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ADVANCES IN GLOBAL SERVICES AND RETAIL MANAGEMENT

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# Extending the Theory of Planned Behavior to Explain Intention to Use Online Food Delivery Services in the Context of COVID-19 Pandemic

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## Abstract

The increased fear of getting COVID-19 led to significant changes in foodservice delivery and shoppers' behaviors. This paper incorporated trust and fear of COVID-19 into the theory of planned behavior (TPB) model to explore shopper's intention to use online food delivery (OFD) services in the context of the COVID-19 pandemic. A self-administered questionnaire was developed to collect data from 278 respondents intercepted at the three largest shopping centers located in Algiers city (Algeria). A multiple regression analysis was used to test the hypotheses of the model. This research found that intention to use OFD is significantly and positively affected by the fear of COVID-19, followed by trust, attitude, and then the subjective norm. PBC was non-significant. This paper provides a theoretical contribution and presents practical implications relevant to academics and practitioners working in areas related to OFD services in the context of the health crisis.

**Keywords:** COVID-19 fear, online retailer, theory of planned behavior, trust

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## Introduction

The COVID-19 pandemic is still harmfully permeating all aspects of human life and on all sectors of the global economy alike (Bouarar et al., 2020). Nevertheless, the degree of harm it is inflicting differs from one sector to another (Mouloudj et al., 2020). The COVID-19 pandemic triggered common confusion, fear, anxiety, and tiredness (Bae and Chang, 2020). Therefore, during health crises, such as COVID-19, the fear of contracting the virus proliferates quickly among people, and the protective behavior becomes remarkably obvious (Mehroliya et al., 2020). Population felt insecure due to suspicious or even false information regarding virus transmission, the incubation period, its geographic frame, the number of infected, and the actual mortality rate (Ornell et al., 2020). Due to uncertainty the world is experiencing major anxiety, the scarcity of information made potential risks and implications of the COVID-19 pandemic on the global economy in general unpredictable (Bouarar et al., 2020), and the OFD services in particular.

On the other hand, one of the significant factors that prompted the Online to Offline (O2O) trade explosion has been the increasing usage of smartphones, Laptops, tablets, and the infrastructure development that made payment and delivery easier (Li et al., 2020). With the emergence of the O2O era, the increasing various food delivery apps are not confined to benefit customers with

copious choices but also presents restaurant operators more opportunities to have access to more potential customers and gain additional revenue (Chen et al., 2020). Online food delivery (OFD) systems provide customers with a suitable, fast, and reliable delivery service of foods and beverages provided by foodservice partners (FSP) (Bates et al., 2020). OFD ordering services are a novel tool in the restaurant industry (Ali et al., 2021). OFD refers to "the process whereby food that was ordered online is prepared and delivered to the consumer" (Li et al., 2020). Developments in food delivery services are altering customers' food buying practices (Troise et al., 2020). When shoppers perceive the likelihood and implications of getting infected to be high, they feel compelled to engage in self-protective behavior, including the use of OFD services, to reduce perceived risk. OFD apps electronically link consumers to a wide gamut of foodservice outlets (Bates et al., 2020). Wherefore, food delivery is essential during health crises. During the global 2020 pandemic, OFD proved to be advantageous, since customers had easy access to prepared food and endowed food providers with a great chance to maintain their activities (Li et al., 2020).

Motivation for use online food ordering system is one of the most important topics for researchers in this field. But in the context of COVID-19 pandemic, research has shown that customer behavior in the hospitality industry is more complicated than ever and difficult to predict (Stojczew, 2021). Therefore, to take adequate actions in online food marketing or planning, one must understand which factors influence shoppers' intentions to use OFD services. Indeed, several studies on customer's intentions and behaviors could be found in the literature in the online food marketing context. For instance, Saad (2020) found that delivery time, service quality, price, and condition of food delivered directly affect the success of OFD. Researchers have paid considerable attention to OFD in different countries (e.g., Ali et al., 2021; Bates et al., 2020; Chen et al., 2020; Daim et al., 2013; Dsouza and Sharma, 2020; Lee et al., 2017; Li et al., 2020; Mehroliia et al., 2020; Troise et al., 2020). Technology adoption literature has suggested that adoption of technology acceptance for online food services is determined by his/her attitude, perceived usefulness and perceived ease of use (Lee et al., 2017), speed of the website, the fast response time on online services, and kindness and quality of the personnel (Daim et al., 2013). However, very little research has been applied the TPB model to explore shopper's intention to use OFD services (e.g., Chen et al., 2020; Troise et al., 2020), especially, in the context of the COVID-19 pandemic (e.g., Troise et al., 2020).

This paper aims to contribute to the development of an extended TPB and to gain some insight into the motives for shoppers' intentions to use the OFD services during the COVID-19 pandemic. More specifically, this paper seeks to answer the following five questions: (1) Does shoppers' attitude affect the intention to use the OFD services during the COVID-19 pandemic? (2) Does shoppers' subjective norm affect the intention to use the OFD services during the COVID-19 pandemic? (3) Does shoppers' PBC affect the intention to use the OFD services during the COVID-19 pandemic? (4) Does shoppers' trust affect the intention to use the OFD services during the COVID-19 pandemic? (5) Does fear of COVID-19 affect the intention to use the OFD services? The current paper has been divided into five sections. After the introduction, Section 2 presents the literature review. Section 3 describes the methods utilized in the paper. The results are discussed in Section 4. Section 5 presents the conclusions of this paper, with suggested directions for future research.

