



Managing the effectiveness of e-commerce platforms in a pandemic

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ABSTRACT

Given the severe impacts of the Covid-19 pandemic on business activities, this study presents a systematic framework to examine the effect of the perceived effectiveness of e-commerce platforms (PEEP) on consumer's perceived economic benefits in predicting sustainable consumption. This study adopted uses and gratification theory to base the conceptual model while adding a boundary condition of pandemic fear. The primary research method of this study is a quantitative survey and analysis. Using a sample of 617 online consumers with PLS analytical technique, this study finds a positive moderating effect of pandemic fear on the relationships among PEEP, economic benefits, and sustainable consumption. The contribution of this study is its examination of how economic benefit mediates the PEEP and sustainable consumption relationship which is dependable on the levels of pandemic fear. Implications for managers and theory are also discussed.

1. Introduction

Recent decades have witnessed an escalation of global pandemics, e.g., SARS in 2003, H5N1 in 2006, and H1N1 in 2009, each of which hampered business activities and economic growth (Chung, 2015). For example, the Covid-19 virus caused a 13.5% drop in China's industry production and a 20.5% decline in retail sales in the first two months of 2020 while the U. S's stock market lost trillions of dollars, leading to a negative wealth effect and lower GDP (Pesek, 2020). As scientists have long warned, infectious diseases can force business activities into a new reality that severely impacts operations and one where managers have unclear guidance about how to effectively respond (Hudecheck et al., 2020). As a result of the Covid-19 impact, for instance, consumers are increasingly turning to online purchases; thus, managers need to be innovative in seeking alternative forms of supplies which raise the interest in the facilitation between firms and consumers.

The extant literature has situated the importance of e-commerce platforms that facilitate virtual interactions and include informative and insightful product information (Chandna and Salimath, 2018; Li et al., 2020) that consumers might consider to be economic benefits (Zhang et al., 2017). Such that, firms can increase sales revenue as e-commerce platforms help leverage existing consumers and attract new ones, build social groups, and ensure compatibility with legacy systems (Lee et al., 2018), especially in pandemic periods (Nielsen, 2020). In fact, Covid-19 has disrupted and changed the business landscape as managers have been thrust into the position of operating online supplies due to the reduction of in-person contact. However, the literature has yet to

address how e-commerce platforms can benefit both firms and consumers during the pandemic. As a result, managers who seek to implement online selling currently have no specific guidance to improve consumer intention for sustainable consumption over time and circumstance (Guillen-Royo, 2019; Hernant and Rosengren, 2017).

Therefore, this study provides an exploratory study in which the author develops a model of perceived effectiveness of e-commerce platform (PEEP) and analyzes its effectiveness on consumer's sustainable consumption behavior. In so doing, the author examines if economic benefits are a potential mediator of the PEEP and sustainable consumption relationship. The author, drawing on uses and gratification theory (UGT), also takes pandemic fear into account to identify contingencies for the framework. UGT explains why consumers use a specific medium to satisfy their needs (Kaur et al., 2020), providing valuable insight into the nascence of e-commerce platform adoption, information-seeking behavior, and social interactions (Abid and Harri-gan, 2020). In fact, rather than being a cause to worry, the Covid-19 pandemic appears to be a catalyst to testify a firm's effectiveness in operating its business activities more sustainably.

2. Conceptual background and hypothesis development

2.1. Uses and gratification theory

Uses and gratification theory (UGT) refers to an influential sociological paradigm that explains which social and psychology needs motivate consumers to select particular platforms (Li et al., 2018).

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Advances in Internet technologies have enabled e-commerce platforms to transform retail and logistics operations that create more economic benefits as reductions of costs and delays, triggering the roles of UGT in explaining usage motivations (Luo et al., 2011). For example, consumers use e-commerce platforms to interact and purchase products from retailers while retailers can provide consumers with various online shopping opportunities (Wagner et al., 2020). In this regard, UGT fundamentally helps to examine what role consumer behavior and motivation plays in consumers' online interactions with firms (Huang et al., 2014). If firms can effectively fulfill consumer needs with products via online platforms, consumers will be more willing to continue to interact with firms (Li et al., 2018). The current study argues that UGT helps to capture how consumers adopt and utilize e-commerce platforms to satisfy their purchase needs. In terms of usability and functionality, UGT addresses the patterns and motivations of online platform's application in seeking information, interacting with contents and communities, and sustaining purchase decisions for specific situations (Korhan and Ersoy, 2016). For example, the Covid-19 pandemic increased consumers purchase intention towards e-commerce platforms due to the medium's perceived health and safety benefits in contrast to those of traditional retailers. UGT helps to explain why, in light of pandemic fear, consumers increasingly engaged in online platforms to make relevant purchase considerations. In addition, UGT enables managers to identify the reasons behind consumer choice and product and service ratings (Ray et al., 2019). UGT also provides managers with importance of differentiated content strategy based on transactional data and information exchange to develop content strategy more effectively (Lim and Kumar, 2019). Therefore, this study employs UGT to explore the interactive linkages of PEEP, consumers' perceived economic benefits, pandemic fear, and sustainable consumption.

