

# CONSUMERS' ACCEPTANCE OF ONLINE GROCERY SHOPPING IN A PANDEMIC SITUATION: AN EXTENDED TECHNOLOGY ACCEPTANCE MODEL PERSPECTIVE

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## ABSTRACT

This study aims to understand the mechanisms of consumers' online grocery shopping (OGS) acceptance in the current COVID-19 pandemic. Through this perspective, an extended technology acceptance model is employed by including the fear of COVID-19 factor to reveal the extent of the Turkish consumers' acceptance of OGS. We have tested the proposed research model on 455 survey participants living in various cities of Turkey. Structural equation modeling is employed to test the eleven research hypotheses. The results indicate that perceived ease of use, perceived usefulness, and attitude are valid predictors of OGS acceptance. Besides, the fear of COVID-19 negatively moderates these relationships. By revealing these empirical results, this study provides some useful insights into our understanding of the acceptance mechanisms of OGS processes in a pandemic situation. We hope to pinpoint the underlying reasons for the vast expansion of OGS among Turkish customers in pandemic times.

## KEY WORDS

online grocery shopping, technology adoption, technology usage, e-TAM, fear, COVID-19

## JEL CODES

M10, M31

## 1 INTRODUCTION

The online grocery shopping (OGS) market has been growing steadily on a global scale, particularly within the last decade and has reached USD 134.998 billion in 2019 (Globe Newswire, 2020). According to the same report, the main reason for this growth stems

mainly from increasing technological advances, convenience to shopping online, product variety availability, and saving in cost and time. According to recent Nielsen data, on a global scale, half of the online consumers believe that choosing online channels for grocery shopping is

convenient and saves time (Singh, 2017). Apart from these reasons for consumers to prefer OGS, several other research perspectives have been adopted to understand consumer OGS behavior, including the theories of Reasoned Action and Planned Behavior (Hansen et al., 2004; Hansen, 2005), Motivation-Opportunity-Ability Model (Van Droogenbroeck and Van Hove, 2017), the technology acceptance model (TAM) (Sreeram et al., 2017; Loketkrawee and Bhatiasavi, 2018; Driediger and Bhatiasavi, 2019) and the Attitude Theory (Brand et al., 2020). These research perspectives explain consumer behavior regarding OGS with sound theoretical foundations. However, literature also suggests that situational factors (such as developing health problems) also play a role as a trigger for buying groceries online (Robinson et al., 2007; Hand et al., 2009). As an emerging actor, we consider the novel COVID-19 outbreak as a potential situational factor, which creates a research gap that needs to be addressed. Accordingly, we used an extended technology acceptance model (e-TAM) as the theoretical foundation for understanding the consumers' adoption of OGS technology. These constructs need to be understood thoroughly to gain better consumer insights and their OGS behavior.

Although many recent studies in OGS behavior used TAM as their theoretical framework (Loketkrawee and Bhatiasavi, 2018; Bauerová and Klepek, 2018; Driediger and Bhatiasavi, 2019), none of them included fear of COVID-19 construct in their research model due to the timing of the pandemic. Therefore, the current study offers a unique perspective on the recent OGS behavior under the conditions of the COVID-19 outbreak. There are many sound reasons for us to adopt the COVID-19 effect (particularly Fear of COVID-19) to be an influential factor in understanding consumers' OGS behavior. Firstly, the COVID-19 outbreak has been affecting people's lives on a global scale in various ways. As the World Health Organization declared COVID-19 a pandemic as of March 2020, many countries practiced various restrictions like lockdown, travel restrictions, closure of businesses and schools, all of which negatively affected the global economy.

The economic damage is driven mainly by a fall in consumer demand, which is expected to lead to a 4.5% decrease in the global GDP (Statista, 2020). Therefore, many sectors are negatively affected by the COVID-19, such as tourism, automotive, transportation.

However, the consequences of economic contraction have not been experienced negatively for all industries. Remarkably, the grocery shopping market could be regarded as one of these rare sectors. There was even a temporary supply problem in certain products such as toilet paper due to consumers' stockpiling behavior. Simultaneously, there has been an increasing shift in consumer behavior from store visits to online shopping, aiming to reduce face-to-face interaction to prevent viral infection (UN, 2020). Consequently, it is seen that online channel preferences in grocery shopping particularly have increased significantly during the COVID-19 period, mostly due to the safe characteristics of online channels to meet basic human needs (Gorman, 2020).

The situation for the Turkish market is similar to global trends. In the first period of 2020, Turkey's e-commerce volume has risen 64% compared to the same period of 2019 by reaching USD 14.2 billion (Şahin, 2020). Significant growth was experienced in grocery shopping by far apart from all the other online retailing branches. According to the Turkish Ministry of Commerce data, OGS increased by 434% in the first six months of 2020 by reaching USD 244.90 million (Yağcı, 2020). Even local grocery shops started to operate their online channels after the pandemic began, which is entirely new for the Turkish market. Considering it is a current situation, it might be regarded as an opportunity for marketing professionals to understand the mechanisms of consumers' OGS behavior and create valuable consumer insights.

