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Article

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MARKETING | RESEARCH ARTICLE

Online grocery shopping behavior during COVID-19 pandemic: An interdisciplinary explanation

Kharabela Rout¹, Priti Ranjan Sahoo^{1*}, Archana Bhuyan¹, Arvind Tripathy¹ and Smrutirekha¹

Abstract: The second wave of COVID-19 forced many countries to impose a strict lockdown to check the escalated infection rate. The imposed lockdown and social distancing made people involuntary home arrested, and people shifted back to virtual space by adopting, starting from work from home to online shopping. The essentials such as food and grocery shopping moved from brick-and-mortar stores to online stores. Consumers immensely adopted online grocery shopping to cope with the severity of the second wave of COVID-19. This study predicts consumers' online food and grocery buying behavior during a pandemic by considering the health threat-related and perceptual factors that got neglected in the extant literature. The current study adopted Protection Motivation Theory (PMT) and Technology Acceptance Model (TAM) as a theoretical lens to explain the online grocery buying intention of Indian consumers in the COVID-19 pandemic scenario.

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Dr. Priti Ranjan Sahoo is an Associate Professor at KIIT School of Management, KIIT University. Prof. Sahoo has more than 28 years of experience in both industry and academics. He holds double master degrees in MBA & MTA and is a FDP alumna of IIM Ahmedabad. He has been serving in the editorial board of many national and international journals of repute. Currently he is the Editor-in-Chief of "Indian Journal of Hospitality Management" having ISSN: 2582 4082, the official journal of IHM, Ahmedabad. His research interests include Business Policy, Tourism & Hospitality, Strategic Management, International Business, Channel Management, E-Commerce. Kharabela Rout is a doctoral scholar at KIIT school of Management, KIIT University, India. He obtained his bachelor degree in science from Utkal University, India, and his master's degree in Agribusiness and marketing at Utkal University, India. His current research interests comprised; consumer behavior in online retailing, Neural network modelling, consumer behavior towards Private label brands, adoption of new technology.

Data was gathered from 133 online grocery consumers and were analyzed using Smart-PLS 3 to examine the proposed model. The study revealed that factors, namely self-isolation intention, perceived ease of use, perceived usefulness, and customer perceived value, have positively and significantly predicted the online grocery shopping intention. Further, the perceived usefulness and self-isolation intention positively and greatly influence the customer perceived value. A small sample is noted as the prime limitation of the study. Managerial and theoretical implications are suggested in this study.

Subjects: Marketing; Social Sciences; Area Studies; Asian Studies; Economics, Finance, Business & Industry; Business, Management and Accounting; Marketing; Relationship Marketing; Retail Marketing

Keywords: online grocery shopping; perceived usefulness; perceived ease of use; isolation intention; consumer-perceived value

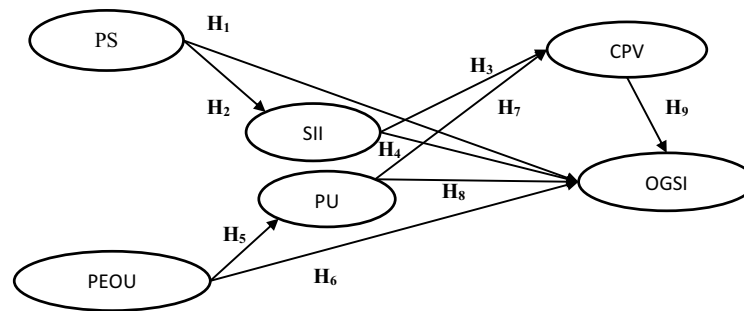
1. Introduction

The global pandemic of COVID-19 brought major changes in consumers' buying behavior (Martin-Neuninger & Ruby, 2020). At the beginning of the pandemic and during the second wave of the pandemic, due to the disrupted supply chain and unusual consumer behavior such as fear of purchase and surged demand for essential food items in the supermarkets caused the shelves to empty (Laato et al. 2020; Hobbs, 2020). Moreover, following social distancing and limited operating hours for the supermarkets due to imposed lockdown by Governments offered little time for the consumers to buy grocery and food products. Most importantly, the possible risk of the infection made the consumers' shopping experience stressful. Moreover, limited access to information about the products due to short operating hours of supermarkets declined the quality perception of the food and grocery products among the consumers (Martin-Neuninger & Ruby, 2020). In response to containment measures, globally, people shifted to online shopping, home delivery, and cashless transactions during the COVID-19 pandemic (Eger et al., 2021). As the physical mode of grocery and food shopping is prone to infection and associated with poor accessibility, online grocery and food shopping (OGS) services evolved as an effective channel in the premises of the COVID-19 pandemic. OGS services serve a public health interest by reducing social contacts, unlike physical retail stores, and protecting consumers from low and high health risks (H. Hung-Hao Chang & Meyerhoefer, 2021). As a result, online shopping behavior has surged in response to the pandemic. People reconsidered a new mode of shopping and newly learned and adopted online food and grocery shopping (Eger et al., 2021).