2.2. Perceived effectiveness of e-commerce platforms (PEEP)

E-commerce literature has well-documented that advances in Internet technology allow firms to directly sell products to consumers through e-commerce platforms (Fan et al., 2020), resulting in increased sales (Lee et al., 2018). However, consumers cannot physically examine products when buying online, which leads to product uncertainty (Song et al., 2020). The literature also indicates that online customer information is collected and tracked for data-driven marketing efforts but are inadequately safeguarded (Bandara et al., 2020). For example, security risk (e.g., personal information leakage) has been found to have strong negative effects on online transactions (Hubert et al., 2017). This is important because today's e-commerce platforms offer various online products and services from electronic devices to high-tech products, health and beauty to food, and fashion to sport and travel with a large volume of financial transactions. When consumers use e-commerce platforms to book a hotel room or flight ticket with online payments, they must provide their personal and bank account information which needs to be protected from leakage and fault behaviors or consumers will probably face with potential risks and dangers, otherwise (Hubert et al., 2017). Based on UGT, consumer perception of online transactional safety increases continuance intention and motivation to write positive reviews of products and services. Consequently, online safeguards are critical for personal and transactional data (Liao and Shi, 2017).

Furthermore, the literature recommends that online safeguards include credit card guarantees and privacy protection (Planger and Watson, 2015; Wang et al., 2019). For instance, when receiving online payments, e-commerce platforms have privacy policies and agreements in place with financial companies (e.g., banks) to protect customers against fraudulent actions (Chang and Chang, 2014; Fang et al., 2014; Kaur et al., 2020a; Liao and Yang, 2020). Guided by UGT, online consumers often express concern for privacy and security when participating in the on-going brand relationship (Simon, 2017). This theory also suggests that consumers only interact with firms when triggering gratification from firm commitment (Simon, 2017). Therefore, the

author conceptualizes PEEP as an online customer's perception that e-commerce platforms have safeguard mechanisms in place to protect online transactions from potential risks in both regular and pandemic times.

2.3. Economic benefits

In e-commercial literature, the conventional meaning of economic benefit largely refers to the consumer perception that e-commerce platforms offer price discounts, promotions, or other preferential activities (Liu et al., 2019). Liu et al. (2019) indicate that economic benefit derived from e-commerce platforms can generate positive emotional responses, which in turn leads to online purchase intention. In line with this logic, Wang and Herrando (2019) suggest that e-commerce platforms enhance interactions between seller and consumers and among consumers, as these interactions impact increasing online shopping behavior and generate economic benefits. Based on UGT, economic benefits also trigger consumer intention to engage in sustainable consumption during uncertain situations. Benefits, for instance, may include coupons, cash-backs, and discounts (Ray et al., 2019). UGT also suggests that if commercial offerings do not match consumers' expectations, the commercial quid pro quo relationship may be triggered by consumers (Simon, 2017). Additionally, this study adds that economic benefits pertain to consumers' perceived economic benefits (e.g., cost savings and discounts) for purchasing from e-commerce platforms during pandemic periods.

2.4. Pandemic fear

A pandemic refers to a new disease that most people do not have an immunity to and one that spreads worldwide (WHO, 2010), and pandemics are becoming one of the biggest threats for the world today (Harvard Global Health Institute, 2020). According to the Harvard Global Health Institute (2020), an infectious disease could rapidly cause millions of deaths globally, destabilize governments, and restrict trade and travel. The recent Covid-19 virus, for instance, has infected 422,945 people worldwide, resulting in 18,907 deaths at the time of writing (March 25, 2020), and accounting for 3.4% of death in comparison with seasonal flu (1.0%) (Worldometer, 2020). This fear of contagion becomes an emerging issue, such that it is imperative to learn how pandemic fear influences consumer spending and purchase behavior (Khan and Huremović, 2019). The consumer behavior literature indicates that fear refers to the negative consequences of a specific event that can lead to changes in consumer behavior and attitude (Solomon, 2017). In this regard, the Covid-19 pandemic has changed consumer purchasing behavior as consumers fear contagion (Laato et al., 2020; Prentice et al., 2020). For example, a prompt survey by Nielsen (2020) indicates that 45% of Vietnamese consumers purchased products intended for storage, and 25% purchased these products online, while Taiwanese consumers purchased additional instant noodles. In addition, Vietnam firms have changed their support programs (e.g., home delivery and masks and sanitizers at stable prices), the result of which is a notable growth in sales (Vietnam News, 2020). Collectively, this study conceptualizes pandemic fear as consumer contagion fear, a belief which influences the way consumers use e-commerce platforms to purchase products.