Before the COVID-19 era, although in a much lower percentage, OGS was already steadily growing in the Turkish market. Online grocery brands target mostly young, educated, tech-friendly customers who do not have sufficient time to visit the shops (Retail Türkiye, 2019). Today those businesses are offering their services to a much wider range of consumers.

This situation can also be regarded as another research gap considering the extraordinary situation caused by COVID-19. Additionally, Studies in the literature regarding OGS have been conducted in different countries. However, as Driediger and Bhatiasevi (2019) stated in their study, most of the studies subjected to OGS have been conducted in the context of western countries, and there is much need to be done to create insight in terms of consumers' OGS behavior for developing markets, which represent another research gap for our study. Thus, to understand the novel situation and develop a better perspective, the topic needs to

be further investigated. Adopting this perspective, this study explores the OGS behavior of Turkish consumers in the COVID-19 era using an e-TAM. In this context, the variables Trust in Retailers and COVID-19 fear were included in the TAM to obtain a better consumer insight. Researching Turkish consumer behavior in the Covid era also has other benefits, such as providing valuable information to grocery business leaders for setting the possible future direction of their industry and changing customer preferences. Fear of COVID-19 construct would also be interesting to study and assess further in future studies.

## 2 THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

This study has used an e-TAM to propose a research model for understanding the mechanisms of OGS acceptance in Turkey within the COVID-19 era, as illustrated in Fig. 1.

The research hypotheses and their background arguments have been provided in the following paragraphs.

### 2.1 Technology Acceptance Model

One of the broadly cited theoretical models in the literature is the TAM by Davis (1989). The model explains individual technology adoption and usage behavior coherently and concisely; that is, it has high explanatory power with a few variables. Hence, it has been popular and cited thousands of times by scholars from various research fields. According to the original model, our technology adoption attitudes are a function of two antecedents as perceived ease of use (PEU) and perceived usefulness (PU), that jointly form our positive or negative attitudes toward specific technologies that in turn shape our intentions to use or not use those technologies (King and He, 2006).

TAM is constructed on the Theory of Reasoned Action (TRA) by Ajzen and Fishbein (1980). TAM's two main antecedents are also rooted in Rogers' Technology Diffusion Theory (Rogers, 1983). TRA and TAM are belief-

based theoretical structures that pose a causal relationship between our beliefs – attitudes and intentions – behaviors. Attitude is the outcome of our subjective beliefs for particular behavior as well as the results of our given importance to such beliefs (Moreno-Agudelo and Valencia-Arias, 2017). TAM and TRA aim to explain as well as predict our particular behaviors in a wide variety of contexts which can easily be applied to many research settings and is a well-recognized theoretical framework across different contexts and cultures (Gefen et al., 2003). TAM has been recently applied to numerous research domains such as acceptance of online travel products (Sevim et al., 2017), e-commerce (Dash and Saji, 2008), mobile commerce (Zamil et al., 2020), and online banking (Onyiriuba, 2016). Besides, according to the literature, TAM is found to be the strongest predictor to influence OGS behavior, compared to other independent variables (Loketkrawee and Bhatiasevi, 2018). Thus, we adapted an extended version of the TAM as the theoretical lens for this research.

#### 2.1.1 Perceived Ease of Use and Perceived Usefulness

PEU is defined as users' self-assessment of interacting and using a particular system that would be effortless to use (Davis, 1989). PU

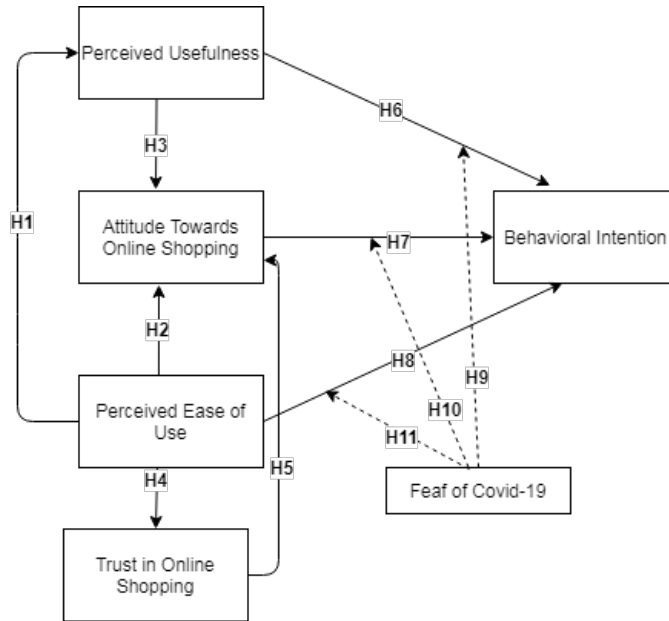


Fig. 1: Research model and hypotheses

means the users’ subjective chances of adopting the system in question that would enhance their job performance (Davis et al., 1989). PEU has its roots in intrinsic motivation research. Ease of use is effective when both browsing websites as well as entire Information Systems Use (Chin and Goh, 2017). If a web shopping site is perceived as easier to use by customers, they will probably return to that website for further shopping (Dash and Saji, 2008). Thus, we suggest the following hypothesis.