## Literature Review and Hypothesis Development

### *Intentions to Use Online Food Delivery (OFD) Services*

Consumers are growingly opting for online services as their disposable income increases, electronic payments have gained significant trust, and the ambit of suppliers and the extent of their delivery networks expand (Li et al., 2020). Consumers can use the OFD platform or an app to choose menus from local foodservice outlets, and setting different criteria of their preferences including offers, healthy options, and delivery fees. The consumer puts orders prepared by the foodservice outlet and subsequently receives his order wherever he might desire. (Bates et al., 2020). Previous studies have shown that convenience motivation and post-usage usefulness (Yeo et al. 2017), utilitarian and hedonic values (Chen et al., 2020), performance expectancy, congruity with self-image, habit, and mindfulness (Gunden et al., 2020a), optimism, and innovativeness (Ali et al., 2021), all exert a significant positive effect on intention of using the OFD services. Mehroliya et al. (2020) discovered that age, purchase frequency, affective and instrumental beliefs, perceived benefits, perceived threat, and product involvement explained 58.5 percent of the variance in respondents' purchase decision on OFDs selection during the COVID-19 outbreak. However, Gunden et al. (2020a) affirmed that impulse buying tendency had a negative impact on intentions to use OFD systems in the USA. In addition, Ali et al. (2021) found that insecurity and discomfort have a significant and negative correlation with OFD ordering service intentions. According to market research reports, people using OFD platforms are usually working adults ranging between 35 and 44 years of old enjoying high disposable incomes (Bates et al., 2020). Furthermore, Ali et al. (2021) found that consumer behavioral intentions exert a positive and significant effect on the actual adoption of OFD ordering services.

### *Theory of Planned Behavior (TPB)*

TPB is a theory developed for explaining the factors that affect behavioral intention (Ajzen, 1991). The core concept of the TPB suggests that attitude, subjective norms, and perceived behavioral control are determinants of behavioral intention, which, in turn, determine behavior. The TPB model has been applied extensively by marketing researchers to predicting behavioral intentions. The application of the TPB to determine factors associated with intentions to use OFD apps has been demonstrated in many studies using empirical research methods. For example, Chen et al. (2020) applied the TPB to understand customers' purchase intentions toward OFD platforms. The study showed that TPB constructs positively and significantly affected purchase intention toward OFD Services through utilitarian and hedonic values. Troise et al. (2020) combined the TAM and the TPB to understand the main predictors of users' intention to use food delivery apps. They found that “combining the TAM and the TPB provides a valid and significant model that can be used to understand OFD users' behavioral intentions.” However, researchers have incorporated extra variables in the TPB to gain more accuracy in predicting behaviors (Bae and Chang, 2020). Accordingly, this paper incorporated trust and fear of COVID-19 into the TPB model. Troise et al. (2020) found attitude towards OFD was influenced positively by trust in OFD services. Furthermore, Addo et al. (2020) found that fear appeal is correlated with the sharp dynamics in online purchases as related to the COVID-19.

However, some other studies have used other theories to investigate intentions to use OFD. For instance, Daim et al. (2013) applied the technology acceptance model (TAM) to investigate the

factors affecting online food shopping. Yeo et al., (2017) used the contingency framework and extended model of IT continuance to analyze the main drivers of customer's continued intention to use online food ordering systems. Lee et al. (2017) used the extended TAM to establish the relationship between the determinants that affect customers' use of food delivery apps. Mehroliia et al., (2020) used the health belief model (HBM) to assess the distinctive features of customers who did and did not order food through OFD services during the COVID-19 pandemic. Recently, Ali et al., (2021) applied the theory of technology readiness as the theoretical research framework to explore the role of influence of COVID-19 pandemic as a moderating variable in the factors influencing the intention to order OFD services.

## Hypothesis Development

### *Attitudes Towards Use the Online Food Delivery Services*

According to Ajzen (1991, p.188) attitudes refers to "the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question." In this research, attitude is defined as "an overall positive or negative evaluation towards the behavior of use OFD services". Previous studies have shown that convenience motivation and post-usage usefulness (Yeo et al. 2017), perceived usefulness and perceived ease of use (Lee et al., 2017), utilitarian and hedonic values (Chen et al., 2020) have a significant positive effect on attitude toward OFD services. Hsu et al. (2014) showed that perceived risk has a negative and significant effect on attitude toward online shopping. Behavioral intention is substantially predictable by attitude as it has a significant positive effect (Yeo et al., 2017). Kang and Namkung (2019) found that attitudes toward food O2O are positively associated with customers' intentions to use food O2O. Chen et al. (2020) demonstrated that utilitarian and hedonic values have a mediating influence on attitude and purchase intentions toward OFD services. Hsu et al. (2014) found that attitude toward online shopping has a positive effect on the intention to purchase. Furthermore, Yeo et al. (2017) affirmed that there is a positive link between attitude toward OFD services and behavioral intention toward OFD services. Additionally, Lee et al. (2017) confirmed that attitude regarding the use of mobile delivery apps exerts a positive effect on the intention to use mobile delivery apps. Troise et al. (2020) found that attitude positively influences the behavioral intention to use OFD. As a result, the following research hypothesis has been constructed:

- **H1:** Shoppers' attitude positively affects their intention to use OFD services.