2.5. Extending the concept of sustainable consumption

Sustainable consumption refers to consumers' adoption of green lifestyle to satisfy their needs without damaging the earth's resources or putting future generation at risks (Sharma and Jha, 2017). In line with this logic, previous studies have synthesized common threads of sustainable consumption as care for nature, self, and community, factors at the heart of contemporary marketing discipline (Lim, 2017). Much of the literature documents a wide range of positive outcomes for

customers to include happiness and life satisfaction resulting from product and service interactions (Guillen-Royo, 2019). Conversely, the existing literature also evidences that unsustainable consumption patterns cause adverse social, environmental, and economic side effects (Sharma and Jha, 2017). For example, Covid-19 has sparked worldwide alarm, as it spreads rapidly, through human-to-human contact (Harvard Medical School, 2020). The virus can be spread through small droplets as the infected person coughs or exhales (WHO, 2020). To reduce the spread of the virus, consumption practices should turn to e-commerce platforms as this can increase efficiency of shopping, enable new purchases, and facilitate information access and online communication between consumers and sellers (Guillen-Royo, 2019). Given the existing literature and Covid-19's impact, this study extends the concept of sustainable consumption as “*purchasing products and services from e-commerce platforms to satisfy needs and wants, and to increase health safety for selves and community during a pandemic period.*”

2.6. Hypotheses

This section describes the development of the research model to explain how PEEP affects economic benefits which subsequently lead to sustainable consumption under the boundary condition of pandemic fear. In doing so, this study argues that pandemic fear positively moderates (1) the relationship between PEEP and economic benefits, and (2) does so in the relationship between economic benefits and sustainable consumption. Fig. 1 presents the proposed relationships.

PEEP plays a key part in the strategy to create online seller product and service credibility. This is because the online customer is unable to physically interact with the seller in the virtual environment, and this might trigger privacy risk concerns (Liao and Shi, 2017). With PEEP, the customer can be assured that personal and transactional data collected from e-commerce platforms are protected. According to Pappas (2016), higher levels of trust in the online platforms safety and security help to construct a consumer belief in e-vender credibility which ultimately increases the likelihood of a sale. In an online situation, e-commerce platforms provide customers various benefits, e.g., privacy and security, information search and provision, product reviews, promotion, and order fulfillment (Qin et al., 2020). Plangger and Watson (2015) added to the literature that while advances in information technology have facilitated business operations to be more effective, e.g., less costly and data rich, firms also need to protect customer privacy and avoid risks that can threaten the long-term relationships. From the UGT perspective, e-commerce platforms generate economic benefits for customers such as privacy and cost savings (Huang et al., 2014). In addition, the Covid-19 pandemic, and related fear of contagion, has created worldwide chaos, e.g., hoarding, market gyration, and travel restrictions (McNulty, 2020). The pandemic has triggered infection fears and social distance in which the normal supplying routines are insufficient while consumers are increasingly turning to online purchase whereas raising the important role of e-commerce platforms. The literature also situates that e-commerce platforms provide fruitful benefits for a wide range of business from restaurants to florist and laundry to medicines while customers are becoming more adaptive with online products (Zhang

et al., 2019). As the Covid-19 virus can be spread via person-to-person contact, and effective medications or vaccines have yet to be found (Smith and Prosser, 2020), consumers can be expected to make more online purchases to reduce exposure (Nielsen, 2020). The pandemic had become an unprecedented grand challenge that created many social, health, and economic problems to society at large (Bacq et al., 2020). For example, the pandemic has led to the lower accessibility of in-store selling retailers due to higher health concerns of consumers which triggered a sudden increase in demands for alternative distribution channels (Pantano et al., 2020). In such situations, the author believes that pandemic fear will increase the relationship between PEEP and economic benefit. As so:

H1. Online customer pandemic fear positively moderates the relationship between PEEP and economic benefits, such that PEEP influences economic benefits more strongly when pandemic fear is higher.

Furthermore, the issue of economic benefits facilitating consumer sustainable consumption intention has been explicitly addressed in the literature (Dabbous and Tarhini, 2019). The rationale behind this is that consumers perceived economic well-being, a comparison of current situation to a past situation when make a purchasing decision (Verma and Sinha, 2018). Some researchers consider economic benefits to be as important as product attributes when exploring online purchase intention (Lee et al., 2018), while others consider it to be a driver of sustainable consumption (Dabbous and Tarhini, 2019). This relationship is often based on a consumer responsibility, e.g., social, environmental, and ethical concerns (Lim, 2017), or emotional responsibility (Luchs et al., 2015). According to UGT, consumers often reciprocate the benefits they receive in the form of feelings of appreciation (Simon, 2017). However, the current Covid-19 outbreak has added health concerns to this and the need for mediums where firms and consumers can interact without in-person contact. Covid-19 has killed thousands and set millions in quarantine (Worldometer, 2020), as it spreads easily with breathtaking speed. The fear of Covid-19 stirs up the role of e-commerce that supports social interaction and stakeholders' contributions to provide online buying and selling of products and services (Addo et al., 2020). Pantano et al. (2020) indicated that while the Covid-19 pandemic has produced anxiety, depression and stress in society, consumers are increasingly purchasing products and services through online platforms as they perceived the safety offered by the Internet and online technologies. Accordingly, the Covid-19 pandemic has increased health concerns as well as the need for online transactions to protect sellers and buyers from infection. This study proposes that pandemic fear facilitates the relationship between perceived economic benefits and sustainable consumption in the context of e-commerce platforms. Therefore:

H2. Online customer pandemic fear positively moderates the relationship between economic benefits and sustainable consumption, such that economic benefits influence sustainable consumption more strongly when pandemic fear is higher.

