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# Consumer Adoption of Online Food Delivery Ordering (OFDO) Services in Pakistan: The Impact of the COVID-19 Pandemic Situation

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**Abstract:** Evolving internet technology has brought about changes in consumer lifestyle and increased online shopping. Grounded in the theory of technology readiness (TR), this study aims to examine the effect of factors such as optimism, innovativeness, insecurity, and discomfort that may motivate consumers' adoption intentions towards online food delivery ordering (OFDO) services. Additionally, this study intends to investigate the moderating role of situational influences (COVID-19) in affecting such an online behavior. By using survey methods, a total of 439 usable responses were gathered through an online survey. Data were analyzed by using Partial least square (PLS) and multigroup analysis (MGA) techniques. The results revealed that optimism and innovativeness have positive influences on adoption intentions while insecurity and discomfort have negative influences on adoption intentions in the use of OFDO services. The results also supported the moderating role of situational influences such as the COVID-19 pandemic. Furthermore, the PLS-MGA results indicate that the effects of optimism and innovativeness are stronger in demographic variables, i.e., young, male, high income, high education, etc. On the contrary, the effects of insecurity and discomfort are stronger for the opposite, i.e., elder, female, low income, low education, etc. Finally, this paper depicts remarkable insights for researchers, practitioners, service providers, and marketers.

**Keywords:** online food delivery ordering (OFDO) services; situational influences COVID-19; technology readiness (TR) model



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## 1. Introduction

The rapid development of internet technology has enhanced retail e-commerce, which has created massive changes in people's lifestyles and society in general [1,2]. Globally, the retail e-commerce market constituted a market share of 3.53 trillion US\$ in 2019 and is forecasted to grow to 6.54 trillion US\$ by 2022 [3]. It is estimated that 95 percent of purchases will be facilitated by e-commerce in 2040 because online shoppers will have increased significantly throughout the world [4]. The continuous growth and development of retail e-commerce have even outpaced the traditional brick and mortar business model [5]. Consumers prefer online shopping compared to brick and mortar shopping due to competitive pricing, convenience, temporal and spatial barriers, wider choice, customized service, expert advice, greater access to information, and fast delivery [6,7]. Products and services such as clothing, food, hotel rooms, or car rentals are more frequently bought through online shopping [8,9]. The restaurant industry is highly competitive and has reached its saturation level already [10]. Restaurateurs need to introduce new additional services (i.e., online food delivery ordering services) to remain competitive in the market [11]. Online food delivery (OFD) is the largest market segment in retail e-commerce. In recent years, the online food delivery market has grown at an unprecedented pace globally [12]. By

2024, the global online food delivery market could swell to 182.3 billion US\$—up from about 136.4 billion US\$ today [13]. Prior research has extensively studied online shopping behavior. However, the research stream on consumer behavior relative to OFDO services is still in its infancy [14].

The rapid economic growth of the Asian region has changed the world's economic power. The Asian region contributes more than 30 percent to the world GDP [15]. Pakistan is a country of 212 million people, and 63% of this population falls under the age of 25. Pakistan is the 4th most populous country in the Asian region as well as the 10th most populous country in the world in terms of internet users [16]. In Pakistan, there are 76.38 million internet users, of which 44.10 million users are online shoppers, which shows that Pakistanis are self-assured in e-commerce [16]. This population demographic and appetite of the young population have fueled the growth of OFDO services in Pakistan. However, despite the massive potential, just 15% of Pakistanis choose online channels for food ordering [17]. This statistical evidence on OFDO services shows that the consumption pattern of Pakistanis towards OFDO services remains unclear. Hence, understanding consumer behavior towards OFDO services is a dire need for policymakers, restaurateurs, and marketers to develop and reinforce their presence online.

To date, global researchers have underpinned different theoretical models such as the theory of planned behavior (TPB) [18], technology acceptance model (TAM) [9], unified theory of acceptance, use of technology (UTAUT) [14], or extended model of information technology (IT) compliance [11] to explore consumer behavior towards OFDO services. Researchers argue that person technology readiness affects consumer purchase intentions [19]. Technology readiness refers to “people’s propensity to embrace and use new technologies for accomplishing goals in home life and at work” [20]. However, despite the critical importance of technology readiness in consumer behavior research, this aspect of the investigation is still lacking in the literature. Hence, at this juncture, this study employed the theory of technology readiness (TTR) to narrow down this gap.

Furthermore, previous studies only examined consumer intentions towards OFDO services [11,14,18,21,22]. However, according to Sultan, Tarafder, Pearson, and Henryks [23], there is a discrepancy between what people claim and how they behave, which is referred to as an intention–behavior gap. Hassan, Shiu, and Shaw [24] argued that research on the intention–behavior gap is relatively scarce. Moreover, the intention–behavior gap is poorly understood in the context of OFDO services [11,14,18]. This intention–behavior gap may exist due to situational constraints [25]. Situational factors mostly drive consumer behavior [26–28]. Situational factors refer to “all those factors particular to a time and place of observation which does not follow from a knowledge of personal (intra-individual) or stimulus (choice alternative) attributes” [26]. Consumer’s online-channel choice for buying is largely determined by situational influences [27,28]. However, the study of situational influences has been predominately ignored in consumer behavior research, particularly in OFDO services [28]. Coronavirus 2019 (COVID-19) is a type of virus that causes respiratory infections in humans, typically ranging from mild to lethal (i.e., common cold to severe respiratory diseases). The outbreak of COVID-19 has had detrimental effects on the restaurant industry because, due to devastating COVID-19 effects, consumers have changed their lifestyles and spending habits from bricks to clicks [29]. Across the world, sit-down traffic at restaurants has dropped by 83% precipitously compared to the previous year because, due to lockdowns, governments have forced restaurants to close down or consumers may not want to visit restaurants due to health concerns [30]. Therefore, the COVID-19 epidemic seems to be a significant situational influence that affects consumer behavior toward OFDO services. Thus, at this juncture, this study includes the situational influence (COVID-19) variable as a moderator to overcome the intention–behavior gap in the OFDO service context. Furthermore, to the authors’ knowledge, despite the OFDO service behavior have been well investigated in developed countries, there is a lack of research on OFDO services in developing countries (i.e., Pakistan). The present study

contributes to these research gaps. Therefore, the research questions of the study are as follows:

RQ1: Does technology readiness influence the consumer's intention to use OFDO services?

RQ2: Do consumers' intentions influence the consumers' adoption behavior towards OFDO services?

RQ3: Does situational influences (COVID-19) moderate the relationship between consumers' intentions and consumer adoption behavior towards OFDO services?

## 2. Literature Review and Hypothesis Development

### 2.1. Online Food Delivery Ordering Services (OFDO)

OFDO services are the process of ordering food directly from local restaurants or restaurant intermediaries through mobile applications or web pages to get food delivered to a specific location or their doorstep. OFDO service providers can be classified into food chain restaurants (i.e., McDonalds, KFC, Pizza Hut, Domino's, and more) and several mobile applications (i.e., Foodpanda, FikiFoo, HiFood, EatEasy, Delivers.pk, and so on) as restaurant intermediaries for multi-restaurants [2,11]. Technology in the food industry has migrated from manufacturing and preservation processes to OFDO services [31] that enable consumers to search for preferred restaurants, to select available products, and to give a delivery address to order meals via OFDO services or restaurant websites [32]. The development in internet technology and increased use of smartphones have encouraged several OFD ordering service system startups [22]. This transformation in the foodservice industry enables food retailers to improve their order accuracy, to enhance productivity, to develop customer relationships, and to broaden customer reach [11,33].