H<sub>1</sub>: PEU positively affects individuals’ PU in OGS.

**2.1.2 Perceived Ease of Use and Attitude Toward OGS**

Attitudes are shaped by our behavioral beliefs, and behavioral beliefs are expected outcomes of our major underlying beliefs like Perceived Usefulness and Perceived Ease of Use. Our positive attitudes coupled with greater and positive intentions will lead us to do online grocery shopping (Bezirgani and Lachapelle, 2021). PEU can easily influence potential and current customers’ attitudes to shop and re-shop from a particular online shopping website. In fact, there is a positive association between the PEU of a particular website, especially

with online shopping (Zamil et al., 2020). Also, the perceived simplicity of an online shopping website can easily affect how it has been adopted (Pratyaksa, 2015). Therefore, our second hypothesis is:

H<sub>2</sub>: PEU positively influences individuals’ attitudes toward OGS.

**2.1.3 Perceived Usefulness and Attitude Toward OGS**

The Internet can easily be regarded as a useful tool, especially for online shopping (Davis, 1989). With online shopping, customers would be relieved from carrying groceries that they bought, looking for a parking space at the supermarkets, waiting in the long queues in front of the cashiers (Kaur, 2018), resulting time, money, and effort savings in the process. The utility has been presented as a most critical construct influencing customers’ intentions to shop online (Hausman and Siekpe, 2009; Belanche et al., 2012), which leads us to propose the following hypothesis.

H<sub>3</sub>: PU beliefs positively affect individuals’ attitudes toward OGS.

#### 2.1.4 Perceived Ease of Use and Trust Toward OGS

Trust can be defined as “the expectation that the trusted party will accomplish the task reliably” (Sitkin and Roth, 1993). Lack of trust in a technical system (i.e., OGS) can act as a potential barrier to the use of the channel (Dahlberg et al., 2003). In the literature, it is emphasized that trust in online channels is even more important in matters that physically affect consumers such as grocery shopping (Citrin et al., 2003), and in this respect, the role of the online retailer in its success is critical (Toufaily et al., 2013). Also, PEU is hypothesized to positively affect trust in the literature (Chinomona, 2013) that in turn significantly plays vital importance in online shopping behavior through our attitudes. Jared Hansen et al. (2018) also found a strong correlation between PEU affecting trust constructs. Therefore, our fourth hypothesis has been proposed as the following:

H<sub>4</sub>: PEU positively affects trust in OGS.

#### 2.1.5 Trust and Attitude Toward OGS

In online shopping, establishing trust is an important and necessary prerequisite for successful progress and finalization of real online shopping behavior, given unfortunate cases of customer swindling in some of the past instances. Most consumers feel the need to trust websites before revealing and submitting their financial and credit card information. Hence, we believe that the feeling of trust is much integrated into OGS customers' behavior, and it is one of the most important prerequisites of the progress of OGS. Shadkam et al. (2013) stated that trust is a key element steering users to utilize online shopping platforms. Virtual stores pose greater risks than online stores when considering OGS. Especially existence of online secure payment processing and receiving systems are a must for the trusted and secure online shopping experience.

If customers form trust in a particular website in online shopping, they would indeed develop affirmative attitudes toward that specific site. In several studies, perceived trust has been defined as an important variable influencing attitude (Chen and Tan, 2004; Kim et al., 2008;

Ha and Stoel, 2009). Besides, it has been widely acknowledged that trust positively influences individual attitudes toward online shopping. As a result, we offered the following claim with our fifth hypothesis.

H<sub>5</sub>: Trust positively affects attitude toward OGS.

#### 2.1.6 Perceived Usefulness and Behavioral Intention

Starting from the original TAM study by Davis (1989), there are many researchers who have been investigated and proved positive and significant effects of PU on the behavioral intention of technology users. Studies of Ha and Stoel (2009), Venkatesh et al. (2003), and Shih (2004) have shown that a relationship could hold true in online shopping, leading to our sixth hypothesis. Perea y Monsuwé et al. (2004) argued that usefulness is the customer's recognition of online shopping and customer's intention to shop online. Davis (1989) indicated that if a specific innovation is helpful, they will form positive perceptions about the system or online platform (Ruangkanjanases et al., 2021). PU is about mostly how innovations could enhance our lives. Hence, we propose that:

H<sub>6</sub>: PU positively influences individuals' behavioral intention toward OGS.