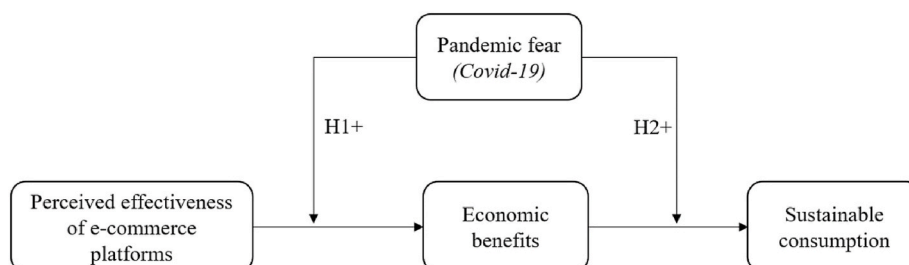


Fig. 1. Proposed model.

3. Methods

3.1. Sample

The sample consists of 617 online consumers from the Vietnam-based market. Sampling online consumers was adopted because the recent Covid-19 pandemic has changed the shopping behavior in Vietnam. A survey by Nielsen Vietnam (2020) shows that 95% of consumers feel afraid of the Covid-19 virus, resulting in a 25% increase in online shopping purchases. As consumers increasingly use online methods to prepare for a possible emergency, firms need to ensure smooth, frictionless, and fast experiences on their e-commerce platforms that meet customer needs and expectations (Abramovich, 2020). Thus, a study of online consumer behavior in a pandemic context can provide firms with useful information for their business operations.

3.2. Data collection

Data were collected from a sample of 1000 online consumers using Facebook. A valid online consumer is identified as one who had online shopping experience during the Covid-19 outbreak (January 1 to March 15, 2020). The author sent the questionnaire to fifty key social networkers whose Facebook accounts have at least 500 friends and followers, asking them to contact 20 subsequent respondents from their Facebook lists. This technique is useful when respondents are difficult to identify and contact while the survey needs to be conducted expediently (Cooper and Schindler, 2013). The author tracked the survey's progress daily using the key networkers' Facebook walls, tags, and messengers. Out of the initial 1000 invitees, 617 valid responses were obtained (61.7% response rate). The author assessed nonresponse bias by comparing early and late responses through t-tests of means among the research constructs which of results showed no differences (ranging from -1.06 to 0.24 , $p > .05$). A chi-square test for PEEP ($\chi^2 = 14.827$, $p = .53$), economic benefits ($\chi^2 = 1.884$, $p = .75$), pandemic fear ($\chi^2 = 10.884$, $p = .28$), and sustainable consumption ($\chi^2 = 16.656$, $p = .16$) indicated no differences at the 95% significance level. Accordingly, nonresponse bias and common method bias were not a concern in this study. The respondents (227 males and 390 females) were on average 27.5 years of age (ranging 18 to 64, $SD = 8.85$), with an average monthly income of 13, 309, 141VND ($SD = 11,730,842$). Finally, most of the consumers (71.4%) held a bachelor's degree, 19.6% held a master's degree or above, and 9.0% held a college degree or below. The detailed demographic characteristics are provided in Table 1.

3.3. Instrument

This study designed online questionnaire using Google Forms for the data collection. The scales of the research constructs were adopted, revised, and translated from English to Vietnamese as the survey was administered in Vietnam. The survey was pretested with 20 online consumers to detect possible weaknesses in design and instrumentation. This is important to avoid negative consequences to the survey operation such as ambiguities, confusions, and offensive questions (Cooper and Schindler, 2013). On the basis of the consumer's comments, this study refined some items and included the final questionnaire form. Responses were recorded using a 5-point agreement scale.

3.4. Measures

First, measures of PEEP were adopted from Fang et al. (2014). Second, economic benefits and sustainable consumption were measured using the scales developed by Dabbous and Tarhini (2019). Finally, pandemic fear was operationalized on the basis of Chatterjee et al. (2019). The author provides details of the constructs in Appendix 1.

Table 1

Demographic characteristics (n = 617).