In the restaurant industry, OFDO services are considered an emerging wave. The demand of people has increased towards OFDO services due to the offered ease from innovative technology in terms of space and time. OFDO services satisfy the needs of individuals residing in urban areas by delivering quick and convenient food to their doorstep during or after long working days [34,35]. Most people are switching to OFDO services in the recent time period because of the present pace of life and opportunity to search for other restaurants within the locality that offer different cuisine types [34,35]. OFD apps provide more food choices, ratings, and reviews and offer quick order handling. Tech-savvy customers have acknowledged these evolving OFD apps [34]. OFDO services have modified the consumers' nature and enable them to think about and plan fresh and healthy meals via internet technology instead of preparing food themselves or going to a restaurant to buy food for dine-in or takeaway to their offices or at homes [35]. It has been seen that OFDO services save consumers time and provide convenience to them as they can order their favorite meal without leaving their offices or homes [35]. Digitization satisfies the fundamental needs of consumers by offering OFDO services [34]. Moreover, the OFD market is growing rapidly with the fast increase in online ordering and influences the food industry as it has the potential to expand businesses, enhancing employee productivity and developing a big database of customers [31,36].

### 2.2. Theoretical Underpinning

Prior researchers have adopted different theories to examine the consumers' behavior towards OFDO services such as the theory of planned behavior [18] proposed by Ajzen [37], which is an expansion of the theory of reasoned action (TRA) proposed by Fishbein and Ajzen [38]. TRA assumes that attitude (ATT) and subjective norms (SN) are the two main determinants of individual's behavioral intentions (BI) when executing a task. On the other hand, the theory of planned behavior (TPB) extends the theory of reasoned action (TRA) by adding a third determinant to predict the behavioral intentions of an individual to perform a specific task, i.e., perceived behavioral control (PBC). Technology acceptance model (TAM) [9], which was introduced by Davis, Bagozzi, and Warshaw [39], estimates the consumers' adoption of innovative products or services. TAM was adapted from the theory of reasoned action (TRA) [38]. Therefore, attitude is considered a key determinant

of behavioral intentions in this model. In addition, attitude is influenced by consumers' insights regarding features of innovative products or services. This model adopts two key determinants (i.e., perceived ease of use and perceived usefulness) to examine the consumers' attitude to adopt innovative products or services [39]. In addition, the unified theory of acceptance and use of technology (UTAUT) [14], which was developed by Venkatesh et al. [40], extended the theory of information technology (IT) compliance [11] to predict consumers' behaviors towards technology adoption. Researchers found that individuals' technology readiness influences the consumers' intentions to adopt the technology [19]. Moreover, technology readiness has a significant importance in consumer behavior studies, but this aspect of research is still scarce in the literature. Therefore, at this stage, the current study adopted the technology readiness theory to add to the body of knowledge.

### 2.2.1. Theory of Technology Readiness (TR)

Technology readiness (TR) describes the shared characteristics of individuals when adopting new technology [41]. Parasuraman [41] stated that "technology-readiness refers to people's propensity to embrace and use new technologies for accomplishing goals in home, life, and at work". The presence of OFDO services does not mean that customers are ready to adopt these technologies [42], highlighting the need to ascertain consumers' readiness. People behave differently when accepting new technology as not everyone is prepared to adopt the technology due to different perceptions, motivations, feelings, and beliefs [43]. Moreover, new technology plays a major role in consumers' everyday life, but sometimes, it is perceived as difficult to use and operate for users [41]. Meuter, Ostrom, Bitner, and Roundtree [44] stated that many consumers face anxiety while using innovative technology. Therefore, Tsikriktsis [45] gave the name "technophobia" to these experiences. Furthermore, individuals' personality traits influence their intentions to use the latest technology. This notion provides insight to researchers into determining the influence of technology readiness on consumers' intentions to adopt innovative technology [41,46]. Parasuraman and Colby [20] developed the scale TRI 2.0 to determine consumers' behavioral intentions to adopt and utilize the latest technology by implementing technology-related personality traits. TR is categorized into four personality traits (positive as well as negative traits) based on customers' readiness: (1) optimism, (2) innovativeness, (3) discomfort, and (4) insecurity [41]. The positive traits (i.e., optimism and innovativeness) are perceived as favorable factors that stimulate individuals to accept the novel technology. On the other hand, the negative factors (i.e., discomfort and insecurity) are considered unfavorable factors or inhibitors that restrain consumers from embracing modern technology [43,47].

#### Optimism

Researchers have identified that optimism plays the role of a driver in the adoption of new technology [48]. Parasuraman [41], and Parasuraman and Colby [20] defined optimism as "how positively a person perceives technology and believes that it offers people more control, flexibility, and efficiency in their lives". Optimists have a sound belief that new technology can offer beneficial opportunities for them to satisfy their work and home tasks efficiently [20,49,50]. They adapt more dynamic techniques compared to others in their daily activities to achieve reliable results [51]. Innovative individuals are always assured that they can resolve the uncertainties originating from adopting new technology, and they consider it easier to use [52]. They are less worried about the negative results of new technology [53]. Moreover, optimists indicate that new technology allows them to adjust the tasks to best fit their needs [20]. Consumers can adopt OFDO service apps to buy online food and to make payments. Although the value and flexibility derived from OFDO services develop a feeling of optimism among consumers, as consumers may have positive beliefs about OFD apps, they may behave differently when using the app [48]. In short, optimists believe that technology might enhance work efficiency by providing them more control and freedom over different aspects of their lives [51]. Huy et al. [52]

stated that optimists are always willing to adopt new technology. Similarly, Chen et al. [54] and Damerji [55] found a positive association between optimism and intention to use new technology. In the same vein, Lin and Hsieh [56] revealed that optimism has a positive impact on consumer intentions to use new technology. However, the association between optimism and intention to use an OFDO service app is ignored by academicians in both developed and emerging countries (i.e., Pakistan). Based on the above discussion, the researcher hypothesizes the following:

**Hypothesis 1 (H1).** *Optimism has a significant positive effect on OFDO service intentions.*

#### Innovativeness

Innovativeness is defined as an individual's predisposition towards experimenting with innovative technologies to become a thought leader and technological pioneer [20,41]. Innovative individuals want to pursue new technologies and love to face the challenge of attaining technological skills. After introducing the latest technology, innovative individuals always like to adopt and use them before they are adopted by others [20,41]. According to Walczuch et al. [53], innovativeness is perceived as a human trait of those who are independent and do not care about internal and external factors. Innovative people act positively towards the latest functions of technology [57,58]. Innovators intend to gain perceived utility by attaining new knowledge and by finding novelty in products and services [59]. However, when they are bored with traditional products design and features, they use innovative and unique products to satisfy their trait of innovativeness [60]. They consider new technologies more useful when they become more familiar with them [53,61]. Individuals holding high scores in innovation are perceived as early adopters. They are stimulated to accept and try the latest technologies; they have sound beliefs and positive impressions about the usefulness of new technology. Therefore, they do not show reluctance to use it when they are uncertain about their values and benefits [51]. Moreover, previous studies stress that there is a positive association between innovativeness and intention to use new technology [54,56,62]. However, Pham et al. [63] found that innovativeness has a negative impact on consumer intention to adopt new technology. Therefore, there is a need to investigate this association due to inconsistent findings. Based on the above discussion, the researcher hypothesizes the following:

**Hypothesis 2 (H2).** *Innovativeness has a significant positive effect on OFDO service intentions.*

#### Insecurity

Insecurity refers to "distrust of technology, stemming from skepticism about its ability to work properly and concerns about its potential harmful consequences" [20]. Insecure individuals have distrust in and doubt about new technological products and their capability to perform tasks efficiently. Individuals who experience more insecurity perceive more risk involved in adopting new technology [64]. Insecurity emphasizes transactional aspects instead of lack of control that is associated with discomfort [52]. People with this personality trait always face intrinsic fear when connecting with new technologies [49] and usually do not feel confident in handling them [20,65]. Confidence has an inverse relationship with the amount of insecurity in utilizing the new technological products [51] because insecurity acts as an inhibitor of TR [20]. The intrinsic fear of insecure people convinces them to avoid the adoption of new technology due to their insecurity and doubtful results [53]. In addition, they are unwilling to embrace new technology as they need assurance of the risk associated with new technologies that bring about a feeling of insecurity [19]. Chen et al. [54], Lin and Hsieh [56], and Smit et al. [66] revealed that insecurity is a predictor of consumer intention to use new technology. In the same vein, Pham et al. [63] and Ramos-de-Luna, Montoro-Ríos, and Liébana-Cabanillas [67] found that insecurity has a negative association with consumers' intention to adopt new technology. The researcher proposed the following hypothesis:

**Hypothesis 3 (H3).** *Insecurity has a significant negative effect on OFDO service intentions.*

#### Discomfort

The personality trait discomfort refers to “a perceived lack of control over technology and a feeling of being overwhelmed by it” [20,41]. This type of individual is always suspicious about new technology [20,41] because discomfort is considered an inhibitor of TR. Individuals with this personality trait feel nervous and uncomfortable using new technology as they perceive that the technology directs them. Usually, they feel doubtful about the performance of innovative products [46]. The perception of a lack of control over technology diminishes the ability to deal with uncertainties that new technology can generate [49,57]. The difficulty of adopting new technology such as OFDO service apps could cause discomfort for individuals (i.e., consumers), and this would influence their usage of the app [68]. OFDO service apps are still considered a new experience in developing countries, causing a high level of discomfort, and they will not get more adoption until consumers feel comfort using these apps [69]. Previous studies by Lin and Hsieh [56] and Smit, Roberts-Lombard, and Mpinganjira [66] found that discomfort is a significant predictor of consumer intention towards new technology adoption. However, no study has examined the association between discomfort and consumer intention to use OFDO services. To add to the literature, this study intends to examine the impact of discomfort on consumer intention to use OFDO services by proposing the following hypothesis:

**Hypothesis 4 (H4).** *Discomfort has a significant negative effect on OFDO service intentions.*

#### 2.3. Consumer Adoption Intention to Use OFDO Services

Increasing experiences with direct and indirect influences of consumption patterns on e-retailing or online shopping lead to consumers modifying their traditional lifestyles. Davis [70] estimated that adopting a system (i.e., e-retailing, more specifically OFDO services) can be a better solution. Consumer adoption intention has been studied in management and marketing studies [71]. Previous studies have found that consumer purchase intentions direct actions and that they are significant determinants in explaining and predicting consumer consumption behavior [37,72,73]. Consumer behavior is goal-directed and usually follows well-organized plans that direct consumers in performing specific behaviors [74]. An action is not presumable if the intention is missing; thus, intent leads to action [75,76]. Initially, consumers intend to experience, and then, they have a mental map of what they intend to perform [77]. According to Davis [70], consumers' intention refers to a “measure of the strength of individuals' intention to perform a specified behavior”. Similarly, Wang, Law, Guillet, Hung, and Fong [73] stated that intention is the willingness of a consumer to direct their attention to participating in exploring the appropriate information and in choosing the desired products or services for prospective purchase. Human beings are perceived as rational actors who intend to plan actions to achieve a certain task and to behave accordingly, which explains that intentions shape human behavior [74,78]. However, Ajzen, Brown, and Carvajal [79] recommended that “investigations that rely on intention as a proxy for actual behavior must be interpreted with caution.” Davis [70] hypothesizes that consumers' behavioral intention to adopt the system has an impact on user behavior. Consumers' intention assesses whether consumers are ready to use and put effort into actual adoption. When consumers have strong intentions, they are more likely to execute an action [37,80,81]. Based on the above discussion, the researchers hypothesize the following:

**Hypothesis 5 (H5).** *Adoption intentions have a positive significant effect on OFDO service usage behavior.*

#### 2.4. Moderating Effect of Situational Influences (COVID-19)

Some studies found that there is a mismatch between the revealed intentions and consumption behavior of consumers, indicating the presence of a gap between what buyers revealed they will purchase and what they do when buying [23,82]. This inconsistency is considered an intention–behavior gap. However, there is limited research on the intention–behavior gap [24]. The intention–behavior gap is not properly understood in the OFDO service perspective [11,14,18], and this gap may occur as a result of situational circumstances [25]. To overcome this limitation and to improve the intention–behavior gap, we need to consider some exogenous factors. Exogenous factors are essential to the initiation of consumers' actions, and they may moderate the association between intention and behavior [77]. In addition, Rehman, Bhatti, Mohamed, and Ayoup [83] argued that intention–behavior association can be supported by adding the moderating variable. Therefore, this study includes the situational influences COVID-19 as a moderating variable to improve understanding and to strengthen this association.

Coronavirus 2019 (COVID-19) is an infectious disease by a virus that causes respiratory infections in humans, typically ranging from mild to lethal (i.e., common cold to severe respiratory diseases). The spread of the COVID-19 pandemic has had spatial and dramatic impacts on all markets including the food market [84]. Due to devastating COVID-19 effects, the restaurant sector is affected across the world [85]. Similarly, governments forced restaurants to close down and consumers may not want to visit restaurants due to health concerns. Prohibition of dining on the premises of restaurants has a substantial effect on the operations and setups of restaurants [84,86]. As a result, the demand for retreatant meal and services have decreased instantly [87,88], and consumers have adopted social distancing to avoid the spread of the COVID-19 infection [85,89]. However, consumers changed their lifestyles and shifted their behaviors rapidly from bricks to clicks [85,88]. Due to the relative changes in buying opportunities, online buying of food items via restaurant websites and OFDO services is increasing [85,88–90]. In this way, COVID-19 generated a significant shift in consumers' consumption behavior. Thus, consumption displacement identifies the effects of space and time on the buying process and offers experience-based shopping techniques in marketing, where shopper predispositions have considered the former theme [90]. Therefore, it is necessary to understand the moderating impact of the situational influences COVID-19 to better understand the intention–behavior association that could lead to realignment of the restaurant sector.

Moreover, situational factors refer to “all those factors particular to a time and place of observation which do not follow from a knowledge of personal (intraindividual) and stimulus (choice alternative) that have a demonstrable and systematic effect on current behavior” [26]. Bandura [91] emphasized the significance of contextual elements, involving social, temporal, and situational conditions under which events take place in molding the cognitive consideration of cause and effect of an individual's behavior. However, situational factors have gained not more attention in the context of consumer behavior and adoption of new technology based on e-retailing services [92,93]. The significance of situational factors stimulates the acceptance of e-retail, recommended in an erratic process of adoption and captured by situations instead of cognitive evaluation [28].

Furthermore, more consistency can be attained through personal factors (i.e., motivation) as well as situational factors (i.e., expected and actual effects of behavior) [94]. However, researchers ignore situational factors in the context of consumer behavior in usual as well as particular perspectives of e-retail shopping and acceptance of new technology [28]. However, researchers who admit the importance of situational factors recommend that these factors are very crucial in understanding individuals' adoption processes of new technology [28]. According to Engel and Blackwell [95], and Dabholkar and Bagozzi [92], situational factors can forbid people from using new technology despite favorable con-

sumer personalities. Therefore, Dabholkar and Bagozzi [92] recommend that the need to comprehend the effects of different situational factors so that marketers can design strategies to prevent adverse situational effects on e-retailing.