#### 2.1.7 Attitude and Behavioral Intention Toward OGS

Intentions are the basis for us to determine people's individual actions, especially in using or not using a particular technology. Individuals commonly use and adopt technologies toward which we have positive attitudes and vice versa for other technologies. Davis (1989) clearly outlined this relationship in his article. Therefore, our seventh hypothesis proposes that:

H<sub>7</sub>: Attitude positively affects behavioral intention toward OGS.

#### 2.1.8 Perceived Ease of Use and Behavioral Intention Toward OGS

TAM has roots in two theoretical variables, defining behavioral intention of individuals as PEU and PU in online shopping (Pavlou, 2003; Ahn et al., 2004). PEU influences directly and indirectly via our attitudes to personal

intentions to shop online. Considering this information in the literature, we posit that;

H<sub>8</sub>: PEU perceptions of individuals positively affect their behavioral intention toward OGS.

## 2.2 The Moderating Role of Fear of COVID-19

Fear (Lyon, 2003) and health concerns (Kim and Park, 2012) have certain effects on individuals' consumption behaviors. In a similar vein, it has been known that the COVID-19 outbreak deeply affects the consumption behavior of people by inflicting fear and health concerns. Due to the restrictions and health concerns, consumers have increasingly been looking for safer ways to buy their groceries (Pantano et al., 2020), leading to a dramatic increase in online shopping activities (Chang and Meyerhoefer, 2020). Moreover, the online shopping market is sensitive to the effect of the COVID-19 era to the extent that there was even a correlation between the pandemic's intensity and the increase of online shopping preferences (Grashuis et al., 2020). Within this context, it is essential to consider the fear of COVID-19 in consumers' acceptance of OGS to obtain further insights into the OGS acceptance in the pandemic period. Considering the issue in terms of OGS acceptance, it would normally be reasonable to expect fear of COVID-19 to increase OGS acceptance. However, when the subject is considered in terms of the variables in question when fear of COVID-19 is included in the equation as an important situational

factor, it can be expected to make other factors relatively unimportant. Thus, in this study, we consider the fear from COVID-19 as such an important situational factor that might influence the structure of our research model. As we proposed above, attitude, PEU, and PEU are all potentially effective factors in accepting OGS. However, we consider consumers' fear of COVID-19 as a "game-changer," and we expect that it plays a moderating role in a negative way between the behavioral intention and its specified antecedents. We expect that the consumers' health concerns might play a bigger role in our context, and the inclusion of the COVID-19 factor into the equation would make the specified antecedents less important. Consequently, we offer the following hypotheses:

H<sub>9</sub>: Consumers' fear of COVID-19 negatively moderates the relationship between PU and behavioral intentions toward OGS. When the fear of COVID-19 is low, the link is positive. However, as the fear of COVID-19 increases, the association becomes negative.

H<sub>10</sub>: Consumers' fear of COVID-19 negatively moderates the relationship between attitude and behavioral intention toward OGS. When the fear of COVID-19 is low, the link is positive. However, as the fear of COVID-19 increases, the association becomes negative.

H<sub>11</sub>: Consumers' fear of COVID-19 negatively moderates the relationship between PEU and behavioral intentions toward OGS. When the fear of COVID-19 is low, the link is positive. However, as the fear of COVID-19 increases, the association becomes negative.

## 3 METHOD

### 3.1 Sampling and Data Collection Procedures

We gathered the data from the individuals living in Turkey above the age of 15 and shop their groceries by themselves regularly, either using online or offline channels. Research data were collected in the period of October-November 2020 when pandemic restrictions were strictly enforced in Turkey. A questionnaire link was

disseminated via the authors' social media networks. Three voucher gifts have been allocated based on a random lottery. We determined the study sample size according to the requirements for the structural equation model (SEM), similar to Wang et al. (2019). The research model in the study had 20 parameters which required a samples size of 400 ( $20 \times 20$ ). We restricted the questionnaire to be filled only once from the same IP to prevent multiple participation.



All participants who agreed to fill out the questionnaire were included in the database. 455 usable questionnaires (35 were discarded due to inconsistency issues) were obtained, exceeding the recommended minimum sample size requirement.

### 3.2 Instrument

The online survey method was used in this study to reach the maximum number of participants, considering the extraordinary situation caused by the pandemic. The questionnaire had four main parts. The first part began with a brief explanation containing the research aim, information about the lottery that will be held among the participants, and the average time that the questionnaire was expected to take. The second part consisted of two questions to learn whether the participants had done OGS earlier and, if yes, how often. The next part consisted of Likert-type questions to make it possible to test the research hypotheses. Lastly, the fourth part consisted of questions regarding the demographics of the participants.