Items	Categories	Frequency	%
Age	<20	42	6.8
	20–30	387	62.7
	31–40	138	22.4
	41–50	31	5.0
	51–60	13	2.1
	>60	6	1.0
Gender	Female	390	63.2
	Male	227	36.8
Education	College or below	55	9.0
	Bachelor	441	71.4
	Master	121	19.6
Monthly income (Vietnamese Dong: VND, 1 VND = \$ 0,000044 US)	<12 million	410	66.5
	12–20 million	151	24.5
	21–30 million	33	5.3
	31–40 million	7	1.1
	40–50 million	10	1.6
	>50 million	6	1.0
Product and service types	Sport and travel	173	28.0
	Fashion	209	33.9
	Health and beauty	106	17.2
	Food	73	11.8
	Electronic devices and high-tech products	56	9.1

3.5. Control variables

Demographic characteristics, such as age, gender, education, and income were included as control variables to capture possible effects on sustainable consumption. This was also done to ensure that the results were not biased by not including control variables (Cooper and Schindler, 2013).

3.6. Analytical technique

This study tested the proposed model using the two-stage partial least squares method which allows for an examination of the causal relationship among latent constructs (Hair et al., 2011). To examine the moderating effect, Vinzi et al. (2010) procedure was followed. This study first centered each indicator of moderator and predictor variables and then multiplied them to create interaction terms. The strength of the moderating effects was determined by comparing *R-square* changes through effect size (f^2) (Vinzi et al., 2010).

4. Results

4.1. Measurement quality

First, the author assessed construct reliability and validity using composite reliability (CR) and average variance extracted (AVE). As shown in Table 2, factor loadings (0.71–0.90), CRs (0.81–0.91), and AVEs (0.59–0.78) appeared to be higher than the thresholds of 0.70, 0.70, and 0.50 (Hair et al., 2011), respectively. These results confirm indicator reliability, internal consistency reliability, and convergent validity. In addition, the variance inflation factors ranging from 1.35 to 2.42 were below the cutoff of 5 (Hair et al., 2011), removing the multicollinearity threat.

Second, the author assessed the discriminant validity using Fornell-Larcker Criterion and Heterotrait-Monotrait Ratio (HTMT) (Henseler et al., 2015). More specifically, the correlation matrix in Table 3 shows the highest correlation was 0.57, less than the 0.71 cutoff (MacKenzie et al., 2011) while all construct correlations were lower than the square root of AVE of their own constructs (Hair et al., 2011). Appendix 1 also shows that all items loaded well onto their own construct and poorly on others. In addition, the largest ratio of HTMT (0.68), shown in Fig. 2, was far below the 0.90 benchmark recommended by Henseler et al. (2015). Collectively, both Fornell-Larcker Criterion and HTMT results

Table 2
Measurement model.

Constructs and items	Factor loadings	Composite reliability	Average variance extracted	Variance inflation factor
Perceived effectiveness of e-commerce platforms		.88	.64	
PE1	.80			1.79
PE2	.85			1.95
PE3	.84			2.02
PE4	.71			1.36
Economic benefits		.91	.78	
EB1	.88			2.26
EB2	.90			2.42
EB3	.87			1.98
Pandemic fear		.81	.59	
PF1	.79			1.18
PF2	.79			1.41
PF3	.72			1.35
Sustainable consumption		.90	.75	
SC1	.88			2.09
SC2	.87			2.06
SC3	.85			1.70

Table 3
Descriptive statistics and correlations.

Constructs	Mean	SD	1	2	3	4
1. Perceived effectiveness of e-commerce platforms	3.27	.83	.80			
2. Economic benefits	3.32	1.04	.42	.88		
3. Pandemic fear	4.20	.63	.04	.10	.76	
4. Sustainable consumption	3.70	.90	.30	.57	.02	.86

Note: The bold values on diagonal are the square root of average variance extracted, while the others represent correlation matrix.

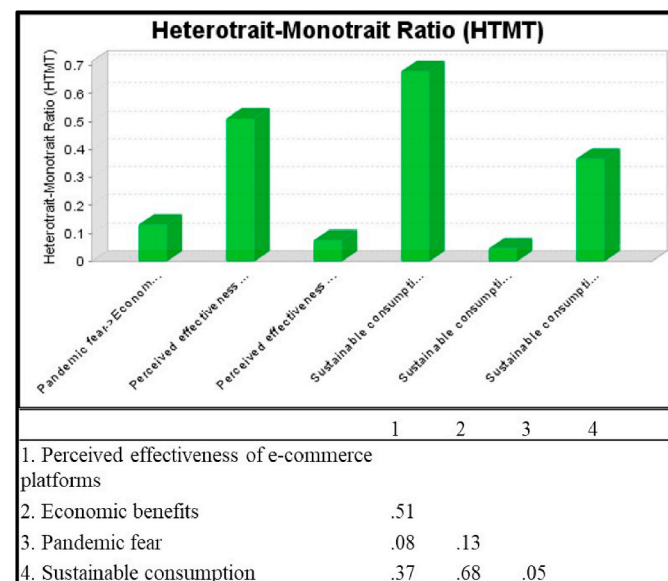


Fig. 2. Heterotrait-Monotrait ratio.

confirm discriminant validity.