### *Subjective Norm (SN)*

According to Bouarar and Mouloudj (2021, p.652), subjective norm refers to "the level of social pressures exerted by a reference group that can influence a person's perception, feeling, preference, judgments, attitude, intention, and behavior." Based on TPB, someone would flair to perform a behavior if he perceived his community's pressure to do it (demonstrated). Previous empirical studies have demonstrated the positive relationship between the subjective norm and intention of performing behavior. Thus, in the context of food delivery, the subjective norm might affect shopper's intention of using OFD. If shopper perceived that the social pressure to use online food delivery services during COVID-19 is high, he/she would be more likely to intend to do it. Gunden et al. (2020b) found that social influence is positively related to consumers' persuasion when using OFD systems. In addition, Chen et al. (2020) values (utilitarian and hedonic) have a mediating

influence on the subjective norm and the behavioral intentions in OFD services context. Troise et al. (2020) found that subjective norms have a significant and positive influence on trust in OFD services, attitude towards OFD, and behavioral intention to use OFD. Based on the foregoing, we establish the following hypothesis:

- **H2:** Shoppers' subjective norm positively affects their intention to use OFD services.

### ***Perceived Behavioral Control (PBC)***

The TPB deems perceived behavior control (PBC) as a third factor influencing human behavior (Bouarar and Mouloudj, 2021). PBC refers to an individual's confidence in his/her abilities to correctly perform the behavior in question (Ajzen, 1991). PBC captures the individual's perception of their capacity to carry out the behavior in the light of experience and expected issues, skills, abilities, opportunity, compulsions, and dependence upon others (Ajzen, 1988). PBC measures people's perception of their ability to perform particular behavior (Sumaedi et al., 2020). Lee et al. (2017) found that perceived usefulness and perceived ease of use influenced attitude toward the use of mobile delivery applications, which in turn influenced intention to use OFD apps. Troise et al. (2020) found that PBC positively influences the behavioral intention to use OFD. Similarly, Chen et al. (2020) showed that utilitarian and hedonic values have a mediating effect on PBC and the buying intentions toward OFD services. Consequently, the following hypothesis is established:

- **H3:** Shoppers' PBC positively affects their intention to use OFD services.

### ***Shoppers' Trust***

One of the main characteristics of online shopping is that there is no physical interaction between buyers and sellers (Çiftçi and Çizel, 2020). Thus, trust is one of the most important psychological factors that affect online customer behaviour. Mayer et al., (1995, p. 712) defined trust as “the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party.” Accordingly, the trustworthiness of the intermediary plays a critical role in determining the extent to which consumers trust and accept the sellers in the e-marketplace (Hong and Cho, 2011). Oliveira et al. (2017) noticed that for the aim of maximizing the overall trust of the end-users in their business, Internet retailers must understand how customers perceive integrity, competence, and kindness. Thus, trust is pivotal in online transactions due to various risks that people would encounter in their buying process (Van der Heijden et al., 2003).

Previous studies have found trust to play a key role in forming the purchase intentions of a customer (Oliveira et al., 2020). Menidjel et al. (2017) found that customer trust is positively influenced by satisfaction which proved that satisfaction is an antecedent of trust. Hong and Cho (2011) found that trust in an intermediary has a strong and significant effect on both attitudinal loyalty and purchase intentions in B2C e-marketplaces. Additionally, Kang and Namkung (2019) showed that perceived usefulness and perceived ease of use have a direct and significant effect on customer trust in the food O2O commerce. The study also revealed that attitudes and behavioral intentions to use O2O services for ordering food products are significantly impacted by customer trust. Hsu et al. (2014) affirmed that trust in a website and vendors are significantly correlated with a customer's attitude towards online shopping. Van der Heijden et al. (2003) argue that a greater degree of trust is a prerequisite in an online shopping environment comparing to a physical shop.

We can therefore argue that building and maintaining trust in the OFD Platform is more important than in an offline environment. Kang and Namkung (2019) found that consumers' attitudes and behavioral intentions to use O2O services for ordering food products are significantly impacted by information quality, perceived usefulness, perceived ease of use, source credibility, and customer trust. Troise et al. (2020) found that trust in OFD services has a positive influence on attitude towards OFD, However, they also found that trust in OFD has no significant influence on behavioral intention to use OFD. As a result, the following research hypothesis has been constructed:

- **H4:** Shoppers' trust positively affects their intention to use OFD services.