Nevertheless, Nguyen et al. [96] argued that studies on the situational influences on e-retailing are limited. The COVID-19 pandemic is a significant situational influence shaping consumer behavior to use OFDO services. Hence, the researcher hypothesizes the following:

**Hypothesis 6 (H6).** *The situational influences COVID-19 moderates the association between consumer adoption intentions and behavior towards OFDO services.*

### 3. Materials and Methods

An online survey was conducted to accumulate responses for determining the relationship among constructs. Based on the suggestion of Cobanoglu and Cobanoglu [97], this approach is considered most suitable in this context. An online survey is considered beneficial as it is less costly and provides quick responses with wide geographical coverage [98] and it has been extensively employed in prior researches [99,100]. The data administrators placed the link of an online questionnaire among respondents via emails and frequently used social media sites such as Facebook and WhatsApp. Thus, the non-probability sampling technique of purposive was employed in this study. It is considered more appropriate when the population is unknown, and it is extremely difficult to get responses from the entire sampling frame [101]. Moreover, the non-probability sampling technique is more suitable for theoretical generalization [102]. Therefore, a purposive sampling technique was adopted to select the respondents for this study. The respondents perceived as digital natives were sampled as they have experience shopping from OFDO service apps [103,104]. However, a screening question (i.e., Do you often buy meals through OFDO service apps such as food panda?) was asked of respondents to ensure their eligibility and to verify that they would communicate valid information based on their prior experience [105]. Moreover, the questionnaire was divided into two main parts. The first part was designed to accumulate the demographic information for respondents such as gender, age, marital status, education, occupation, income, OFDO services usage frequency, and OFDO services usage duration, while the second part was comprised of structural questionnaire regarding key constructs. Items for personality traits such as optimism, innovativeness, insecurity, and discomfort were adopted from Parasuraman and Colby [20]. The construct capturing personality traits was comprised of four items. OFDO service intentions had four statements adapted from [11,22]. Situational influences (COVID-19) were measured by five items adopted by Nguyen et al. [96]. Similarly, items for OFDO service adoption were constructed by Akbar et al. [78], and Yadav and Pathak [106]. All items capturing the constructs were measured by adopting a seven-point Likert scale, which ranged from (1) strongly disagree to (7) strongly agree. As suggested in previous studies by Bearden and Netemeyer [107], and Foddy [108], a seven-point Likert scale provides more appropriate reliability and validity of construct. This scale has a larger division of scales' scores and more discriminating power [109]. The data was accumulated from May 2020 to June 2020. The time duration of one week was given to respondents to provide a response, and the questionnaire was collected immediately on completion of response. After three days of preliminary requests, a kind reminder was delivered to those respondents who had not yet completed the questionnaire. The sample size should range between 200 to 500 responses in consumer studies, as recommended by Churchill and Iacobucci [110]. Unlike traditional sampling techniques, power analysis is considered as more robust. It is unlikely to organize studies that can be affected by "insufficient power because of too few samples or excessive power because of too many samples" [111]. The sample size is considered appropriate for the research framework, as directed by pri-ori power analysis performed with G\*Power software (i.e., 85) [112]. The analysis was performed with the most frequently used parameters' values in social science studies [113]; 0.30 as medium effect size, 0.80 as power, and



0.05 as alpha (i.e., error type). The actual sample size was more than the minimum required sample size. Nulty [114] stated that response rates comprise 40% to 60% in consumer researches. Accordingly, 750 online questionnaire links were placed on emails and familiar social media apps such as Facebook/Messenger and WhatsApp. In the two months of data accumulation, a total of 477 (63.6%) responses were received, out of which, 439 (58.53%) responses were useable for data analysis. Table 1 summarizes the overall demographic information of respondents. After analyzing the data, we found that, out of the 439 useable responses, 61.3% of them were males and the remaining were females. The age of most of the respondents (i.e., 58.3%) ranged between 18 to 24 years. The majority of respondents (72.4%) were single. By an educational point of view, 36.4% of respondents were qualified up to the master’s level while 46.2% of respondents were students. Moreover, 40.1% of respondents belonged to the lower middle class, and 34.4% of respondents used OFDO services once a week, with respondents who have experienced using OFDO services for 1 to 6 months comprising 57.6% of the sample.

**Table 1.** Respondents’ demographic information.

Variables	Categories	Number	Percentage
Gender	Male	269	61.3
	Female	170	38.7
Age (in years)	18–24	256	58.3
	25–34	116	26.4
	35–44	47	10.7
	45 and Over	20	4.6
Marital Status	Single	318	72.4
	Married	121	27.6
Education	Secondary level or below	29	6.6
	Higher Secondary level	91	20.7
	Graduate-level	110	25.1
	Master level	160	36.4
	Professional	49	11.2
Occupation	Government Sector	78	17.8
	Private Sector	24	5.5
	Self-Employed	68	15.5
	Student	203	46.2
	Housewife	66	15.0
Income (in PKR)	Mediocre	132	30.1
	Low Middle Class	176	40.1
	Upper Middle Class	88	20.0
	Rich	43	9.8
OFDO services usage frequency	Almost every day	28	6.4
	Few times a week	98	22.3
	Once a week	151	34.4
	Not even once a month	32	7.3
	Once or twice a month	130	29.6
OFDO services usage duration	1–6 months	253	57.6
	7–12 months	106	24.1
	13–18 months	20	4.6
	19–24 months	28	6.4
	24+ months	32	7.3

#### 4. Data Analysis and Results

This study adopted the Partial least square-structural equation modeling (PLS-SEM) approach to analyze the conceptual framework. PLS-SEM was used to assess the measurement and structural models due to its predictive power in assessing the complex research model with nonnormal data and small sample sizes [115]. The reliability and validity of instruments were tested in a measurement model while the structured relationships were assessed in a structured model [116,117]. The bootstrapping approach in addition to 5000 subsamples was applied to compute the t-values, path-coefficient, and level of significance, as suggested by Hair, Ringle, and Sarstedt [118].

##### 4.1. Measurement Model

We assessed the measurement model by testing the reliability and validity of constructs. To examine the reliability of constructs, we employed the Cronbach’s alpha and composite reliability (CR) test. As reported in Table 2, Cronbach’s alpha values are above the suggested value of 0.6 [119] and CR values range between 0.803 to 0.916, indicating that all the constructs are above the suggested value of 0.7 [120]. We tested the convergent validity of constructs by examining the factor loadings and average variance extracted (AVE). To attain acceptable convergent validity, the values of factor loadings and AVE for each construct must be greater than 0.7 and 0.5, respectively [121]. The results indicate that all constructs exceeded the suggested values (see Figure 1 and Table 2).

Table 2. Measurement model.

Constructs	Items	Loadings	AVE	Cronbach’s Alpha	CR
Optimism	OPT1	0.762	0.568	0.753	0.847
	OPT2	0.782			
	OPT3	0.681			
	OPT4	0.786			
Innovativeness	INN1	0.740	0.582	0.882	0.840
	INN2	0.815			
	INN3	0.742			
	INN4	0.751			
Insecurity	INS1	0.614	0.594	0.774	0.852
	INS2	0.824			
	INS3	0.837			
	INS4	0.787			
Discomfort	DIS1	0.715	0.505	0.837	0.803
	DIS2	0.683			
	DIS3	0.747			
	DIS4	0.696			
OFDO services Intention	OFDSI1	0.811	0.731	0.889	0.916
	OFDSI2	0.860			
	OFDSI3	0.900			
	OFDSI4	0.848			
Situational Influences (COVID-19)	SICOVID1	0.757	0.531	0.792	0.838
	SICOVID2	0.661			
	SICOVID3	0.728			
	SICOVID4	0.816			
	SICOVID5	0.668			
OFDO services Adoption	OFDOSA1	0.779	0.564		
	OFDOSA2	0.696			
	OFDOSA3	0.798			
	OFDOSA4	0.726			