4.2. Hypothesis testing results

As shown in Fig. 3, the model explains 20% of the variance in economic benefits and 37.85% of the variance in sustainable consumption. H1, which stated that pandemic fear positively moderates the relationship between PEEP and economic benefits, was supported ($\beta = .07, t = 1.85, p < .10$). Fig. 4 depicts this moderating effect. As predicted, at high levels of pandemic fear ($Mean + 1 SD$), economic benefits increase as PEEP increases; however, low levels of pandemic fear ($Mean - 1 SD$) slightly enhance the relationship between PEEP and economic benefits. H2, which stated that pandemic fear positively moderates the relationship between economic benefits and sustainable consumption, was also supported ($\beta = .12, t = 3.00, p < .01$). As plotted in Fig. 4, sustainable consumption increases rapidly as economic benefits increase when pandemic fear is higher ($Mean + 1 SD$). At low levels of pandemic fear ($Mean - 1 SD$), sustainable consumption does not increase regardless of the effect of economic benefits. In addition, the relationship between PEEP and economic benefits was positive and significant ($\beta = .42, t = 12.2, p < .01$) as was the relationship between economic benefits and sustainable consumption ($\beta = .56, t = 17.87, p < .01$), thus confirming the mediating role of economic benefits in the relationship between PEEP and sustainable consumption.

This study further determines the substantivity of the moderating effects by comparing *R-square* changes in the model through f^2 (effect size) (Vinzi et al., 2010). In doing so, the author, as illustrated in Appendix 2, runs two models in which Model 1 includes only direct effects and Model 2 adds interaction effects and control variables. As shown in Appendix 2, PEEP significantly increased R^2 of economic benefits by 1.6%, indicating a small effect size ($f^2 = 0.02$). The interaction effect of pandemic fear with economic benefits also significantly increased R^2 of sustainable consumption by 4.4%, indicating a small-to-medium effect size ($f^2 = 0.07$). Thus, the interaction terms increased R^2 significantly with f^2 values surpassing the threshold of 0.02 suggested by Vinzi et al. (2010), thus confirming the substantive significance of the moderating effects.

5. Discussion

The findings support the research hypotheses that for firms operating in pandemic periods, PEEP is an important determinant of sustainable consumption through economic benefits. The results further suggest that pandemic fear increases the positive effect of PEEP on economic benefits which subsequently exerts a strong effect on sustainable consumption. This study adds to the literature by including the boundary effect of pandemic fear in the conceptual model to provide more insight about how to increase managerial effectiveness.

5.1. Theoretical and managerial implications

This study holds several theoretical and managerial implications. The author adopts UGT (Huang et al., 2014; Simon, 2017) to understand and extend the concept of PEEP (Fang et al., 2014) and how sustainable consumption is triggered in uncertain environments (the Covid-19 pandemic). The results of the mediating effect indicate that PEEP is important to sustainable consumption through economic benefits. The results indicate that personal and transactional safeguards of PEEP are conducive to facilitate a consumer’s perceived economic benefits in online business environments. This adds to the study of Fang et al. (2014) by examining the focal role of PEEP in predicting changes in consumer consumption behavior. Second, during pandemic periods, consumers are increasingly concerned more about engaging in sustainable consumption through e-commerce platforms as the findings signify economic benefits influence sustainable consumption. These findings are consistent with Dabbous and Tarhini (2019) who suggest that

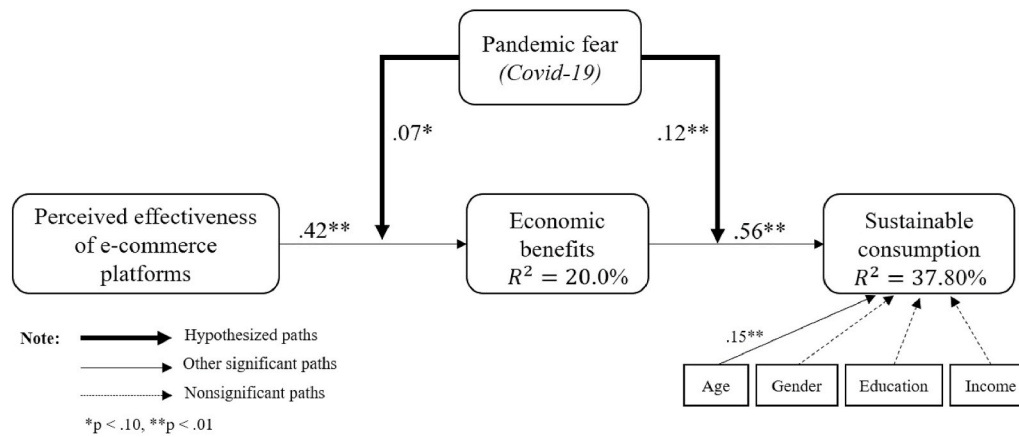


Fig. 3. Results of proposed model.