### *Shoppers' Fear of COVID-19*

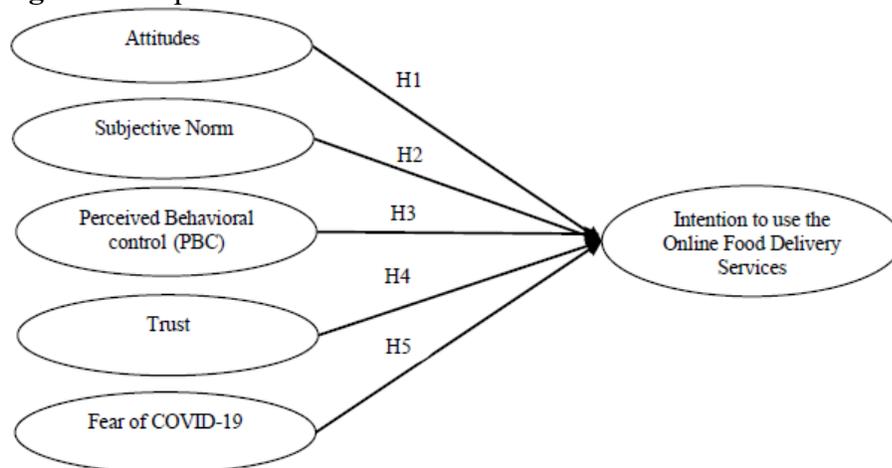
The fear of COVID-19 has imposed lockdown and emptied streets in many countries (Bae and Chang, 2020). Ornell et al., (2020) defined fear as "an adaptive animal defense mechanism that is fundamental for survival and involves several biological processes of preparation for a response to potentially threatening events." According to Mertens et al. (2020), fear refers to "an adaptive emotion that serves to mobilize energy to deal with the potential threat." The fear of COVID-19 was defined as "a negative emotional state that captures the anxiety and depression experienced due to an awareness of the possible consequences of the COVID-19 pandemic" (Jian et al., 2020, p.2). Taylor et al. (2020) determined five factors of stress and anxiety symptoms regarding the COVID-19 include danger and contamination; fears about economic consequences; fear of foreigners who might be carrying infection (i.e., disease-related xenophobia); compulsive checking and reassurance seeking; and traumatic stress symptoms. When the threat is uncertain and persistent, like the COVID-19 pandemic, fear can become chronic and onerous (Mertens et al., 2020). Many studies have been conducted on fear of COVID-19. For example, Giordani et al. (2020) assessed the fear of COVID-19 in the Brazilian population. They found that a higher level of fear is rampant among women and also for those aged 18–29 years. Besides, belonging to a high-risk group and having relatives who died or contracted the COVID-19 showed a positive correlation with fear. Besides, Mertens et al. (2020) identified predictors of fear of the COVID-19 in 28 different countries. They found four predictors for the COVID-19 fear are: health anxiety, regular media use, social media use, and risks for loved ones.

In addition to a felt fear of death, the COVID-19 pandemic exerted several implications in other areas of our life: family organization, closings of schools, companies, and public places, shift in work routines and patterns, isolation, leading to feelings of depression, moreover, it can exacerbate insecurity due to the economic and social repercussions of this mass-scale tragedy (Ornell et al., 2020). In India, Mehrolia et al. (2020) found that customer's purchase decision is affected by their frequency of ordering food online before the nationwide lockdown. Recently, Rather (2021) found that fear of COVID-19 and perceived risk exert a significant negative impact on tourist's attitude towards traveling in the wake of the COVID-19 pandemic. Also, Mehrolia et al. (2020) discovered that high-perceived threats on COVI-19 form negative purchase intentions towards OFD services. Based on the foregoing, we establish the following hypothesis:

- **H5:** Shoppers' fear of COVID-19 affects their intention to use OFD services.

The summary of the hypothetical relationships among the variables is shown in Figure 1.

**Figure 1.** Proposed Model Based on TPB



## Research Methodology

### *Sample and Data Collection*

The data were collected through a self-administered questionnaire while taking into account social distancing measures. Due to movement limitation, the convenience sampling method is used to collect data (Sumaedi et al., 2020), involving participants who have the willingness to take part in the research (Bouarar and Mouloudj, 2021). This sampling method is absolutely swift, handy, readily available, and cost-effective, making it be a useful appealing option to most marketing researchers. Thus, convenience sampling or more commonly known as availability sampling is selected to collect the required data. The sample of the study covers all shoppers beyond 18 years old. Data has been collected from November 15th, 2020 to February 10th, 2021. In total, 400 questionnaires were distributed and 283 questionnaires were returned. However, the analyses were carried out on 278 questionnaires because five of them were either incomplete or incorrect. Participants were intercepted at the three largest shopping centers located in Algiers, namely ARDIS, Carrefour, and Bab Ezzouar commercial center; Algiers is a city of around 3.5 million inhabitants in the North of Algeria. The participants were required to fill the questionnaire, and were promised that the process would not last more than 12 min (Menidjel et al., 2017), and were rewarded a bar of chocolate for their participation.