The new consumer buying behaviors like fear purchasing or panic buying of essential commodities and stockpiling behavior have been extensively studied during the current pandemic by scholars (Hall et al., 2021; Singh et al., 2021). But past studies overlooked the newly shifted and emerged online food and grocery shopping behavior in response to COVID-19, particularly how the fear of the pandemic and protection measures like social isolation leads to the adoption of OGS is unclear. Moreover, the antecedents like customer perceived value (CPV), the usefulness of the technology, and easiness of the technology are extensively examined with the adoption of the OGS (Driediger & Bhatiasevi, 2019; Grashuis et al., 2020), but very limited studies looked at these factors and how these factors shape the OGS adoption in the context of COVID-19 pandemic.

Hence this shortcoming highlights the need to understand the newly emerged OGS trend among the consumers in a unique situation like the COVID-19 pandemic for the researchers. It is equally important for the online food and grocery retailers and managers to understand the online food and grocery shopping behavior to track the change in the consumer behavior and newly formed online shopping habits for the food and grocery products, which ultimately support them to adopt a new or change strategy to serve customer during pandemic (Verma & Gustafsson, 2020). In light of this, the current research proposed one central research question:

Figure 1. Conceptual framework.



What factors influence the consumers' online food and grocery shopping intention in a unique situation like the COVID-19 global pandemic?

Hence, the study aims to predict the online grocery shopping behavior with two different prospective of consumers' perception, one is the health threat perceptions that influence consumers may adopt online grocery shopping, and the second one is the perception of the consumers for the OGS which will help to understand the online shopping behavior in a holistic way in the environment of COVID-19 pandemic. Therefore, this study follows an interdisciplinary approach to develop an integrated research framework (See, [Figure 1](#)) to explain OGS behavior in a pandemic scenario. This study adopted the protection motivation theory (PMT); (Rogers, 1975) and the Technology acceptance model (TAM); (Davis, 1989) as theoretical underpinning. These are two prominent theoretical models derived from the psychology and technology acceptance behavior domain to explain the cyberpsychology behavior during the COVID-19 pandemic (Koch et al., 2020; Laato, Najmul Islam, Laine et al., 2020). This study was conducted from a developing country's perspective, and it offers that future studies can adopt, modify, and empirically validate the developed model in different countries' prospects. As per the best knowledge of the authors of this paper, this study is the first to investigate the OGS with the lens of PMT, and two antecedents, perceived severity and self-isolation intention of PMT, were examined with OGS adoption intention in a global pandemic scenario. This study is also unique to explain the adoption behavior of OGS with the help of the factors like CPV, perceived ease of use (PEOU), and perceived usefulness (PU) during a crisis like the COVID-19 global pandemic. This study contributes to the primary literature by providing a unique and comprehensive explanation of the OGS adoption behavior during a pandemic. Moreover, this study assists online grocery retailers in devising the strategy to deliver a superior buying experience to the consumers during the current pandemic.

This study is organized as follows: This study provides a literature review with a theoretical background and proposes nine hypotheses with a conceptual framework. Secondly, this study discussed the research design and reported the data analysis. Lastly, this study offered both managerial and theoretical contributions of the study.