### 3.3 Measurement

All the measures used in this study were drawn from previous research, which of all were quite robust in terms of reliability and validity (see Tab. 2). The 5-point Likert scales were used to measure all of the scale items (1 – Strongly disagree & 5 – Strongly agree). The moderator Fear of COVID-19 was measured using the seven items adapted from Ahorsu et al. (2020). For the components of e-TAM; PEU (4 items) and behavioral intention (4 items) were adapted from Driediger and Bhatiazevi (2019), while

PU (2 items) were taken from Davis (1987). As the measures for the other components of e-TAM, while attitude toward OGS (3 items) was adopted from Bauerová and Klepek (2018), trust in OGS (4 items) were adopted from Lee and Turban (2001). The questionnaire form was designed in English and then translated into Turkish by two academics fluent in both languages by following the method outlined by Brislin (1970) through the back-translation procedure.

### 3.4 Common Method Bias

Because of the self-reported characteristic of the survey, method variance could be a potential problem. Therefore, the common method bias issue was attempted to be minimized by the authors. Firstly, the questionnaire was designed by adhering to the suggestions of MacKenzie and Podsakoff (2012). In this regard, a pilot test was conducted with 28 academics to see whether they were experiencing any problems understanding the questions. The questionnaire was reassessed accordingly, also by discussing with the translators. The questionnaire was also divided into different parts to reduce the single source bias, as Podsakoff et al. (2003) suggested.

Moreover, to reduce the effects of social desirability, an introduction section was added to the questionnaire to enable the respondents to understand the research purposes clearly. Lastly, to test common method bias, Harman's (1967) test of one-factor was performed as a further post hoc test by SPSS. The results indicated that the first factor explained 33.7% of the variance in the data, which was lower than the suggested 50% cutoff criteria, which reveals a lack of common method bias (Podsakoff et al., 2003).

## 4 DATA ANALYSIS AND RESULTS

### 4.1 Sample Characteristics

Tab. 1 present the main demographic characteristics of the study sample. The sample of 455 participants is nearly equally composed of males (50.5%) and females (49.5%). There

are more than 90 people for each age group, except the participants more than 51 years old, representing heterogeneity for the age distribution of our sample. More than 53% of the participants are below the age of 30, and most of the respondents (61%) have at least one

bachelor's degree. Also, more than 22% have graduate degrees. Lastly, more than half of the respondents (60%) stated that they live with three or more people in a family.

Tab. 1: Demographic characteristics of participants ( $N = 455$ )

Respondent characteristics		Frequency	Percent
Age	15–20 years	105	23.1
	21–30 years	135	29.7
	31–40 years	90	19.8
	41–50 years	106	23.3
	51+ years	19	4.1
Gender	Male	230	50.5
	Female	225	49.5
Education	Secondary School	39	8.6
	High School	97	21.3
	College	42	9.2
	Bachelors	175	38.5
	Postgraduate	102	22.4
Living/w	Alone	35	7.7
	1 person	60	13.2
	2 people	88	19.3
	3 people	129	28.4
	4+ people	143	31.4

Additionally, the results of the two questions asked to reveal the participants' OGS experiences in detail have revealed that 72% of the respondents had already used OGS at least once before. While 51% of them stated that they had started using OGS before the pandemic, 21% started to use it only after the pandemic began. It seems OGS has been common among our Turkish sample, yet a quite significant number of participants started to use OGS the first time after the pandemic.

## 4.2 Measurement Model

We run the confirmatory factor analysis (CFA) with AMOS 21 to determine the validity and reliability scores of the research constructs. The measurement model demonstrates an acceptable-good fit:  $\chi^2/\text{df} = 2.203$ ,  $p < 0.01$ ; root mean square error of approximation (RMSEA) = 0.051; goodness of fit index (GFI) = 0.932; comparative fit index (CFI) = 0.969; Tucker-Lewis index (TLI) = 0.962; based on

the suggestions in the literature (Browne and Cudeck, 1993; Hu and Bentler, 1999; Hair et al., 2010). Regarding CFA results, the AVE and CR values were above the threshold levels (0.5 and 0.7, respectively). The CR of the constructs ranged from 0.856 to 0.913, while the AVE values ranged from 0.647 to 0.753, as shown in Tab. 2. Additionally, the item loadings ranged from 0.748 to 0.931, all statistically significant at the 0.99 level ( $p < 0.01$  for all the items), hence we can ensure the variables' convergent validity (Hair et al., 2010).

Discriminant validity was assessed adopting the perspective of Fornell and Larcker (1981). As represented in Tab. 3, all the AVE values are larger than the MSV (maximum shared variance) values. Also, all AVE values are bigger than the square of latent variables' correlations, ensuring the discriminant validity of variables. Results establish the soundness of the measures used in this study, thus enabling their usage in the stage of hypothesis testing.