### *Measurement Instrument*

The questionnaire was selected due to various merits such as low cost, wider geographical coverage, provides anonymity, and also alleviating prejudices through the pressure an interviewer can give (Yeo et al., 2017). The questionnaire included the questions on demographic profile (such as gender, age, level of education, and household income), and the questions related to the constructs of this study. The constructs were adapted from previous studies to ensure content validity (Sekaran and Bougie, 2010). A definition of an OFD system was included in the questionnaire, to ensure the respondents' understanding of the topic. The attitude construct was measured using four items adapted from Yeo et al. (2017). A three-item scale was adapted from Troise et al. (2020) to measure the subjective norm construct. We developed a scale with three items to measure PBC construct. Three items were adapted from previous studies (Cho et al., 2019;

Troise et al., 2020) to measure the trustworthiness construct. COVID-19 fear construct was measured with scales adapted from Jian et al. (2020) (2020), whereas to measure the intentions to use OFD services, a three-item scale was adapted from Cho et al., (2019) and Troise et al. (2020). All measures were rated based on a Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). According to Dawes (2007), a 5- or 7-point Likert scale provides slightly higher mean scores as compared to a 10-point scale, which bound to facilitate the process of comparing data. As for content validity, three experts in the marketing field were invited to review the questionnaire. In order to ensure the questionnaire is suitable and usable for this research (Yeo et al., 2017), and check for vague items, and before proceeding with data collection, we conducted a pilot test of the questionnaire with a group of 25 shoppers. The questionnaire was initially developed in English and then translated into Arabic and French. And respondents were free to answer in the language of their choice.

## Results

### *The Descriptive Statistics*

The demographic characteristics indicated that 163 were male (58.63%), and 115 were female (41.37%); the average age of the participants was 40.7 years (ages ranged from 18 years old to 67 years old). Also, most participants reported that they were college-graduates (50.36%), followed by (30.94%) secondary degrees, and then high graduate degrees (18.70%). With respect to participants' household income level, about one-fourth of the participants reported a monthly household income above 70,000 Algerian dinars (20.14%), and between 40,000–70,000 Algerian dinars (32.02%), while (47.84%) described their household income as less than 40,000 Algerian dinars or without income. The participants' demographical distribution is shown in Table 1.

**Table 1.** Demographic Characteristic of Participants (n = 278)

Characteristic	Variables	n	(%)
Gender	Male	163	58.63
	Female	115	41.37
Age	18-30	26	09.35
	31-45	158	56.83
	46-65	87	31.30
	Above 65	7	02.52
Level of Education	Secondary	86	30.94
	College-graduates	140	50.36
	High graduate-degrees	52	18.70
Household Income (Monthly)	Less than 40,000 AD	133	47.84
	40,000–70,000 AD	89	32.02
	Above 70,000 AD	56	20.14

The internal consistency reliabilities of each set of TPB, trust, fear of COVID-19, and intentions measures are given in table 2. The minimum coefficient was 0.804; a value greater than 0.6 indicates satisfactory internal consistency reliability (Malhotra, 2010). Test of normality is a key postulation of regression analysis. The reliability of the regression result requires the data to be normally distributed. According to Byrne (2016), the observed distribution was normal if the skewness and kurtosis values were close to zero (0) with a measure of skewness statistics ranging between  $\pm$  two (-2 and +2) and kurtosis between  $\pm$  seven (-7 and +7).

**Table2.** Descriptive Statistics of the Main Items

Factors and items (Cronbach's alphas)	M	SD	Sk.	K.	Tol.	VIF
Attitude (ATT) (0.912)					0.568	1.760
ATT1 For me, use the food delivery app is good.	3,791	,870	-,872	,968		
ATT2 For me, use the food delivery app is rewarding.	3,748	,846	-,718	,728		
ATT3 For me, use the food delivery app is wise.	3,744	,864	-,698	,568		
ATT4 For me, use the food delivery app is favorable.	3,802	,887	-,725	,650		
Subjective Norm (SN) (0.870)					0.410	2.437
SN1 People who are important to me would think that I should use online food delivery services.	3,748	,756	-,655	,896		
SN2 People who influence me would think that I should use online food delivery.	3,773	,702	-,722	1,113		
SN3 People whose opinions are valued to me would prefer that I should use online food delivery services.	3,719	,685	-,727	1,057		
Perceived Behavioral Control (PBC) (0.917)					0.415	2.408
PBC1 I have resources, time, and opportunities to use online food delivery.	3,636	,765	-,639	,569		
PBC2 I know how to use online food delivery.	3,687	,725	-,644	,964		
PBC3 I am confident that if I want, I can use online food delivery.	3,661	,696	-,659	1,110		
Trustworthiness (TR) (0.809)					0.453	2.209
TR1 I trust the food delivery app.	3,971	,745	-,587	,434		
TR2 I felt secure in ordering food through the food delivery app.	4,039	,780	-,621	,197		
TR3 The information provided by the food delivery app is reliable.	3,985	,710	-,648	,843		
Fear of COVID-19 (0.943)					0.504	1.985
FC1 I am afraid of being infected with the COVID-19.	3,435	,751	-,858	1,039		
FC2 I am afraid of losing my life because of the COVID-19.	3,449	,752	-,635	,594		
FC3 When watching news about the COVID-19, I become nervous or anxious.	3,443	,789	-,619	,539		
Intentions (INT) (0.804)					-	-
INT1 I intend to use the food delivery app.	4,021	,750	-,449	-,049		
INT2 If I have an opportunity, I will order food through the delivery app.	4,082	,713	-,482	,168		
INT3 I intend to keep ordering food through the delivery app.	4,089	,707	-,560	,465		

Our results indicate that skewness ranged between -0.872 and -0.449, whereas kurtosis ranged between -0,049 and +1,113, thus ensuring that the data used in the study is normally distributed. Mean and standard deviation are presented in table 2. Means for all items range between 3,435 and 4.089 on a scale of 1 (strongly disagree) to 5 (strongly agree) which demonstrate that the majority of participants had positive intentions towards the green hotel. Descriptive evidence in Table 2 shows that respondents formed positive thoughts on online food delivery services.