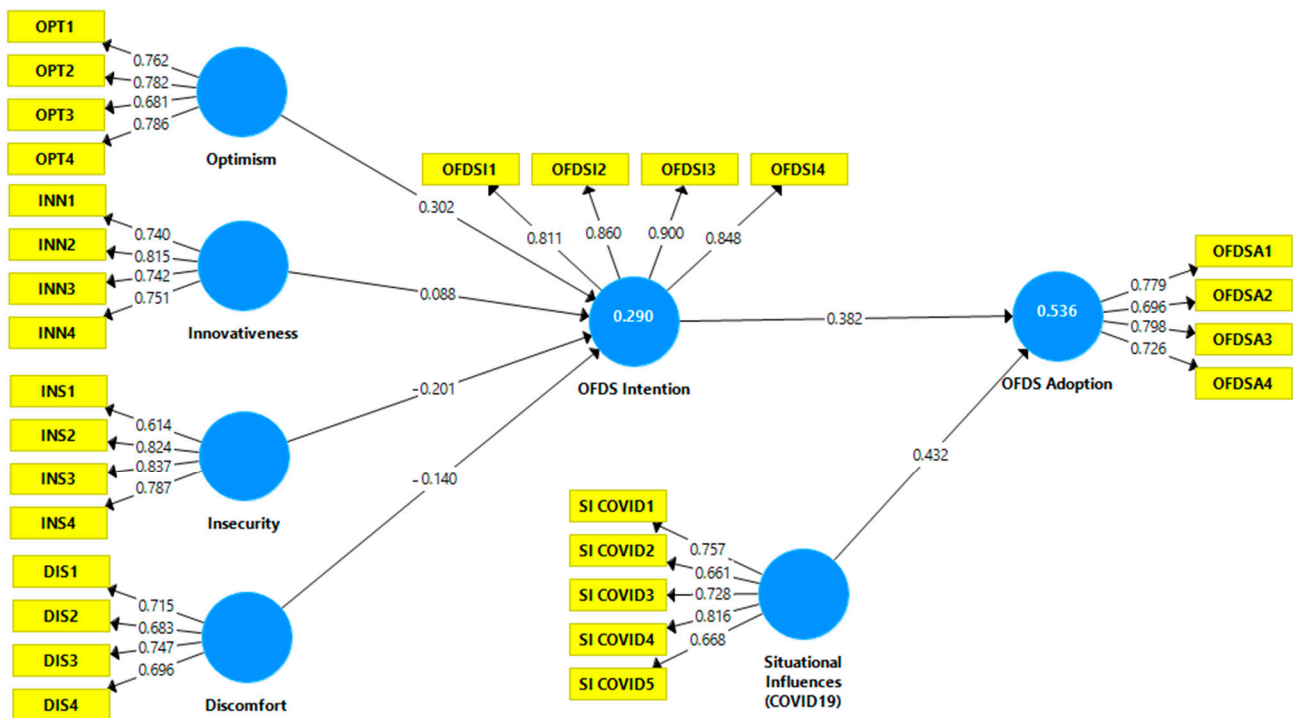


Figure 1. Measurement model (Partial least square (PLS)-algorithm).

Moreover, Heterotrait–Monotrait ratios (HTMT) were applied to examine the discriminant validity of variables. According to Henseler, Ringle, and Sarstedt [122], it is the more robust, superior, and influential method compared to a typical Fornell–Larcker method. As the result, shown in Table 3, specifies that all HTMT values for the model effectively satisfied the criterion suggested by Kline [123], the correlation between two constructs must be below 0.9. The obtained value, presented in Table 3, demonstrates the acceptable discriminant validity for constructs used in this study.

Table 3. Discernment validity.

	OFDOSA	OFDOSI	DIS	INN	INS	OP	SI (COVID-19)
OFDOSA							
OFDOSI	0.798						
DIS	0.599	0.437					
INN	0.567	0.402	0.584				
INS	0.488	0.451	0.494	0.507			
OPT	0.614	0.540	0.528	0.493	0.373		
SI (COVID-19)	0.853	0.732	0.571	0.607	0.531	0.512	

#### 4.2. Structural Model

Afterward, several steps were implemented to test the hypothesized relationship and their level of significance in the structured model. Consequently, we assessed the statistical significance of path coefficients by using the bootstrap method with 5000 subsamples. Next, the t-statistics criterion with 95% confidence interval was implemented to determine the statistical significance of the relationship between independent and dependent variables ( $t > 1.645$  and  $p < 0.05$ ). The outcomes of the structural model are shown in Table 4.

Table 4. Hypotheses testing.

Hypothesis	Relationship	Path-Coefficient	Std. Error	t-Value	p-Value	Supported	f <sup>2</sup>	R <sup>2</sup>	Q <sup>2</sup>	SRMR
H1	OPT→OFDOSI	0.302	0.045	6.807	0.000	Yes	0.101	0.290	0.204	0.066
H2	INN→OFDOSI	0.088	0.043	2.160	0.041	Yes	0.008			
H3	INS→OFDOSI	−0.201	0.040	5.339	0.000	Yes	0.045			
H4	DIS→OFDOSI	−0.140	0.043	3.504	0.001	Yes	0.020			
H5	OFDOSI→OFDOSA	0.382	0.045	9.515	0.000	Yes	0.194	0.536	0.294	
Moderating effect										
H6	SI (COVID-19)→OFDOSA	0.141	0.034	4.115	0.000	Yes	0.118	0.557		

The findings indicate that all the hypotheses are accepted as all path coefficients are significant (see Table 4). Optimism ( $\beta = 0.302, t = 6.807 > 1.64, p < 0.05$ ) and innovativeness ( $\beta = 0.088, t = 2.160 > 1.64, p < 0.05$ ) significantly and positively influence the online food delivery ordering service intentions. Similarly, insecurity ( $\beta = -0.201, t = 5.339 > 1.64, p < 0.05$ ) and discomfort ( $\beta = -0.140, t = 3.504 > 1.64, p < 0.05$ ) have significant and negative associations with online food delivery ordering service intentions. In addition, consumer behavioral intentions ( $\beta = 0.382, t = 9.515 > 1.64, p < 0.05$ ) has a positive and significant impact on actual adoption of OFDO services. Moreover, the situational influence COVID-19 ( $\beta = 0.141, t = 4.115 > 1.64, p < 0.05$ ) moderates the positive association between OFDO services intentions and behavior towards OFDO services. As per the recommendation of Henseler and Sarstedt [124], in PLS-SEM, the quality of the research model can be assessed by determining the predictive power of dependent variables. Measures such as significance of path coefficient ( $\beta$ ), coefficient of determination ( $R^2$ ), predictive relevance ( $Q^2$ ), and effect size ( $f^2$ ) are employed to test the model quality. The  $R^2$  value for OFDO service adoption is 0.536, demonstrating that explanatory power in this model is moderately strong, as suggested by Hair et al. [118]. Similarly,  $Q^2$  is the technique that is used to assess the predictive relevance of the research model. As suggested by Hair et al. [121], a value of  $Q^2$  greater than 0 demonstrates that the model has predictive power. The results reveal that the  $Q^2$  value of the research model is 0.294, which justifies its best predictive relevance. Additionally, as suggested by Cohen [125],  $f^2$  scores of 0.02, 0.15, and 0.35 demonstrate small, medium, and large effects size, respectively. The  $f^2$  scores justify the effect size varying from small to medium in this model. The values of  $R^2, Q^2,$  and  $f^2$  are provided in Table 4. Overall, the results reveal the significant positive impact of optimism and innovativeness on OFDO service intentions and the significantly negative effect of insecurity and discomfort on OFDO service intentions. In addition, OFDO service intention has a significant positive impact on OFDO service adoption. Moreover, the overall model fitness, the standardized root mean square residual (SRMR), is assessed by following the Henseler, Hubona, and Ray [126] criterion. The estimated results demonstrated in Table 4 indicate that the SRMR value (i.e., 0.066) confirms a good fit as an SRMR value below 0.08 is suggested to reach an adequate fit [126].