## 4.3 Main Effect Analysis

A structural equation modeling (SEM) was undertaken using AMOS 21 to test direct effects. The proposed model had an acceptable fit ( $\chi^2/\text{df} = 2.736$ ,  $p < 0.01$ ; CFI = 0.967, TLI = 0.958, GFI = 0.933, RMSEA = 0.062).

Tab. 4 presents the analysis results of the research hypotheses. We can see that consumers' PEU significantly affects their PU of OGS ( $\beta = 0.458$ ,  $p < 0.01$ ), thus supporting H<sub>1</sub>. Also, PEU was found to be positively affecting attitude toward OGS – at a 90% significance level ( $\beta = 0.563$ ,  $p < 0.01$ ), “partially” supporting H<sub>2</sub>. PEU also positively affects attitude ( $\beta = 0.089$ ,  $p < 0.10$ ) and trust in OGS ( $\beta = 0.556$ ,  $p < 0.01$ ), supporting H<sub>3</sub> and H<sub>4</sub>. Additionally, trust is found to positively affect attitude toward OGS ( $\beta = 0.312$ ,  $p < 0.01$ ), supporting H<sub>5</sub>. Lastly, the PU of OGS ( $\beta = 0.187$ ,  $p < 0.01$ ), attitude toward OGS ( $\beta = 0.556$ ,  $p < 0.01$ ), PEU of OGS usage ( $\beta = 0.158$ ,  $p < 0.01$ ) all were found to have significant positive effects on the behavioral intention of OGS, supporting the hypotheses H<sub>6</sub>, H<sub>7</sub>, and H<sub>8</sub>.



Tab. 2: Summary of the measurement model

Construct	Statements	Factor loadings
<i>Fear of COVID-19</i>	I am afraid most from Corona Virus.	0.82
AVE = 0.65; CR = 0.88	I feel uncomfortable in thinking coronavirus.	0.82
MSV = 0.54; $\alpha$ = 0.89	I am afraid to lose my life because of coronavirus.	0.79
	When seeing news and stories on coronavirus on social media, I feel stress and worried.	0.79
<i>Trust in Online Shopping</i>	Internet shopping is secure.	0.82
AVE = 0.73; CR = 0.91	In general, Internet shopping sites hold their promises.	0.80
MSV = 0.38; $\alpha$ = 0.91	Internet shopping is reliable without any uncertainty.	0.85
	Internet shopping is a secure experience.	0.93
<i>Perceived Ease of Use of OGS</i>	Doing OGS is/might be easy.	0.88
AVE = 0.65; CR = 0.88	Getting experienced in OGS is/might be easy.	0.71
MSV = 0.50; $\alpha$ = 0.89	Following the procedures in OGS is/might be easy for me.	0.77
	In general, I believe that doing OGS is easy.	0.87
<i>Attitude</i>	Doing grocery shopping over the web seems attractive for my daily life.	0.87
AVE = 0.75; CR = 0.90	Doing online grocery shopping over the web is/would be pleasant.	0.87
MSV = 0.50; $\alpha$ = 0.90	Using a website for grocery shopping is/would be a good idea.	0.86
<i>Perceived Usefulness of OGS</i>	Online grocery shopping enables me to save my time.	0.92
AVE = 0.75; CR = 0.86	Using the website for grocery shopping makes it easier to do my shopping.	0.81
MSV = 0.23; $\alpha$ = 0.85		
<i>Behavioral Intention</i>	Whenever possible, I intend to use OGS to purchase groceries.	0.75
AVE = 0.67; CR = 0.86	I intend to use OGS when there is free home delivery.	0.87
MSV = 0.27; $\alpha$ = 0.85	I intend to use OGS when the price is competitive.	0.83

Notes: AVE = Average Variance Extracted; CR = Composite Reliability, MSV = Maximum Shared Variance;  $\alpha$  = Cronbach’s Alpha

Tab. 3: Correlation matrix for the constructs of the study

	1	2	3	4	5	6
1 Fear of COVID-19	1					
2 Trust	0.002	1				
3 Ease of Use	0.048	0.331	1			
4 Behavioral Intention	0.054	0.096	0.259	1		
5 Attitude	0.033	0.381	0.497	0.273	1	
6 Perceived Usefulness	0.047	0.094	0.234	0.139	0.082	1

Note: Values in the table represent the square of latent variables’ correlations.