In addition, multicollinearity can affect any regression model with more than one predictor. The variance inflation factor (VIF) and tolerance are two closely related statistics for diagnosing collinearity in multiple regression. Hence, it is important to test multicollinearity before conduct a regression analysis. Hair et al. (2013) suggest that when Tolerance is less than 0.20 and VIF value is above 5.0, there is a problem with multicollinearity. The results in Table 2 suggest that the Tolerance and VIF value in all the constructs is above the threshold limit suggested by Hair et al. (2013), and this means that multicollinearity is not a problem in this analysis.

### Testing of Hypotheses

To test our five research hypotheses, we conducted a multiple linear regression to evaluate the degree of importance of each variable (Table 3). We note that the global regression model is significant ( $p = 0,000 < 0,05$ ). Hypothesis testing was further done through multiple regression analysis. The details of the multiple regression analysis are shown in Table 3.

**Table 3.** Regression Analysis Results for Intention to Use OFD Services

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(constant)	,748	,142		5,255	,000
ATT	,099	,034	,124	2,867	,004
SN	,098	,049	,102	1,996	,047
PBC	,013	,046	,015	,290	,772
TR	,304	,047	,314	6,482	,000
FC	,381	,039	,450	9,779	,000

Notes: Model summary:  $R = 84,3\%$ ;  $R\text{ Square} = 71,0\%$ ;  $Adjusted\ R\ Square = 70,5\%$ ;  $F = 133,470$ ;  $P = 0.000$  ( $p < 0.05$ ). Dependent Variable: Intention to use OFD services. Independent variables: Attitude (ATT), Subjective norm (SN), Perceived behavioral control (PBC), Trust (TR), Fear of COVID-19 (FC).

The results of the current study showed that a positive attitude towards using the OFD services positively affecting the shopper's intention to use OFD services during the COVID-19 pandemic ( $\beta = 0.099$ ;  $t = 2.867$ ) at the .05 level ( $p < .05$ ), a hypothesis that was suggested by various authors in business management literature. Thus hypothesis 1 is supported. In the same context, it was found that subjective norm exerts a positive effect on shopper's intention to use OFD services during the COVID-19 pandemic ( $\beta = 0.098$ ;  $t = 1.996$ ). Thus hypothesis 2 is supported. This suggests that for subjective norms, the perceptions of other significant individuals have a strong direct effect on the intention to use OFD services. Also, the findings indicate that trust had a significant and positive effect on shopper's intention to use OFD services in the context of COVID-19 pandemic ( $\beta = 0.304$ ;  $t = 6.482$ ). Thus hypothesis 4 is also supported. This suggests that level of trust has a strong direct effect on the intention to use OFD services. Besides, the findings indicate that fear of COVID-19 has a significant positive effect on shopper's intention to use OFD services in the context of COVID-19 pandemic ( $\beta = 0.381$ ;  $t = 9.799$ ).

On the other hand, PBC had a non-significant effect on shopper's intention to use OFD services in the context of COVID-19 pandemic ( $\beta = 0.013$ ,  $t = 1,566$ ) and ( $p = 0.772$ ). Thus hypothesis 3 is not supported. For PBC, this suggests that perceptions of control and perceived enhancers or barriers did not have a significant direct effect on the intention to use OFD services. Lee et al. (2017) found that information provided by restaurants exerted a positive effect on an app's perceived usefulness, thus it is incumbent upon food delivery apps to bring about a framework to provide accurate information to consumers.

### Discussion

In our Model, attitude, subjective norms, trustworthiness, and fear of COVID-19 explained 71 percent of the intention to use the online food delivery services in times of COVID-19, while the remaining 29 percent explained other variables not included in the research model. Results of this paper demonstrated the utility of an extended model of the TPB as a conceptual framework in analyzing the customers' intention to use OFD services during the COVID-19 pandemic. However,

for OFD systems to be successful, they must use top-quality retail interfaces, specifically designed to enlighten customers through effective and valuable purchasing (Gunden et al., 2020b).

Along with the study's findings, there was evidence that attitude toward behavior affects a shopper's intention to use OFD services during the COVID-19 pandemic. But the effect can only be qualified as minor. This finding is in agreement with H1. This finding supported the theoretical framework that posits attitude as a predictor of customer's intention. Furthermore, this result is consistent with the findings of the previous studies. For example, Yeo et al. (2017) discovered that attitude toward online food delivery services positively influences behavioral intention toward OFD services. In addition, Lee et al. (2017) found that attitude was a strong predictor of intention to use mobile delivery apps. Kang and Namkung (2019) found that attitudes are positively associated with intentions to use food O2O. In addition, Chen et al. (2020) found that attitude had an indirect effect on purchase intentions toward food delivery platform services through utilitarian and hedonic values.