#### 4.3. The Moderating Effect of Situational Influences (COVID-19)

The moderating effect of situational influences (COVID-19) is investigated by determining its interaction effect on the relationship between OFDO service intentions and OFDO service adoption. This is examined by investigating the interaction of situational influences (COVID-19) and OFDO service intentions on OFDO service adoption. The results demonstrate that situational influences (COVID-19) ( $\beta = 0.141, t = 4.115 > 1.64, p < 0.05$ ) significantly moderate the relationship between OFDO service intentions and OFDO service adoption (see Figure 2 and Table 4). The moderating effect of situational influences (COVID-19) increased the  $R^2$  value from 0.536 to 0.557 for this model. Therefore, we can conclude that, after adding situational influences (COVID-19), the explanatory

power of the proposed model increased. However, the change is minimal, though it plays an important role in investigating the moderating effect.

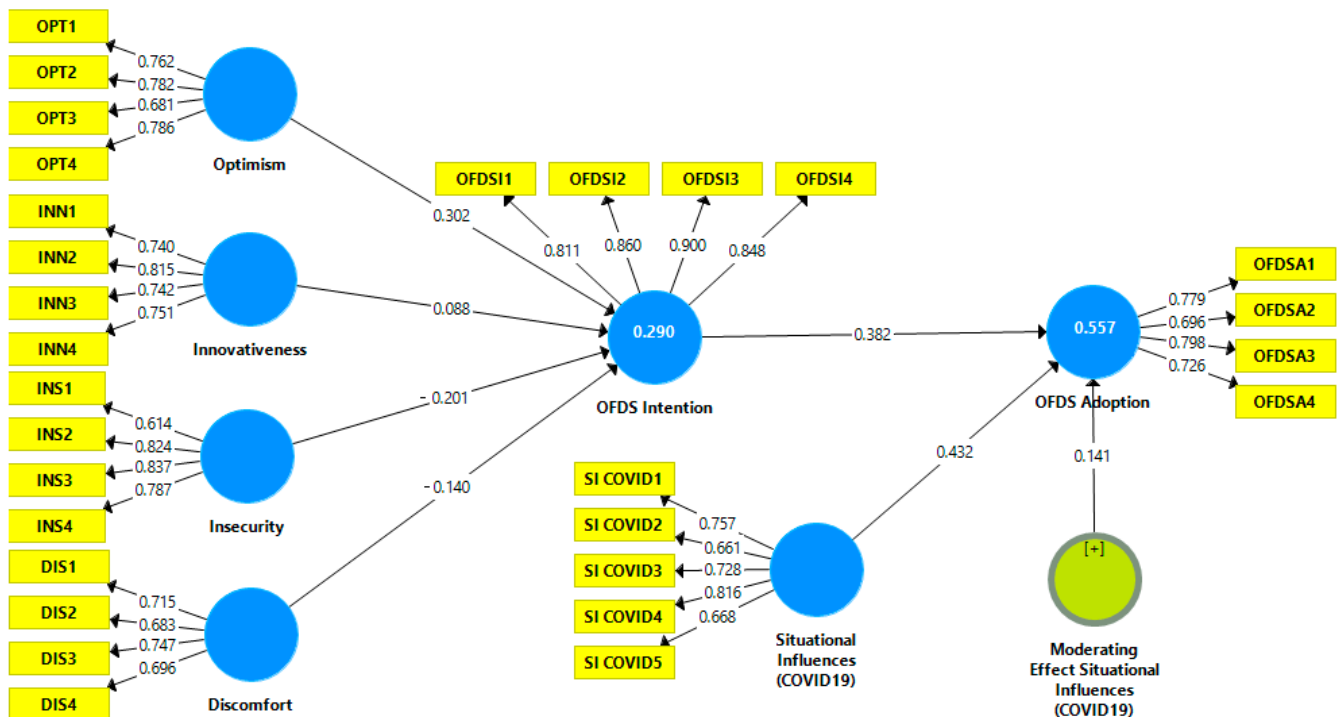


Figure 2. Moderating effect model (PLS-algorithm).

#### 4.4. Analysis of Multi-Group SEM

A multi-group SEM (Structural equation model) analysis was utilized to examine the impact of different demographic factors (such as gender, age, income, education, usage behavior, and usage duration) on the relationship between consumers' personality traits based on technology readiness, consumers' intention and behavior to use OFDO services, and situational influences (COVID-19). The sample was categorized into two subdivisions independently according to gender (male and female), age (young and old), income (low and high), education (low and high), usage behavior (less frequent and more frequent), and usage duration (up to one year and over one year). However, a multi-group SEM was conducted to further determine the impact of consumers' personality traits on consumers' intention, consumer intention on actual behavior to use OFDO services, and situational influences (COVID-19) on the association between consumers' intention and behavior towards OFDO services among different groups.

Table 5 indicates the results of the estimated path of each group through multi-group SEM analysis. In term of significant and positive impact of optimism on consumers' intention to use OFDO services (H1), this effect was investigated significantly and it seems strong among subgroups of male ( $\beta = 0.322, p < 0.05$ ), young ( $\beta = 0.314, p < 0.05$ ), high income ( $\beta = 0.182, p < 0.05$ ), high education ( $\beta = 0.261, p < 0.05$ ), users having experience to use OFDO services up to one year ( $\beta = 0.336, p < 0.05$ ), and more frequent usage behavior ( $\beta = 0.241, p < 0.05$ ). H2, which proposed a positive association between innovativeness and consumers' intention to use OFDO services, was supported, and it seems strong in the male group ( $\beta = 0.093, p < 0.05$ ), young group ( $\beta = 0.086, p < 0.05$ ), high-income group ( $\beta = 0.109, p < 0.05$ ), high education group ( $\beta = 0.107, p < 0.05$ ), user group having experience to use OFDO services up to one year ( $\beta = 0.113, p < 0.05$ ), and more frequent usage behavior group ( $\beta = 0.082, p < 0.05$ ). In terms of significant and negative influence of insecurity and discomfort on consumers' intention to use OFDO services (H3 and H4),

these effects were investigated as significant and they seem strong in the groups female ( $\beta = 0.240$  and  $\beta = 0.145, p < 0.05$ ), elder ( $\beta = 0.213$  and  $\beta = 0.240, p < 0.05$ ), low income ( $\beta = 0.156$  and  $\beta = 0.119, p < 0.05$ ), low education ( $\beta = 0.203$  and  $\beta = 0.117, p < 0.05$ ), users having experience to use OFDO services over one year ( $\beta = 0.173$  and  $\beta = 107, p < 0.05$ ), and less frequent usage behavior ( $\beta = 0.182$  and  $\beta = 0.137, p < 0.05$ ).

**Table 5.** Analysis of Multigroup SEM.

	H1	H2	H3	H4	H5	H6
	OPTI	INNO	INSE	DISC	Int	SI
Age						
Young	0.314	0.086	0.169	0.097	0.518	0.136
Elder	0.211	0.077	0.213	0.125	0.339	0.127
Gender						
Male	0.322	0.092	0.219	0.130	0.431	0.103
Female	0.198	0.079	0.240	0.145	0.239	0.087
Income						
Low	0.151	0.081	0.156	0.119	0.331	0.085
High	0.182	0.109	0.139	0.097	0.542	0.116
Education						
Low	0.211	0.092	0.203	0.117	0.307	0.067
High	0.261	0.107	0.141	0.093	0.581	0.091
Usage Behavior						
Less Frequent	0.201	0.070	0.182	0.137	0.403	0.103
More Frequent	0.241	0.082	0.111	0.109	0.587	0.161
Usage Duration						
Up to One year	0.336	0.113	0.129	0.091	0.496	0.147
Over One Year	0.114	0.092	0.173	0.107	0.399	0.084

As presented in Table 4, consumers’ intention has a positive and significant association with consumers’ actual behavior to use OFDO services (H5) and this effect was significant. It seems strong in the subgroups male ( $\beta = 0.431, p < 0.05$ ), young ( $\beta = 0.518, p < 0.05$ ), high income ( $\beta = 0.542, p < 0.05$ ), high education ( $\beta = 0.581, p < 0.05$ ), users having experience to use OFDO services up to one year ( $\beta = 0.496, p < 0.05$ ), and more frequent usage behavior ( $\beta = 0.587, p < 0.05$ ). Moreover, H6 suggested that situational influences (COVID-19) moderates the positive association between consumers’ intention and actual behavior towards OFDO services. This effect was significant, and it seems strong in the male group ( $\beta = 0.103, p < 0.05$ ), young group ( $\beta = 0.136, p < 0.05$ ), high-income group ( $\beta = 0.116, p < 0.05$ ), high education group ( $\beta = 0.091, p < 0.05$ ), users having experience to use OFDO services up to one year ( $\beta = 0.147, p < 0.05$ ), and more frequent usage behavior ( $\beta = 0.161, p < 0.05$ ).