Tab. 4: Structural model hypothesis test results

Hypothesis	$\beta$	<i>t</i> -value	Result
<i>Direct effects</i>			
H <sub>1</sub>	0.458***	8.674	Supported
H <sub>2</sub>	0.563***	9.547	Supported
H <sub>3</sub>	0.089*	1.803	Partially Supported
H <sub>4</sub>	0.556***	12.213	Supported
H <sub>5</sub>	0.328***	6.496	Supported
H <sub>6</sub>	0.187***	3.398	Supported
H <sub>7</sub>	0.312***	4.672	Supported
H <sub>8</sub>	0.158***	2.140	Supported
<i>Moderating effects</i>			
H <sub>9</sub>	-0.166***	-4.093	Supported
H <sub>10</sub>	-0.120**	-3.164	Supported
H <sub>11</sub>	-0.110**	-2.465	Supported

Note: \* =  $p < 0.10$ ; \*\* =  $p < 0.05$ ; \*\*\* =  $p < 0.01$ .

#### 4.4 Moderation Analysis

We assessed the moderating effects of Fear of COVID-19 using PROCESS macro, considering this method is more sophisticated in terms of operationalization of moderating-mediating effects compared to SEM (Hayes et al., 2017) via IBM SPSS 21. Based on the results, it was seen that consumers' fear of COVID-19 moderates the relationships between PU and behavioral intentions toward OGS:  $F(3, 451) = 28.627$ ,  $\Delta R^2 = 0.031$ ,  $\beta = -0.166$ ,  $p < 0.01$  supporting H<sub>9</sub>; attitude and behavioral intention toward OGS:  $F(3, 451) = 46.886$ ,  $\Delta R^2 = 0.017$ ,  $\beta = -0.120$ ,  $p = 0.02$  supporting H<sub>10</sub>; and lastly, PEU and behavioral intention toward OGS:  $F(3, 451) = 34.221$ ,  $\beta = -0.110$ ,  $\Delta R^2 = 0.011$ ,  $p = 0.014$  supporting H<sub>11</sub>. Hence, all moderating relationships have been statistically supported.

## 5 DISCUSSION

Explaining the adoption of online shopping using TAM is a popular research field in the marketing literature. However, only a few studies specifically focused on the acceptance of OGS (e.g., Loketkrawee and Bhatiasavi, 2018; Driediger and Bhatiasavi, 2019). This study supports the idea of using the e-TAM framework to explain the acceptance of OGS. Adopting this perspective, we extended the TAM by including two variables to the research model, which are trust and fear of COVID-19. The inclusion of trust into the TAM is well supported in the literature (e.g., Dhagarra et al., 2020). It is also known from the literature that situational factors might also have an effect on the acceptance of OGS. This study includes an emerging situational factor, fear of the COVID-19 variable as a moderator in the acceptance of OGS. Since the day it was first seen over a year ago, COVID-19 has caused significant changes in people's consumption habits, as in many other issues. One of these significant changes has been observed in OGS with an excessive preference over store visiting. This situation creates a research opportunity to understand the pandemic

process, which is thought to play an important role in accepting OGS by consumers. Adopting this perspective, this study's main objective was to empirically reveal the consumers' OGS acceptance mechanisms in the pandemic era using the e-TAM as a theoretical lens. To reach this objective, eleven hypotheses were proposed and tested via aSEM. The results obtained are discussed below respectively.

The current study is also among the first studies in Turkish literature to contribute OGS behavior of individuals by employing the TAM framework under COVID-19 pandemic conditions. Also, we incorporated the fear of COVID-19 in our empirical model that is also among one of the few studies in international OGS literature that we know of. Hence, we introduce unique perspectives from southeast Mediterranean customers and shed light on Turkish customers' novel shopping habits and preferences in emerging online shopping areas under pandemic conditions with the addition of a less used construct of fear of COVID-19. Hence, we hope the insights gained from this current study would provide valuable feedback

to politicians as well as managers of respective organizations in setting up their strategies, policies and directions for the industry as well as the particular firms.

The certain positive influence of consumers' PEU on PU toward OGS ( $H_1$ ) is supported in this study, meaning that consumers who think that OGS is easy to use also perceive it as useful. Although there are studies in the literature that propose a reverse relationship between those two constructs (Loketkrawee and Bhatiasavi, 2018), the results we obtain in this study are congruent with the original TAM model (Davis, 1987), which is also supported in other studies (Bauerová and Klepek, 2018).

The positive effect of PEU on attitude toward OGS is also supported ( $H_2$ ). This result suggests that consumers who consider OGS to be easy also gain positive attitudes toward it. There are contradictory findings in the literature regarding this relationship. While some studies reveal a significant relationship between two variables (Chien et al., 2003; Loketkrawee and Bhatiasavi, 2018), some did not (Bauerová and Klepek, 2018). Our findings empirically support the positive relationship between the two constructs in the context of OGS.

The relationship between PU and attitudes showed a significant effect, thus supporting  $H_3$ . This result suggests that consumers who consider OGS as a useful instrument also gain positive attitudes toward it. Yet, it seems natural for us to shop online in the pandemic era rather than mere performance enhancement or time and effort gains, which is also consistent with the literature (Chien et al., 2003; Loketkrawee and Bhatiasavi, 2018).