2. Review of literature

2.1. Theoretical background

Protection motivation theory (PMT) was advanced by (Rogers, 1975) to elucidate how individuals are motivated to respond in a self-protective way towards a perceived health threat and adopted by the past studies in different natural hazards contexts (Westcott et al., 2017). and recently, it was adopted by the past studies to explain consumer behaviors in the COVID-19 pandemic context (Laato et al. 2020; Sharifirad et al., 2014). In light of PMT, response efficacy which refers to the health risks of the COVID-19 pandemic, motivates people to adopt protective measures, such as self-isolation (Laato et al. 2020), to mitigate the infection to proximity. This protective measure is the outcome of personal threat appraisal, which encompasses perceived severity (PS). PS in the context of the COVID-19 pandemic can be described as the extent to which an individual believes

that the threat (COVID-19 disease) is profound. Hence, this study adopts PMT to explain the impact of health threat-related factors on consumers' online grocery shopping intention. Researchers and practitioners widely use the technology acceptance model (Davis, 1989) to predict and explain user acceptance of information technologies in different contexts (Davis & Venkatesh, 1996). The two significant predictors, namely perceived ease of use (PEOU) and perceived usefulness (PU), are responsible for predicting significant variance in usage intention of technology or information system (Davis, 1993). Recently, in the context of acceptance of technology in the premise of the COVID-19 pandemic, prior studies verified the impact of PEOU and PU on the usage intention of various virtual technology like online shopping (Koch et al., 2020), online learning (Sukendro et al., 2020); video conferencing (Pal & Vanijja, 2020) and telemedicine (An et al., 2021). Hence consistent with previous studies, this study looked into the impact of PEOU and PU on online grocery shopping during COVID-19 by relying on TAM. Consumer perceived value (CPV) is an essential concept in consumer behavior research and determines the consumers' overall judgment and satisfaction with products and services (Woodruff, 1997). In this study, CPV was treated from both from a behavioural perspective and utilitarian theory perspective.

2.2. Hypothesis development and conceptual framework

2.2.1. PS

PS is a crucial construct in PMT, and PS influences or motivates people to take preventive measures against the disease, e.g., COVID-19 (Rogers, 1975). After COVID-19 arrived and was confirmed as a highly contaminated disease, Governments, and administrative authorities enforced social distancing measures like social isolation and quarantine. They imposed strict lockdown to flatten the infection curve during the pandemic (Teslya et al., 2020). In line with (Laato et al. 2020), this study considered self-isolation intention (SII), which refers to a voluntary reduction of social distancing and avoiding visiting public places, for example, brick and mortar stores for shopping. PMT recommended that when the threat appraisal is intense or perceived severity is high, it directly motivates or induces people to take self-protective measures like self-isolation in the COVID-19 pandemic, and the perceived severity of COVID-19 decreases social interactions (Laato et al. 2020). Previous studies in the context of pandemics confirmed that perceived severity is a crucial determinant of changing behavioral intention. In the context of the beginning of the COVID-19 pandemic, perceived severity leads to unusual buying of products like food and sanitizers. COVID-19 is a highly contaminated disease, and the chance of spreading in a crowded place is more (World Health Organisation, 2020). Hence considering the severity of the COVID-19 in crowded places like retail stores and Malls, people preferred to adopt online retail stores or shift from physical stores to virtual retail stores for a safe and convenient way to purchase products like food and grocery items without any social contact. Hence, in the above literature, the following hypotheses were advanced as follows:

H₁: Higher the PS of the COVID-19 pandemic, higher the SII of the consumers.

H₂: Higher the PS of the COVID-19 pandemic, higher the OGSI of the consumers.

2.2.2. SII

To maintain self-isolation during the COVID-19 pandemic as a health safety measure, people prefer to adopt online shopping for essential products like food and groceries. During social distancing, consumers looking for value like convenience and availability of the quality and value for money products due to the short supply of products (Hao et al., 2020) and modes of shopping that provide safety like contactless home delivery and cashless transactions ((Li et al., 2021). Hence following the behavioral aspect of perceived value by (Woodruff, 1997), consumers who are following the self-isolation valued online grocery stores over physical retail stores to full fill the purpose of social distancing, and features like contactless home delivery, quality, and price of the products available with online stores. Due to imposed lockdown by the governments in different

countries to prevent the spreading of the disease, it temporally closes the physical stores. It forces people to stay socially isolated most of the time (Parmet & Sinha, 2020). It induces people to buy food and groceries from online stores. Situational factors (e.g., social isolation) lead to the adoption of online grocery shopping (Hand et al., 2009). Moreover, the self-isolation intention positively influences consumers' buying behavior during the COVID-19 pandemic (Laato et al. 2020). Hence, building on the above literature following hypotheses was advanced as follows:

H₃: Higher the SII, higher CPV for the OGS during the COVID-19 pandemic.