### 5. Discussion

Online food delivery ordering (OFDO) services is a new emerging wave in the restaurant industry. The tendency of consumers towards greater convenience in terms of time and space has escalated the demand for OFDO services. The primary objective of this research is to investigate the factors that affect the technology adoption behavior of consumers towards OFDO services. Drawing on the technology readiness theory (TRT), the present study developed and tested a research model of consumer technology adoption towards OFDO services. The findings of this study revealed that all proposed hypotheses were fully supported. As postulated in H1, innovativeness has a significant effect on intention to adopt OFDO services ( $\beta = 0.474, t = 10.128, p < 0.001$ ). This finding is aligned with [54], which opined that innovativeness significantly influenced consumers’ intention to adopt new technology. This result is perhaps because OFDO services are a new technological phenomenon in developing countries (i.e., Pakistan) and because innovative consumers

are technological pioneers and are interested in adopting innovative technologies before they become common.

H2 investigates the relationship between optimism and intention to adopt OFDO services. In line with other previous studies [54–56,62], the current study also found a positive association between optimism and intention to use OFDO services. Optimism refers to a positive view of technology. Optimistic consumers believe that technology offers a lot of control, flexibility, and efficiency. One possible explanation for this result could be that OFDO services are more flexible and efficient in terms of order placement, order tracking, restaurant choice, and food filtering choice and enable a consumer to avoid traffic-related situations or avoid wait times at restaurants.

H3 tested the relationship between discomfort and intention to adopt OFDO services. The results showed that discomfort has a negative and significant effect on consumer's intention to adopt OFDO services, which provides support for H3. This is in agreement with past studies that found discomfort as a driver of consumer intention to adopt self-service technologies [56,62,66]. Discomfort refers to a perceived lack of control over technology. Discomfort is an inhibitor of technology readiness. Consumers with discomfort personality traits have anxious feelings about new technology usage. The significant effect of discomfort on intention to adopt OFDO services might be because OFD is considered a new technological phenomenon in Pakistan.

In examining the hypothesis regarding the effect of insecurity on intention to adopt OFDO services, the result indicates that insecurity has a significant and negative effect on intention to adopt OFDO services ( $\beta = -0.093$ ,  $p < 0.001$ ), thus supporting H4. This connection has been supported by other studies that have been conducted in self-service technology domains such as Chen et al. [54], Leung and Chen [62], Lin and Hsieh [56], and Smit et al. [66]. Insecurity refers to distrust in technology and its ability to work properly. The plausible explanation for this result is that the consumers in e-retail or online shopping require greater trust towards the company from which they are buying. A large body of previous studies by Chiu, Wang, Fang, and Huang [118], Edelman, and Brandi [119] associate e-retail or online shopping with greater risks due to the absence of personal contact. In relation to that, Quevedo-Silva et al. [127] argued that, in online food buying, consumers feel unsure because the internet is an inherently risky environment due to the absence of personal contact. As proposed in H5, the result reveals that behavioral intention exerts a positive effect on adoption behavior ( $\beta = 0.474$ ,  $t = 10.128$ ,  $p < 0.001$ ). This result is in agreement with the findings of Lai and Cheng [80]; Testa, Sarti, and Frey [81]; and Minbashrazgah, Maleki, and Torabi [128]. This result reveals that consumer-behavioral intention only explains 53 percent of the variation in consumer-adoption behavior. This result indicates that consumer-behavioral intention has a moderate explanatory power to predict consumer-consumption behavior. A possible reason for this moderate explanatory power could be other variables that are not considered in this study, such as hedonic motivation [11], convenience motivation [21], wired lifestyle, and food-related life style such as food neophobia or food quality [127]. H6 assumed that a situational influence (COVID-19) moderates the relationship between consumer-behavioral intention and consumer-adoption behavior. The finding of this relationship has reached its statistical significance ( $\beta = 0.474$ ,  $t = 10.128$ ,  $p < 0.001$ ). This is somewhat consistent with Grewal, Marmorstein, and Sharma [129], who acknowledge that consumer behavior is determined by situational influences that consumers have at the moment. This result is also in line with the literature which proves that online shopping is largely driven by situational influences [28]. A study carried out by Hashem [130] claimed that the COVID-19 pandemic has escalated online shopping. In line with that, additionally, Nguyen et al. [96] empirically found a significant impact of situational influence (COVID-19) on consumer behavior.

Furthermore, the differences in various groups among the associations between variables are explained based on findings of PLS-multi-group analysis. The differences in the gender group are mainly demonstrated in two dimensions. First, the findings indicate that optimism and innovativeness significantly and positively influence the consumers'

intention to use OFDO services. These effects were stronger in the male subgroup. Second, the results indicate that the effects of insecurity and discomfort are higher in the female subgroup. It is proved that males more often have advanced technological skills, and they are more technology-savvy and less fearful about the usage of gadgets than females [131–133]. As reported by Tsikriktsis [45], and Elliot and Hall [134], males who have more self-confidence are more enthusiastic when adopting new technological gadgets than females.

Similarly, the differences in age groups are mainly demonstrated in two aspects. The results show that optimism and innovativeness significantly and positively influence the consumers' intention to use OFDO services. These effects are all higher in the younger group while the effect of insecurity and discomfort is stronger in the elder group. Based on the findings of previous studies, there is a negative relationship between age and new technology adoption. Tsikriktsis [45] suggested that young people are more likely to adopt new technology than elder people. In the same vein, Hertzog and Hultsch [135] have found that elder people perceive that they do not have enough cognitive skills to learn new things, which could create hindrance in adopting and using new technological gadgets.

In addition, the differences in education and income groups are mainly demonstrated in two dimensions. The findings revealed that the effect of optimism and innovativeness are higher in the high income and high education subgroups. On the other hand, the effects of insecurity and discomfort are higher in the low education and low-income groups. The attainment of education has also been considered a crucial indicator to determine consumers' intentions to adopt new technology. It has been found that less educated people have less elegant cognitive skills that may restrict their capability to learn new technology [136]. The finding of a previous study by Porter and Donthu [137] revealed that educational level positively related to the perceived ease of use of the Internet. In the same vein, consumers who have higher income are persuaded and confident in their capabilities to use new technology but individuals who have a low-income level show resistance to adopting new technology. They believe that technology has more control over their personal lives. Therefore, they are less motivated to use new technology. Thus, income is considered an inhibitor [138].

Moreover, the differences in usage behavior and usage duration are manifested in two dimensions. First, the effect of innovativeness and optimism is stronger in more frequent users and users who have experience using OFDO services up to one year. Second, the effect of insecurity and discomfort are all higher in less frequent user and users who have experience using OFDO services over one year. Innovative and optimist consumers are confident and interested in adopting new technologies; they believe that innovative technology facilitates them by offering flexibility, a lot of control, and efficiency. Therefore, they are more frequent users than insecure and discomfort users.