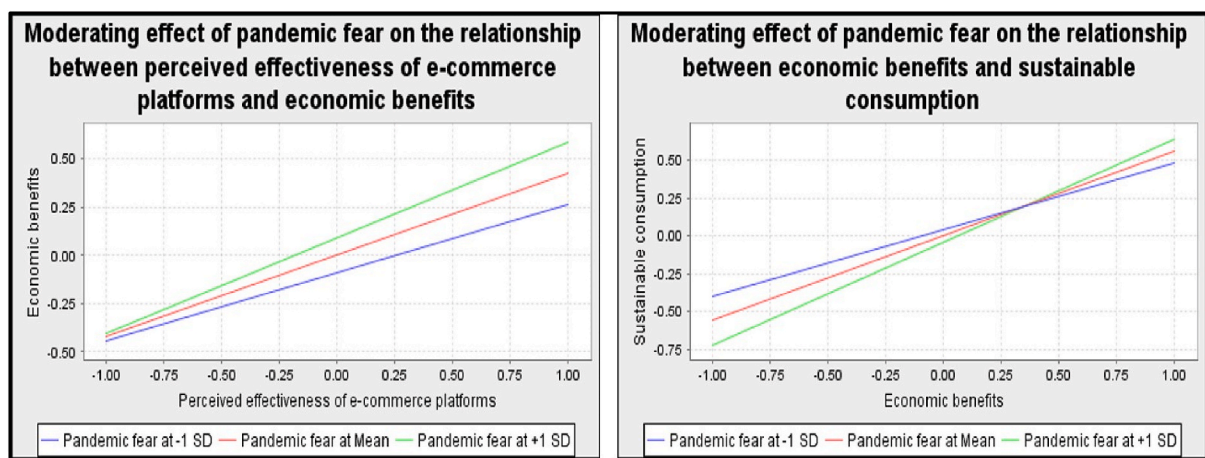


Fig. 4. Moderating effects of pandemic fear.

economic benefits influence consumer sustainable consumption intention. Thus, the current study, through the lens of UGT, offers a new theoretical view of the relationship among PEEP, economic benefits, and sustainable consumption. Furthermore, pandemic fear is an important moderator as it increases the impacts of PEEP and economic benefits which ultimately enhance sustainable consumption. This finding extends the fear theory of Chatterjee et al. (2019), who suggest that fear negatively influences consumer buying intention in risky or uncertain situations.

Given the findings, firms should reallocate online resources to employ e-commerce platforms to serve customers, as e-commerce platforms can facilitate communication among sellers and buyers on the basis of building trust and credibility to establish and maintain the customer-seller relationship. In a pandemic condition like Covid-19, high levels of pandemic fear motivate consumers to rely more on PEEP for transactional activities which requires trust-building and risk-reducing potential. As such, firms should seek opportunities to provide consumers effective online safeguards. For example, e-wallet (e.g., MoMo: <https://momo.vn/>) secure online transactional information, as it only requires consumers to enter their user name and password at the end of the purchase, and all data is encrypted. Business managers should reinforce the proliferation of technological application with suppliers, retailers, and legal institutions to build reliable platforms to deliver products and services while utilizing online platforms as a strategic marketing orientation to promote online transactions to reduce the

infections of the Covid-19 pandemic. Firms also need to require credit card guarantees from financial institutions (e.g., banks) to compensate online consumers in case of fraudulent seller behavior (Fang et al., 2014). It is critical for firms to increase PEEPs and enhance interactive communication with consumers by providing online safeguards effectively. For instance, they can offer specific guarantees and privacy protection by publishing customer reviews, as reviews generate consumer confidence products and services (Mattison Thompson et al., 2019). Note that when buying online, consumers also focus on economic benefits, and this positively affects sustainable consumption during pandemic periods. Firms should emphasize the consumer savings (e.g., lower costs in contrast with the traditional counterparts) and improved transaction performance and efficiency that result from the use of e-commerce platforms (Dabbous and Tarhini, 2019). In addition, consumer's fear of the Covid-19 pandemic boost online purchase intention. This requires that firms not only provide online products and services but also e-commerce platforms that include an online care center to ensure online consumers' health and safety (e.g., Lazada offers a Covid-19's online help center, <https://www.lazada.vn/>).