H₄: Higher the SII, higher the OGS of the consumers during the COVID-19 pandemic.

2.2.3. PEOU. PEOU refers to “the degree to which a person believes that using a particular technology or information system would be free of effort” (Davis, 1989). The effort refers to the finite resources allocated to the activities. The Individual is responsible for (Driediger & Bhatiasevi, 2019). The PEOU is a major predictor of the PU of the technology as TAM (Davis, 1989) argued that the easier the information system is to use, the more useful it can be. Researchers extensively and empirically evident that PEOU is significantly linked to the PU (Venkatesh & Davis, 2000). The previous studies also verified the impact of PEOU on PU in online shopping (Driediger & Bhatiasevi, 2019; Loketkrawee & Bhatiasevi, 2018). Moreover, PEOU significantly influences usage intention (Gefen et al., 2003; Venkatesh & Davis, 2000). In the context of online grocery shopping, the PU has a positive and significant impact on online OGS (Driediger & Bhatiasevi, 2019; Sreeram et al., 2017). Hence, in the context of the COVID-19 pandemic, consumers look for channels like online grocery stores, where minimum effort is required to purchase food and grocery items due to social distancing, leading to the perceived usefulness of the technology motivates people to purchase online grocery stores. Build on the above literature; the following hypotheses were advanced as follows:

H₅: PEOU of online grocery stores positively influenced the PU of the online grocery store during the COVID-19 pandemic.

H₆: PEOU of online grocery stores positively influenced the OGS during the COVID-19 pandemic.

2.2.4. PU

PU can be defined as “the degree to which a person believes that using a particular system would enhance his or her job performance” (Davis, 1989). In the context of the COVID-19 pandemic, consumers may perceive those online stores use technology to avoid social contacts and virtually purchase products they need. The PU encompasses a consumer's detailed investigation of whether the value set integrated into a particular usage matches their lifestyle (Kervenoael et al., 2021). Hence, the PU of online grocery store usage offered consumers the value set, for example, quality, value for money, and a secure channel to buy groceries, matching the lifestyle during social distancing. (Kervenoael et al., 2021) Their study empirically confirmed that PU positively and significantly explained the perceived value.

Moreover, PU is a major predictor of usage intention of information systems, and it explains the more significant amount of variance in usage intention (Taylor & Todd, 1995; Venkatesh & Davis, 2000) and when an individual perceives that a particular technology is useful for their job, then it leads to an increase in the usage of that technology (Abdullah et al., 2016). The previous studies on the online grocery shopping context empirically elucidate that PU positively influences the OGS (Driediger & Bhatiasevi, 2019; Sreeram et al., 2017). Likewise, during the pandemic, if consumers perceived that online grocery stores were useful for them, they continued to purchase groceries from online grocery stores. Hence, building on the above literature, the hypotheses were advanced as follows:

H₇: PU of online grocery stores positively influenced the CPV for the OGS during the COVID-19 pandemic.

H₈: PU of online grocery stores positively influenced the OGS during the COVID-19 pandemic.

2.2.5. CPV

The utilitarian perspective is based on value consumption theory and commonly defined the CPV as “the assessment of the utility of a product or service based on the consumers’ perception of what is obtained and what is given” (Boksberger & Melsen, 2011). The behavioral aspect of CVP, which is based on means-end theory, states that perceived value has different dimensions, namely, value as a low or affordable price, value as whatever the consumers want in a product and service, and value as the quality derived from the price paid (Zeithaml, 1988). Moreover, CVP depends on consumers’ perceived preference and evaluation for a particular product or services features and features’ performance and the outcomes arising from the use of the product or service achieving the consumers’ purpose in use situation (Woodruff, 1997). Hence in the same vein, in the context of the COVID-19 pandemic and online shopping environment, CPV encompassed quality and price as utility derived from online shopping. Consumers prefer safe and convenient ways for essential products, for example, food and grocery shopping online (Grashuis et al., 2020; Mohanty, Das, Chandra Panda, Ranjan Sahoo et al., 2019). They avoided the possible health risk due to the physical mode of shopping. However, CVP is a key antecedent of customer loyalty and satisfaction (H. H. Hsin Hsin Chang & Wang, 2011), and CPV positively influences online purchase intention (E. C. En Chi Chang & Tseng, 2013; Gan & Wang, 2017; Wu et al., 2014). Hence building on the above literature, the hypothesis was advanced as follows:

H₉: CPV positively influence the OGS during the COVID-19 pandemic.