## 6. Implications and Future Directions

### 6.1. Theoretical Contribution

First, to the researcher's knowledge, the present study is the first to use the theory of technology readiness to determine factors that influence OFDO service adoption in Pakistan. Therefore, this study extends the existing body of knowledge related to the theory of technology readiness as applied in a different culture. The results of this study support the robustness of the theory of technology readiness in terms of its ability to predict adoption intentions within different sampling frames and to target technologies. Second, this study contributes to the literature by examining the moderating role of situational influence (COVID-19) on the relationship between intention and behavior that has not been tested before. Past literature suggested that intentions are an important factor in planned behavior, but according to Ajzen, Brown, and Carvajal [79], "Investigations that rely on intention as a proxy for actual behavior must be interpreted with caution." In line with that, Moghavvemi, Salleh, Sulaiman, and Abessi [139] stated that intentions are insufficient prerequisites to understand successful behavior. This phenomenon is



euphemistically termed as intention–behavior gap, which is poorly understood in research areas of consumerism [23]. Hence, this study contributes in the literature by opening the black box of the intention–behavior gap in the acceptance of OFDO services.

### 6.2. Practical Implications

Regardless of theoretical implication, this study also offers practical insights for practitioners, retailers, service providers, and marketers, as the results provide valuable notions into which experts should take emphasis to redesign their strategies. This study strongly approves the view that technology readiness plays a crucial role in stimulating the consumers' intentions to adopt a particular technology (i.e., OFDO services). Therefore, restaurant proprietors and OFDO service providers should consider technology-related consumers' personality traits (i.e., innovativeness, optimism, discomfort, and insecurity) that influence the consumers' readiness to adopt OFDO services. In addition, OFDO service providers should promote the use of OFDO services by reinforcing the positive drivers of technology readiness (i.e., innovativeness and optimism) that foster the adoption of OFDO services and by reducing the inhibitors of technology readiness (discomfort and insecurity) to reduce the consumers' hesitations in adopting OFDO services. The statistical findings of this study indicated that innovativeness and optimism have significant and positive associative associations with consumers' readiness while discomfort and insecurity have significant and negative impacts on consumers' intention to use OFDO services. Moreover, OFDO service providers should frequently refurbish their services by adding value to fascinate optimistic consumers and to convert the pessimistic consumers to optimistic one.

OFDO service providers also should systematically monitor their special services to determine the elements which improve or erode consumers' readiness to use OFDO services. Each component of technology readiness is essential to consumer understanding, and particular attention should be given to every element during the design of online services. On a webpage, food like other commodities is shown via online media, and it is intangible on webpages. Consumers cannot see, smell, touch, or taste the offered meal, but they can evaluate the quality of meal by depending on a given description and an image of the meal on the webpage. OFDO service providers can promote innovativeness and optimism through creative design, visual appeals, and entertainment. Effective use of background, online videos, appealing visual graphics, creative logo, attractive display of innovative products, entertaining website, and overall aesthetically appealing presentation are perceived as significant components in visual appeal. These components can facilitate service providers to remove consumers' complications and improve optimism.

In addition, OFDO service providers can reduce the consumers' discomfort level in adopting OFDO services via layout and functionality of website because these two elements are considered critical criteria in evaluating a website. The online layout can be described by organization, arrangement, structure, and mobility of sites, whereas functionality means facilitation of service goals. OFDO service providers can enhance the consumers' comfort level by providing a convenient layout, understandable information with proper explanations, and navigation aids to facilitate consumers to move among different sections of related pages. They can put contact information on the webpage to provide quick contact facility and specialized guidance to consumers. In the same vein, the website should be user-friendly, and it should offer keyword searching and price comparison so that consumers can make the right decision and buy products from this website without other assistance. The website should be customized and interactive to enable the consumers to change the website layout, colors, font size, etc. as per their requirements and allow them to see the demonstration of product from different dimensions. Hence, it is an inexpensive way to reduce the consumers' discomfort level to enhance their intentions to use OFDO services.

Moreover, demographic variables are also considered significant factors in persuading the consumers' intentions towards the adoption of new technology. It has been found from the findings that males, young individuals, higher educated members, and those with high

income are more optimistic, innovative, and more aware of and have positive intentions towards the adoption of new technology (i.e., OFDO services). They are considered the first adopter of innovative technology. Females, elder people, less educated people, and those with low income feel discomfort and insecurity have negative intentions towards adoption of new technology and may specify that they intend to communicate and deal with companies adopting interpersonal ways instead of using innovative technologies such as OFDO services. For example, based on the target market, organizations may adopt online contacts for both selling and promotion of goods or services [140].

Moreover, company managers interested in the target market (i.e., consumers) with low involvement in technology would be suggested to concentrate on a strategic solution such as communication with their consumers. For example, an organization needs to design an advertising strategy by focusing on minimizing the uncertainty level among those consumers who have high insecurity and discomfort levels with new technology. They can use a well-known celebrity as an endorsement to enhance their trust level with the new technology introduced by a particular company. In this way, they can influence the optimistic and innovative consumers along with insecure and discomfort consumers by offering potential benefits to enhance the usage frequency level of new technology among targeted consumers.

Furthermore, financial security is considered the most significant driver to convert an insecure buyer into an optimistic buyer. OFDO service provider should provide efficient, secure, straightforward, and easy-to-use payment procedures to reduce the buyers' insecurity level and to convert their negative intentions into positive readiness to use OFDO services. Moreover, the findings of the current study could also be beneficial for startups, service providers intending to be involved in the food industry, government bodies, policymakers, advertisers, and marketers. They can use our study findings to build a better relationship with consumers. Finally, multinational organizations that intend to expand their market of OFDO services in emerging countries can attain strategic notions from the findings of this study.

### 6.3. Limitations and Future Research Directions

This study has several empirical and managerial implications along with a few limitations that can be considered in future researches. First, the respondents of the current survey are OFDO service users in Pakistan, and the findings of study cannot be generalized to different countries with different cultures. Future researchers can include OFDO service users from different countries and can generalize the results across a wider population. Second, the study is cross-sectional, and future studies can re-investigate this model by using experimental and longitudinal data to examine the variation in the constructs' relationships. Third, this study emphasizes OFDO service users only. Thus, the findings cannot be implemented to other setups in the foodservice sector (e.g., online delivery of fresh fruits and vegetables). Therefore, future examiners need to consider issues regarding sellers, employees, and delivery workers involved in the food sector. Finally, online reviews are considered a more crucial source of information for consumers to make effective purchase decisions and to offer more benefits to them. Similarly, online reviews in the form of open innovation also provide value to organizations. They perform as a source of continuous improvement in the product and service, enhance sales, and facilitate organizations to build a long-term association with customers. However, they play a major role in the marketing endeavors of organizations. The growing importance of online reviews has opened new avenues of research for academicians and practitioners to study how online reviews can impact consumer intention to use OFD ordering service systems during the COVID-19 pandemic situation.

## 7. Conclusions

This study adopted the technology readiness theory to study consumer personality traits (i.e., innovativeness, optimism, discomfort, and insecurity) and its association with

consumers' intentions and actual behavior to use OFDO services. Moreover, this study also tests the moderation effect of situational influences (COVID-19) on the association between consumers' intentions and behavior to use OFDO services. Different researchers showed their intense interest in consumer personality traits, but this study adopted these traits and examined its impact on consumer intentions and behavior toward OFDO services with a moderating effect of the situational influence COVID-19 on consumer behavior towards OFDO services. The results indicate that optimism and innovativeness significantly and positively influence OFDO service intentions. Similarly, insecurity and discomfort have a significant and negative association with OFDO service intentions while consumer behavioral intentions have a significant impact on actual behavior towards OFDO services. In addition, a situational influence (COVID-19) moderates the association between consumer intention and actual behavior to adopt OFDO services. Moreover, the results based on PLS-MGA reveal that optimism and innovativeness have stronger effects in demographic variables, i.e., young, male, high income, high education, etc. while insecurity and discomfort have stronger impacts in the opposite, i.e., elder, female, low income, low education, etc. Overall, the existing study adequately provides insights to marketers and practitioners to understand consumer traits, consumer intentions, and actual behavioral associations in the OFDO service perspective and provides new insights for academicians and researchers.

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