In line with the study's findings, there was proof that the subjective norms affect the shoppers' intention to use OFD services in the context of COVID-19 pandemic. But the effect is deemed to be insignificant. This finding is in agreement with H2. This means that shoppers with an influential group (such as family members, friends, and peers) were more likely to produce favorable intentions to use online food delivery services and convert the intention into behavior. For example, a wife (housewife or working wife) may influence her husband to order dinner online, also customers at the workplace may get influenced by his colleagues or one of his subordinates for mere watching someone using an app to order food, and the same applies between friends. This result is consistent with the results of the study carried out by Chen et al. (2020) who found that subjective norm has a positive and significant effect on purchase intentions toward OFD services, but this effect would be mediated by utilitarian and hedonic values.

Consistent with the study's findings, fear of COVID-19 affected shoppers' intentions to use online food delivery services during the COVID-19 pandemic. This finding is in agreement with H5. This result is logical and expected, because the high risk of contracting covid-19 associated with the fear that either one the delivery service staff, or other customers are infected, oblige customers to avoid going to restaurants, it also makes him limit his interaction with people in retail stores, and this would significantly stimulate the customer to order food online. In this context, Troise et al. (2020) found that perception of COVID-19-related risks in OFD services negatively influences users' behavioral intention to use OFD in Italia. This result is also logical particularly that Italy witnessed a high rate of infection and deaths in the first months. However, this result is inconsistent with the results of the study carried out by Mehroliia et al. (2020) who found that high-perceived threats on COVI-19 negatively influence the customers' purchase intentions towards OFD services in India.

Study findings revealed that shoppers' trust had a significant effect on the intention to use the OFD services during the COVID-19 pandemic. This suggests that shoppers' intention to use OFD services is affected by their degree of trust in Internet retailers and food delivery apps or systems. This result is consistent with the results of the study carried out by Kang and Namkung (2019) who found that customer trust is positively related to attitudes toward food O2O, which, in turn, is positively related to intentions to use food O2O commerce. Troise et al. (2020) confirmed that when customers highly trust OFD platforms, they have a better attitude towards using these

services and are more likely to use them. In addition, Oliveira et al. (2017) found that customers with high overall trust showed a significant intention to purchase online. According to Hong and Cho, (2011), trust plays a significant role in determining intentions of online purchases. Therefore, in order to increase the online trust of shoppers, OFD platforms, online retailing, and restaurants could use different mechanisms that provide authentication of each partner and safety access (such as online signature, secure passwords, electronic ID, and so on).

On the other hand, the results indicated that PBC had no significant effect on the intention to use the OFD services during the COVID-19 pandemic. This result is in disagreement with H3. This implies that several customers could not buy food online despite their positive attitude toward OFD, among the logical interpretations of this finding, is that the long period of lockdown caused by covid-19, exerted major effects on a wide majority of customers' purchasing power and that a wide range of these customers could not afford the additional cost (such delivery fee), especially that some of one food delivery services providers seized the opportunity to of the situation imposed by the pandemic to increase the prices of services. The second interpretation is associated with the inability of some customers to have access to these services due to strict measures (home quarantine, mobility restrictions), that governments have imposed on citizens and retailers including restaurants, hotels, and providers of food delivery services. The third interpretation can be ascribed to some shopper's difficulties to use technology, particularly elderly people, and those with low education levels. This result is inconsistent with the Troise et al. (2020) study which found that PBC has a positive influence on behavioral intention to use OFD. Chen et al. (2020) found that PBC had an indirect effect on intentions toward OFD services through utilitarian and hedonic values. Lee et al. (2017) found that perceived ease of use had a positive effect on the intention to use food delivery apps through attitude. Also, Yeo et al. (2017) also showed that the intention to use OFD increased with development in the perception of after-usage usefulness and convenience. According to Li et al. (2020), opportunities vary around the globe regarding online food purchase behavior due to social, technological, economic, and cultural factors, these differences can play a key role in differing OFD uptake rates around the world. Moreover, Arnold et al. (2006) suggested that more attention should be paid to people's different circumstances when using a TPB model to predict behavior, particularly when it comes to past decisions and behavior, and to hurdles in carrying out an intention.

## Conclusion

Few studies hitherto have analyzed intention to use OFD services taking into account the epidemiological COVID-19 situation. Hence, this paper attempts to augment research on intention to use OFD services in the context of the public health crisis (COVID-19 crisis) through the lens of the TPB. The study is important from the perspective of the online food industry since scholars have argued that it is critical to understand the factors that drive a customer to use OFD services in different geographies and cultures (e.g., Kaur et al., 2021). The results showed that fear of COVID-19 were the strongest predicting factor for behavioral intention, followed by trustworthiness, attitude, and then the subjective norm. PBC was non-significant. These results were different from a previous study that stated customers' intention to use OFD services could be explained by three standard constructs of TPB (e.g. Troise et al., 2020). This is in line with the assumption that the effect of each construct of TPB on behavioral intention varies across settings, contexts, and samples.