3. Research design

This study adopted a positivist approach and was cross-sectional in nature. The primary data was obtained from online grocery shoppers through an online survey. A questionnaire was designed by adopting existing validated scales from the previous literature (see, Table 1). The questionnaire has a total of 23 items and two sections; in the first section, the questionnaire contains items, namely

Table 1. Results of the measurement model

Constructs/Measures	Source
PS (CR:0.878, AVE: 0. 707) The negative impact of COVID-19 is very high. (PS1) COVID-19 can be life-threatening. (PS2) COVID-19 is a severe threat to someone like me. (PS3)	(Ling et al., 2019)
SII (CR:0.880, AVE:0.648) Avoid going to offline shops during the COVID-19 lockdown. (SII1) Deliberately cancel or postpone a social event, such as meeting with friends, eating outside, or going to a sporting event. (SII2) Reduce using public transportation. (SII3) Stay at home and study/work remotely. (SII4)	(Ling et al., 2019)
PEOU (CR:0.896, AVE:0.742) Learning to use the OGS website was easy for me. (PEOU1) It was easy for me to become skillful at using the OGS website. (PEOU2) I found the OGS website easy to use. (PEOU3)	Davis (1989)

(Continued)

Constructs/Measures	Source
<p>PU (CR: 0.885, AVE: 0.720) The online grocery helped me to be more effective in buying groceries during COVID-19. (PU1) The OGS required the fewest steps to accomplish my grocery shopping and what I wanted to do with it. (PU2) OGS made the task of grocery shopping I wanted to accomplish easier to get done during the Covid-19 pandemic. (PU3)</p>	<p>Davis (1989)</p>
<p>CPV (CR:0.881, AVE:0.651) The grocery products available on the online grocery website are valuable for me during a pandemic. (CPV1) Get what I pay for at this website during a pandemic. (CPV2) The grocery product available on the online grocery website is worthwhile during a pandemic. (CPV3) Delivery charges are fair enough. (CPV4)</p>	<p>Hsin Hsin Chang and Wang (2011)</p>
<p>OGSI (CR:0.857, AVE: 0.674) I intend to use OGS during covid-19 lockdown. (OGSI1) Whenever possible, I intended to use OGS to purchase groceries during the COVID-19 lockdown. (OGSI 2) I intended to use OGS when there are convenient and contactless home deliveries during the COVID-19 lockdown. (OGSI3)</p>	<p>Sreeram et al. (2017)</p>

age, gender, and the Indian online store the respondents prefer to buy groceries, and a second section is dedicated to the items to measure the constructs of the study. The consumers evaluated the items related to online shopping against a seven-point Likert scale ranging from 1 = strongly disagree to 7 = strongly agree.

This study adopted a purposive sampling technique in line with the previous empirical studies those adopted this sampling technique in their research methodologies (Asadi et al., 2017; Etikan et al., 2016). This study aims to include the respondents who have rich experience in online grocery shopping during the COVID-19 pandemic to do so, and this study chose students and employees working from home and frequently buying grocery items from online grocery stores in Bhubaneswar, a smart city in India, during the second wave of COVID-19. A total of 200 online questionnaires were distributed among the respondents. Out of 200 questionnaires, those were distributed, 153 responses were recorded, and 133 questionnaires were found to be correctly filled. The survey was conducted for 10 days, from June 20 to 30 June 2021. This study was carried out in the Indian context because during COVID-19, Indian food and grocery consumers largely shifted from brick-and-mortar stores to online food and grocery shopping due to different health threats and perceptual factors (Sharma & Jhamb, 2020). As the study aims to predict the OGSI in the COVID-19 context, partial least square structural equation modeling (PLS-SEM) is the preferred statistical tool over covariance-based SEM (Hair et al., 2011). The sample size for SEM can be determined by ten times more of the study's independent variables (Asadi et al., 2017). Hence the sample size is adequate for the data analysis. Moreover, PLS-SEM can be utilized with a small sample size and complex model. This study used Smart PLS 3 software packages to perform PLS-SEM operations.

