pandemic	Supported
H4	Subjective norm → Intention to shop online in the future	Dropped
H5	Perceived behavioral control → Intention to shop online during the pandemic	Supported
H6	Perceived behavioral control → Intention to shop online after the pandemic	Supported
H7	Fear of shopping in a physical store due to the COVID-19 pandemic → Intention to shop online during the pandemic	Supported
H8	Fear of shopping in a physical store due to the COVID-19 pandemic → Intention to shop online after the pandemic	Dropped
H9	Intention to shop online during the pandemic→ Intention to shop online in the future	Supported

6. Discussion

Initially, regarding consumer online behavior, the results of the research showed that almost four out of five residents in the Regional Unit of Thessaloniki made online purchases during the COVID-19 pandemic. Most e-consumers shopped online up to nine times and spent €101–500 on their purchases during the pandemic. The products they bought the most were clothing/footwear/sports and electronics, while the payment methods were mainly limited to the use of debit cards and cash on delivery.

Moreover, the results showed that attitudes towards online shopping, subjective norm, perceived behavioral control, and fear of shopping in a physical store due to COVID-19 positively influenced purchase intentions during the COVID-19 pandemic. The result showing that the attitudes of the residents of the Regional Unit of Thessaloniki towards online shopping positively affected the intention to make online purchases during the COVID-19 pandemic confirms the findings of several other researchers [15,18,19,23,64,65].

Age also has a significant negative effect on the intention to shop online, i.e., an increase in age leads to a decrease in the intention to shop online. This affected younger ages, as shown in research by [105], in contrast to research by [106] where intent did not seem to be affected.

Research on gender [107–110] and education level [63,108]; have proven that these factors influence the intention to shop online. We found a positive effect of the intention to shop online on the actual shopping behavior during the COVID-19 pandemic, which is consistent with prior studies such as [57,102].

The significant effect of fear of buying in a physical store on purchase intention is in line with the findings of several studies (e.g., [26,84,89,111]). This finding suggests that consumers prioritize their health over other factors in determining their behavior.

The fear of shopping in a physical store due to the pandemic, as well as the subjective norm, have no effect on the intention to shop online after the pandemic. The intention to shop online after the pandemic is influenced by the attitude toward online shopping as well as perceived behavioral control, indicating that different factors influence the intention to shop online during and after the pandemic.

The influence of family, friends and colleagues (subjective norm) is also very important during the COVID-19 pandemic; therefore, the positive widespread use of the online store plays an important role and leads to the intention to shop online. At the same time, businesses have to target younger age groups because as age increases, the intention to shop online decreases. The internet saves consumers time by not having to go to/browse in a physical store to look for a product and buy it, factors that will lead them in the future to shop online. Thus, from a business standpoint, an online store and business website should be simple to use and have a simple payment process so that customers can easily place orders.

7. Conclusions

The outbreak of the COVID-19 pandemic and fear of the spread of the virus brought about changes in people's lifestyles, and consequently in their consumption habits. In conjunction with the lockdowns where physical stores remained closed, it was of interest to investigate whether consumers turned to e-shopping since the beginning of the pandemic, i.e., since March 2020. The study aimed to investigate the factors that influenced the intention to shop online during and after the COVID-19 pandemic with the use of an extended model of the theory of planned behavior.

The main contribution of this study to the literature is that it emphasizes the role of the fear of shopping in a physical store due to COVID-19 on consumers' intention to shop online. This finding points out that a better understanding of how customers' fears for health provide better insights into their behavior. In particular, based on this research's findings, it can be stated that a greater consumers' fear leads to a greater change in their shopping behavior.

Our findings confirm perceived behavioral control as a key predictor of intention and behavior in the theory of planned behavior model, demonstrating that it positively affects intention during the pandemic. In other words, during and after the COVID-19 pandemic, the control factor in the purchase process plays a critical role in the intention to shop online.

The results of the research can provide suggestions to companies to help them strengthen their customers' intention to shop online, both during the COVID-19 pandemic and in the future. In particular, businesses should reach out to those who have a positive attitude towards online shopping, both during and after the COVID-19 pandemic, by creating an entertaining experience on their site, and offering products people want to buy through safe and easy transactions. Residents of the Regional Unit of Thessaloniki have a favorable attitude toward online shopping, implying that the internet is useful for their purchases. Increasing positive attitudes toward online shopping leads to an increase in online shopping intentions, and thus to an increase in the sales and revenues of online stores. Fear of the spread of the virus also affects online shopping. As a result, businesses could provide more secure product deliveries and safe methods for making card transactions, thereby preventing the virus from spreading.

In summary, residents of the Regional Unit of Thessaloniki made several purchases, spent a lot of money, and used debit cards during the COVID-19 pandemic. Their intention to shop online was also driven by their attitude towards online shopping, perceived behavioral control, their fear of the spread of the virus, and influence from family, friends and colleagues to avoid physical stores, as well as the age factor (the older they were, the lower their intention to shop online). Consumers in the Regional Unit of Thessaloniki are willing to use the internet for future shopping and this is due to their perceived behavioral control and attitudes towards online shopping.

7.1. Research Limitations

This research sought to link the COVID-19 pandemic to consumer behavior in online shopping. However, as with any research, there are always some limitations that need to be considered. Initially, the research only covered the COVID-19 pandemic period. The number of questions could have been increased, but this was difficult to achieve because the survey was originally intended to be conducted over the phone, so the number of questions could not exceed twenty.

According to the way the research was conducted, and more specifically with the telephone research, several restrictions arose. It is particularly important to mention that the survey was addressed only to households in the Regional Unit of Thessaloniki, by making calls only to landlines. However, the telephone directory also included business numbers that were not listed in a professional capacity; thus, some calls were rejected as business calls. Many cell phones were not included in the search and several 'dead' numbers. But the biggest limitation that arose was the many missed calls and negative attitude of the respondents toward answering calls about a survey. This is probably due to the negative attitude many people had concerning such calls because they are already inundated by pushy salespeople, the negative psychological state of mind of many respondents due to the COVID-19 pandemic and because the calls were made using a hidden number. Finally, another limitation is that most respondents who picked up the calls were older, so the sample could not be regarded as representative. For the above reasons, the research was also conducted online.

7.2. Future Research

Future research could compare the shopping intentions of traditional consumers (i.e., those who shop at physical stores) with those who did their shopping online during the COVID-19 pandemic. It would also be interesting to investigate the medium used by consumers (e.g., mobile phones, laptops, and computers) for making online purchases and how it affected their intention to make purchases. Finally, after the end of the pandemic and for at least two years, a comparison could be made between the two time periods

with an analysis of the older age groups, to see if they continued to use the internet as a means of making purchases or if they did not use it at all, even in emergencies such as the COVID-19 pandemic.

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