### ***Theoretical Implications***

Particularly, this paper presents two major contributions. The first contribution is the inclusion of the shoppers' trust and fear of COVID-19 in the TPB model to investigate the intentions to use OFD services in the context of COVID-19 Pandemic since we have not found any study that has done it previously in the context of OFD. Second, this paper answer call by Lee et al. (2017) who called for future studies to measure the behavioral intention to use food delivery apps in different contexts to make a useful contribution to the foodservice industry literature. An examination of the available literature reveals that studies on OFD have to a great extent focused on acceptance from a technology perspective, leaving other aspects of consumer behavior less explored. Also, responds to another call by Kaur et al. (2021), for more research on OFD that focuses on different geographies and cultures. This also makes practical connotation because OFD operating in any area must adapt to local considerations. Accordingly, our study provides a beneficial vision on how to stimulate demand for OFD particularly during times of health crisis for two reasons at least: (1) protecting customers and preserving their health, (2) mitigating the negative implications of a health crisis on small and medium-sized companies to prevent them from bankruptcy and maintain as much as possible of jobs.

### ***Practical Implications***

The results indicate that those who have a positive attitude towards online delivery services are more likely to form intention towards these services. Therefore, during health crises, shoppers must be oriented to generate a positive attitude toward OFD services. The starting point of forming a positive attitude is to identify the current attitudes toward those services and systems, some shoppers for instance might have negative attitudes for their belief that these services are pricey due to delivery fee, therefore, service providers ought to convince customers of the service value, and that the value they pay for is not inferior of what they get in return. The study concluded that personal norms are statistically significant. These findings clearly indicate the impact of important persons to a shopper in influencing his decision to use OFD services, and hence, it is necessary to encourage positive electronic word of mouth (e-WOM), as well as employing public figures and decision leaders in promoting these services, such as filming beautiful family scenes where one of the family members orders food online using a particular app.

The results also indicated that PBC did not exert significant effects; accordingly, it is of vital importance for governments around the world to exempt OFD services during health crisis and diseases or pandemic from quarantine in order to guarantee shopper's ability to have access to the OFD services at anytime and anywhere. In another word, authorities are required to grant authorization for OFD services to work during the lockdown, as long as stern adherence to preventive measures is respected (such as social distancing, wearing masks, and hygiene), authorities have also to implementation of carrot and stick policy approach, through exempting OFD services in exchange for providing fair prices from one hand, and to sternly encounter any sorts of practices that might exploit customers in such circumstances on the other hand. We also recommend that delivery service providers must promote for their services to inform as much as possible of potential customers about the availability of their services, they also have to clarify and explain for those customers who lacks knowledge about working methods of OFD services systems, by providing guiding steps about how to order for these services, to make the process seems easier and not as complex as they might think.

The results also revealed, that having confidence in OFD services plays a key role in forming intentions towards their usage, hence, both online food retailers and those working in food delivery platforms should diligently strive to gain customers confidence, and improve their reputation and image through a strict commitment to food quality, fair price, and timely delivery at the exact required place. Finally, the results showed that the increasing shoppers' fear of contracting the COVID-19 significantly increases the likelihoods to order food online, this confers a golden opportunity that food retailers (such restaurants and hotels), an OFD services platforms should not miss, and this industry has saved several firms in the world from bankruptcy. Policymakers and stakeholders must strongly encourage online food orders, which can be adopted as a preventive strategy that curbs the propagation of diseases; this would undoubtedly lead to (1) preserving peoples' health, (2) relieving stress on healthcare employees, and (3) alleviating medical and treatments costs. However, despite all these advantages, Btaes et al. (2020) mentioned that this novel business model is likely to add more challenges and difficulties to national policymakers, especially concerning health nutrition policy challenges. Therefore, health authorities around the world must pay more attention to the negative implications of OFD services on customers' health. Bates et al. (2020) also believe that OFD platforms in Australia are absent from public health nutrition policies, due to their relatively new existence.

### ***Limitations and Future Recommendations***

The current study does have several limitations as well. First, this study used the conceptual model of TPB. Hence, despite the widespread adoption of this theory to explore behavioral intentions in various areas of research, yet the utilization of other models such as the Technology Acceptance Model, Health Belief Model, and model of value-attitude-behavior -or combining two or more models- to explore the critical factors affecting the adoption of OFD service, would certainly increase the accumulation of scientific knowledge in this field of research. Second, this paper did not address several other factors that would exert an impact on intention to use OFD services, such as perceived fair price, perceived benefits, food quality, past experience, perceived ease of use, and electronic word of mouth (e-WOM), etc. Therefore, future studies could either incorporate these factors in a more extended model or employ them as mediating factors. Third, the study took place in the capital of Algeria Algiers relying on a convenient sample, which does limit the generalizability of the results; therefore selecting a random sample including several provinces would undoubtedly be far more advantageous. It is also preferable to conduct similar studies in different social, cultural, and economic contexts, to understand the possible effects of these differences. Fourth, the study has been conducted in a very exceptional context and circumstances that featured COVID-19 propagation, thus further studies on this topic in post- COVID-19 time would also be appealing. Finally, in light of the several points of criticism against the OFD industry, especially with regard to environmental issues, studying the intention of online green food orders would be of vital importance in fostering the efforts towards sustainability.

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