The sample of the study is slightly skewed towards males, which is 52%, and the female ratio is 48%. The majority of the respondents fall under the age bracket of 21–30, which is 40%, and 9% of

respondents are less than 20 years old, and another 9% make up more than 50-years old. A large chunk of the shoppers are graduates in the sample, which represents 80% of the total sample. The majority of the respondents, which is 73%, prefer to buy grocery products from JIO-Mart online store and 22% of the respondents purchase groceries from Amazon India.com and Flipkart.com.

4. Data analysis and results

4.1. Measurement model assessment

In the first stage of the data analysis, this study analyzed the reliability and validity of this study's outer models or measurement models. The reliability and internal consistency of the constructs of this study were assessed by the value of composite reliability (CR), and the recommended threshold for CR is 0.7 (Hair et al., 2011). The results of CR of each construct in Table 1 show that the constructs meet the criteria. The construct validity was accessed in two ways. Firstly, the convergent validity of each construct was accessed based on the average variance extracted (AVE) value, and the value of AVE should be 0.5 or higher (Hair et al., 2011). In this study, the AVE value of each construct illustrated in Table 1 indicates that all the constructs meet the convergent validity. Secondly, the discriminant analysis was assessed by the correlation matrix depicted in Table 2, where the square roots of AVEs presented diagonally, and the value of square roots of the AVEs are higher than the off-diagonal correlation values, which indicates the sufficient level of discriminant validity (Hair et al., 2011). Moreover, the factors loadings of each construct, illustrated in Table 3, are higher than 0.7 (Hair et al., 2011), indicating the constructs' discriminant validity. This study also checked the common method variance (CMV), and to do this, this study followed the single-factor method recommended (Podsakoff et al., 2003). It was found that there is no single item that explained a substantial amount of the variance in a single latent factor, which confirmed that this study is free from CMV.

4.2. Structural model assessment

In the second phase of data analysis, this study performed a complete bootstrapping method to test the structural paths of the conceptual framework. The value of path coefficients of the structural paths is illustrated in Figure 2. The coefficient of determination (R^2) values was found to be 0.553 for OGSI and 0.407 for CPV (see, Figure 2). The hypothesis testing results presented in Table 4 revealed that, except for H_2 , the rest of the hypotheses are supported. Firstly, PS had a positive and significant impact on SII (beta = 0.649, $p = 0.000$). SII, PEOU, PU, and CPV positively and significantly influence the OGSI, and PU has the highest effect on OGSI (beta = 0.403, $p = 0.000$) compared to other variables. SII and PU had a positive and significant impact on CPV, where PU has a higher effect on CPV (beta = 0.573, $p = 0.000$) than SII. PEOU had a positive and significant impact on PU (beta = 0.499, $p = 0.000$).

5. Discussion and conclusion

This study attempt to explain the OGSI in the COVID-19 scenario by considering the health threat and protective measure factors like PS and SII and perceptual factors like PU, PEOU, and CPV.

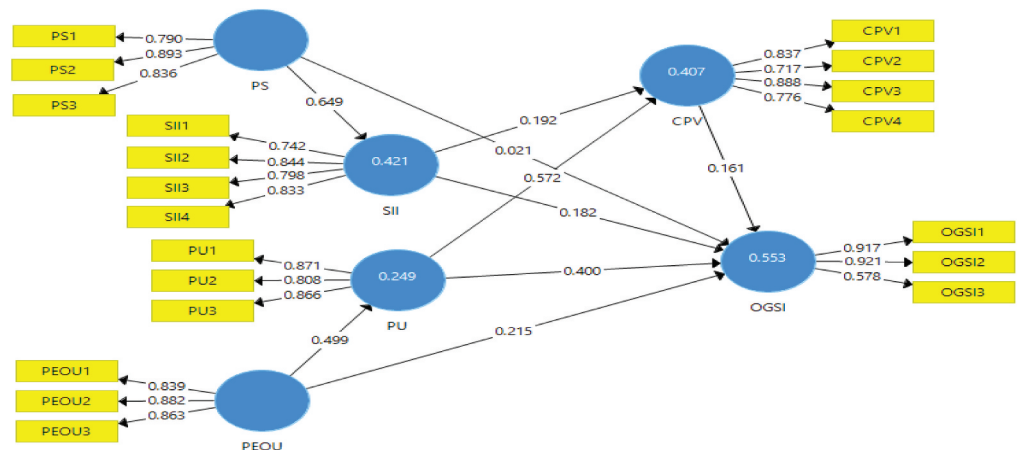
Table 2. Correlation matrix

	1	2	3	4	5	6
CPV (1)	0.807					
OGSI (2)	0.588	0.821				
PEOU (3)	0.581	0.578	0.861			
PS (4)	0.138	0.239	0.190	0.841		
PU (5)	0.609	0.642	0.499	0.094	0.849	
SII (6)	0.302	0.398	0.359	0.649	0.192	0.805