The positive effect of PEU on trust is supported ( $H_4$ ), meaning consumers who find OGS easy to use, also develop trust in it. The relationship between trust and attitude also presented a positive effect, which verifies  $H_5$ . This result suggests that consumers who developed trust toward OGS also gain positive attitudes toward it. Considering that there is no research found in the literature investigating these relationships in the OGS context, these results contribute to the literature by revealing these effects between the OGS antecedents.

Lastly, the positive effects of PU ( $H_6$ ), attitude ( $H_7$ ), and PEU ( $H_8$ ) on the behavioral intention of OGS are all supported. These results suggest that consumers who found OGS useful and easy to use and grew positive attitudes toward it tend to use it in their OGS. Especially, PU was found to be the most influential variable on behavioral intention, with its mean value of 4,39 out of 5, which further supports the findings in the literature (Driediger and Bhatiasavi, 2019).

Overall, the results highlight that the components of the e-TAM are capable of explaining the acceptance of OGS technology similar to the earlier studies (Chien et al., 2003; Loketkrawee and Bhatiasavi, 2018; Driediger and Bhatiasavi, 2019).

## 5.1 Moderating Effects

It is suggested in the literature that situational factors also needs to be taken into account in the acceptance of OGS (Hand et al., 2009). Adapting this suggestion, the current study examines the effect of COVID-19 on the acceptance of OGS by including the people's fear of COVID-19 to the research model as a moderator. The period that the data had been collected was deliberately selected as between 1 and 25 November 2020 after the Turkish government's reintroduction of restrictions, when the effect of the pandemic was still severely experienced by the consumers. The mean level for the participants' pandemic fear was 2,99 out of five, which is above the average. According to the results, significant effects of certain e-TAM antecedents on behavioral intention toward OGS are significantly weaker after adding the interaction effect of consumers' fear from COVID-19, supporting the hypotheses  $H_9$ ,  $H_{10}$  &  $H_{11}$ . These results suggest that the more people are afraid of COVID-19, the less e-TAM is capable of explaining the consumers' acceptance of OGS by itself since we should consider an important and significant external variable of fear of COVID-19. However, by integrating the fear of the COVID-19 construct into our TAM model, we can enhance the predictive power of the model remarkably.

## 6 CONCLUSION

### 6.1 Theoretical Implications

This study further supports the idea of using the e-TAM theory to explain consumers OGS acceptance. The research results also emphasized the importance of situational factors in the TAM structure once again. SEM found all the twelve proposed hypotheses as significant and thereby providing further support to existing TAM relationships, especially with the inclusion of an important situational factor, fear of COVID-19. The addition of the COVID-19 fear construct would be a recent and unique contribution of this study in TAM and OGS literature. As the pandemic is still raging worldwide, it seems logical to argue that we will talk about COVID-19 for a considerable time more.

### 6.2 Practical Implications

The findings in the literature that indicates; PU, attitude, and PEU as significant antecedents of OGS (Driediger and Bhatiasavi, 2019) have also been empirically supported in this research, which suggests further evidence for the retailing managers in terms of understanding the mechanisms of OGS acceptance.

This study also reveals the fear of pandemics as a significant factor in the acceptance of OGS. As we all know, this is not the first pandemic that humanity has faced. However, since a pandemic of this magnitude has been experienced for the first time in the near future, businesses operating in many markets, especially retail, have been caught unprepared for the epidemic. It is also clear that there is a great possibility that new outbreaks will occur in the future (Iserson, 2020). For these reason, retail managers should learn from this crisis and prepare their online channels for a possible upcoming pandemic. In this study,

especially PEU emerged as the most influential variable in OGS acceptance. Thereby, one of the most important preparations that retailers can implement will be to transform their online channels into a more user-friendly form.

### 6.3 Limitations of the Study and Possible Future Undertakings

The current study has some limitations, some of which might provide possible future research challenges. First, mainly due to the pandemic restrictions, this study adopted a convenience sampling methodology for the data gathering process, which could somewhat decrease the generalizability of our findings. Future scholars may replicate this study by using actual data from the retailers operating an online trade channel. Second, this study focuses exclusively on grocery shopping retailers with online channels. Hence, the findings of this study might not be valid for other types of retailers, which would also give some reasoning for future studies.

It is understood from the results of this study that for the people with a high-level fear of a pandemic, the effects of the predictors for the acceptance of OGS decrease. This might be interpreted as a signal for future researchers to examine some other antecedents to understand better the acceptance of OGS in extraordinary situations like the pandemic era. Also, considering the empirical evidence represented in this study regarding the effects of pandemic fear, in future research, scholars can also examine the effects of different aspects of the pandemic on the acceptance of OGS like decreases and changes in purchasing patterns as well as types of supplies. Besides, comparative studies among different OGS venues and other countries with Turkish samples could also bear fruitful and interesting results.

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