Table 3. Factor loadings

	CPV	OGSI	PEOU	PS	PU	SII
CPV1	0.837					
CPV2	0.717					
CPV3	0.888					
CPV4	0.776					
OGSI1		0.917				
OGSI2		0.921				
OGSI3		0.578				
PEOU1			0.839			
PEOU2			0.882			
PEOU3			0.863			
PS1				0.790		
PS2				0.893		
PS3				0.836		
PU1					0.871	
PU2					0.808	
PU3					0.866	
SII1						0.742
SII2						0.844
SII3						0.798
SII4						0.833

Figure 2. Structural model with factor loadings, path-coefficient, and R2.



Further, this study attempt to explain CPV by utilizing the factors, namely, SII and PU. The study's findings revealed that consumers usually follow social isolation when the severity of the COVID-19 is perceived to be high. This insight is in line with the study by (Laato et al. 2020; Rogers, 1975). However, perceived severity did not motivate people to adopt online grocery services, which contradicts the impact of PS on behavioral change in the PMT (Rogers, 1975). The SII of the consumers influenced OGS during COVID-19, and it also positively influenced the perceived value for online grocery services among the consumers during the COVID-19 pandemic. Hence, people following social isolation are the potential adaptors or buyers of online grocery firms during

Table 4. Hypothesis testing

Hypothesis	Path coefficient	T-statistics	p-value	Decision
H ₁ : PS -> SII	0.649***	9.139	0.000	Supported
H ₂ : PS -> OGS	0.020 ^{NS}	0.242	0.809	Rejected
H ₃ : SII -> CPV	0.192**	2.352	0.019	Supported
H ₄ : SII -> OGS	0.181**	2.018	0.044	Supported
H ₅ : PEOU -> PU	0.499***	6.008	0.000	Supported
H ₆ : PEOU -> OGS	0.215**	2.041	0.041	Supported
H ₇ : PU -> CPV	0.573***	9.581	0.000	Supported
H ₈ : PU -> OGS	0.403***	3.915	0.000	Supported
H ₉ : CPV -> OGS	0.160*	1.936	0.053	Supported

***Significant at < 0.01, **Significant at < 0.05, *Significant at < 0.10, NS: Not significant

the COVID-19 pandemic and value perception, which is positive for online grocery stores. People perceived that online grocery shopping required less effort during the pandemic, leading to a positive OGS. People positively perceived online grocery shopping platforms are useful technology during pandemics to purchase food and grocery, and these two findings are consistent with (Venkatesh & Davis, 2000). In light of (Venkatesh & Davis, 2000), this study confirmed that when people perceived online grocery platforms are useful for continuing grocery shopping during the COVID-19 pandemic, it positively motivated consumers to adopt online grocery shopping.

Moreover, consumers' value perception was also positively enhanced for online grocery shopping during the COVID-19 pandemic. Consumers perceived online grocery platforms are useful during COVID-19, and this finding is in line with (Kervenoael et al., 2021). Moreover, when customers' perceived value is positive and favorable for online grocery shopping, this positively leads to OGS during COVID-19, which supports the studies (Gan & Wang, 2017; Wu et al., 2014). The proposed model determined 55.3% and 40.7% change in OGS and CPV, respectively, due to antecedents illustrated in the model. In summary, this interdisciplinary and cross-sectional study finds evidence that during a pandemic, the OGS of the consumers largely influences when consumers perceive the online grocery platforms are useful to avoid social contact and safely continue grocery shopping. Secondly, the OGS is influenced by the people who follow self-isolation intention. Lastly, CPV also positively affects OGS, as people seek price, quality, and convenient modes of shopping. Consumers who prefer to maintain social isolation are perceived online grocery shopping as more valuable. When people perceive online shopping as useful for them, it largely influences the perceived value for the online stores.

5.1. Theoretical implications

This interdisciplinary study contributes to the existing body of knowledge on OGS by developing a conceptual framework (see, Figure 1) in a shock and unique context like the COVID-19 pandemic scenario. Though there are much existing literature available on consumer behavior towards online grocery shopping, there is a gap in studies on how health threats and protective measure factors, for example, PS and SII and CPV, influence the OGS during the COVID-19 pandemic. Moreover, this study expands on TAM (Davis, 1989) to measure the impact of PEOU and PU on the OGS during pandemics. Hence, based on theoretical argument, the current research contributes profoundly to understanding online grocery shopping impacted by health-related factors and perceptions towards online grocery shopping during the pandemic.

This study draws on TAM and PMT to organize the conceptual model and provide a theoretical base to explain the OGS in a unique situation like the COVID-19 pandemic. Unlike other studies, this study looked at online grocery shopping behavior from an interdisciplinary perspective. This study is the first of its kind to explain online shopping behavior with the help of two relevant

factors in the COVID-19 pandemic scenario, that is, SII and PS. Additionally, the most relevant factors like CPV, PEOU, and PU, which are mostly adopted by the past researchers to explain the OGSII, the current research considered these factors and examined how these factors explained OGSII in the COVID-19 pandemic scenario. Moreover, some new contributions made by the current study make some unique contributions positive effect of PS on SII and PEOU of online grocery shopping on PU of online grocery shopping. Additionally, this study confirmed the positive relationship between SII and PU with CPV of online grocery shopping.

5.2. Managerial implications

The findings of this study offered some managerial implications. This study helps the managers to understand consumer behavior towards online grocery shopping during a crisis and help to formulate a strategy to improve customer experience by focusing on perceived value, perceived usefulness of the online grocery shopping, perceived easiness of the technology, and, most crucial factor, contactless service. The findings of the study confirmed that the customers with higher social isolation intention are more likely to buy food and groceries from online channels. Hence, managers need to prepare and implement the contactless delivery by training the frontline employees like delivery staffs. The contactless delivery service needs to be continuously communicated to the customers through affiliated marketing and social media marketing. The vaccination status of the frontlines and their hygiene practice testimonials need to be communicated to the customers. The second major finding confirmed that during the COVID-19 pandemic CPV for online grocery shopping was influenced by social isolation intention, and perceived usefulness of the technology and CPV influenced the OGSII. These findings offer strategies like managers can ensure the availability of the products, unlike physical stores. Secondly, category managers ensure the quality of the products delivered to the customers. Most importantly, safe and contactless delivery needs to be maintained by which CPV will be positively enhanced, leading to positive OGSII during the pandemic. The third findings of the study confirmed a positive impact of PEOU and PU on OGSII. Managers need to think about the updated version of their online stores and incorporate the features like easily navigating the trending items during pandemics like foods, personal hygiene products, home care products, and the online store ensure that customers can complete their shopping with very few steps when these features are taken care it will be easy for the customers to do shopping online and which increases the usefulness of online store. Moreover, if timely delivery is ensured, safety majors are taken care of while dealing with the customers, online payments are incorporated, and quality and accessibility of the products are taken care by the online stores, then the perceived usefulness of the online grocery shopping is enhanced. It will positively motivate the purchase intention of the customers. The findings also offer managerial implications to brick-and-mortar grocery stores. These stores need to adopt an omnichannel strategy to capture the customers who want to buy groceries online over physical stores (Mohanty, Das, Panda, Sahoo et al., 2019). Consumers who shifted to online grocery shopping can be retained by the physical stores.

5.3. Limitations and future scope

Two major limitations were noted in this study. Firstly, this study's sample size is small as compared to the other studies that adopted TAM and PMT. Secondly, this study restricted the sample to the Indian retail market context. Some other major predictors like the subjective norm, attitude, and self-efficacy are not included in the study, which can influence the OGSII during a pandemic. Further, this study included only private employees and students as respondents. An avenue of future research could rely on larger sample size, and another group of people like homemakers and older adults who are more prone to infection can be included in the sample to gather better and broader insight on OGSII during the COVID-19 pandemic. As the COVID-19 pandemic is highly uncertain and consumer behavior is also changing rapidly, another avenue of future research can adopt longitudinal study to track and explain the dynamics of the consumer behavior towards online grocery services during the COVID-19 pandemic. The future research can explore the mediating role of SII and PU illustrated in the conceptual framework of this study.

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