5.2. Limitations and research direction

In this exploratory study, there appears to be several limitations which provide opportunities for future research. First, the conceptual model was tested with online consumers in an emerging economy

(Vietnam), and the respondents viewed e-commerce platforms from their own perspectives. However, their characteristics may differ remarkably from consumers in more advanced economies (the U.S.). Therefore, subsequent research should cross-validate the empirical model by obtaining data from different economies in order to provide more insightful findings. Future explorations should also assess the e-commerce platforms' operation model from the perceptions of firm managers that would be more valuable. Second, the conclusions of this study should be interpreted as preliminary inasmuch as pandemic fear was observed for a brief period (January 1 to March 15, 2020) whereas consumer perception and behavior may vary over time and be dependable on Covid-19's lifespan. In this regard, a longitudinal framework which includes a time-series database that examines the boundary effect of pandemic fear on the PEEP, economic benefits, and sustainable consumption relationship can provide more details about probable causation which can then increase strategic effectiveness. Another limitation of this study is the target group. As reviewed, experts situated that a subculture associated with social networking sites (e.g., Facebook) should be considered because this may influence economic benefits. Many issues can increase countable problems in supply chains, lack of assortment, and delayed deliveries that led to the change in behavioral and attitude assessment of consumer toward e-commerce. Given this, future research should focus on multiple cultures and social networking sites to compare different perspectives on supply chains, lack of assortment, and delayed deliveries will provide more insights about the effectiveness of e-commerce platforms. In addition, the change in consumer wealth is also as a function of time during a pandemic time while the purchasing power of money is changing. Therefore, future research might focus on consumer-specific financial situations, which will be valuable in explaining consumer purchasing behavior.

6. Conclusion

This study is among the first to provide a systematic framework to

examine the PEEP, economic benefits, and sustainable consumption relationship under the boundary condition of pandemic fear. For researchers, this study extended the concept of economic benefit and empirically found support for its mediational role in the relationship between PEEP and sustainable growth while confirming the moderating effect of pandemic fear. Drawing on the UGT, the current study adds to the retailing literature by introducing a mediation and moderating-based model based on the UGT in a global pandemic. Future research should be replicated in diverse environments and over time to increase the power of the conceptual model and theory. For managers, the findings showed that high levels of pandemic fear required PEEP to build an effective mechanism to protect online personal and transactional data such as information leakage and credit card fraud and economical offerings to increase customer consumptions. This study suggests that managers see pandemics (Covid-19 virus), which can happen at any time, as catalysts to prepare and respond more effectively. In addition, firms must strategically build e-commerce platforms and operate in conjunction with offline methods for supplies because consumers turn to online sources to avoid infectious diseases and are increasingly engaging in sustainable consumption behaviors. Overall, this study provides a new perspective of the critical roles of PEEP and economic benefits and sets a supplementing point for future research to further explore sustainable consumption behavior of customers in the boundary condition of pandemic fear.

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Appendix 1. Items and cross-loadings.

Items	1	2	3	4
1. Perceived effectiveness of e-commerce platforms				
When buying online, I am confident that e-commerce platforms protect me against any potential risks (e.g., personal information leakage, credit card fraud, etc.) if something goes wrong with my online purchase.	.80	.31	.03	.21
I have confidence in third parties used by e-commerce platforms to protect me against any potential risks (e.g., personal information leakage, credit card fraud, etc.) if something goes wrong with my online purchase.	.85	.40	.03	.31
I am sure that e-commerce platforms do not take advantage of me (e.g., personal information leaking, credit card fraud, etc.) as a result of purchasing online.	.84	.33	.01	.23
I believe that other parties used by e-commerce platforms have obligation to protect me against any potential risks (e.g., personal information leaking, credit card fraud, etc.) if something goes wrong with my online purchase.	.71	.33	.07	.21
2. Economic benefits (EB)				
I can save money when I buy from e-commerce platforms during the Covid-19 pandemic.	.40	.88	.05	.44
I can improve my economic situation when I buy from e-commerce platforms during the Covid-19 pandemic.	.38	.90	.10	.56
Buying from e-commerce platforms is cheaper than other types during the Covid-19 pandemic.	.36	.87	.11	.53
3. Pandemic fear (PF)				
I feel scared upon facing the Covid-19 pandemic.	.05	.09	.79	.03
I feel dread upon facing the Covid-19 pandemic.	-.01	.08	.79	.01
I feel fearful upon facing the Covid-19 pandemic.	.06	.06	.72	.02
4. Sustainable consumption (SC)				
I will make an effort to buy from e-commerce platforms during a pandemic like Covid-19.	.26	.50	.06	.88
I will purchase from e-commerce platforms more often during a pandemic like Covid-19.	.25	.48	.00	.87
I intend to purchase from e-commerce platforms to meet my needs during a pandemic like Covid-19.	.28	.51	.01	.85

Appendix 2. Results details.

Variables	Economic benefits		Sustainable consumption		Economic benefits		Sustainable consumption	
	Model 1		Model 2		Model 2		Model 2	
	β	t	β	t	β	t	β	t
<i>Control variables</i>								
Age							.15**	4.28
Gender							-.00	.22
Education							.03	1.10
Income							.00	.10
<i>Independent variables</i>								
PEEP	.43**	12.20			.42**	12.2		
Economics benefits			.58**	18.28			.56**	17.87
<i>Interaction effects</i>								
PEEP \times pandemic fear					.07*	1.85		
Economic benefits \times pandemic fear							.12**	3.00
R ²	18.40%		33.40%		20.0%		37.80%	
Effect size (f^2)					.02		.07	

Note: * $p < .10$, ** $p < .01$. PEEP: Perceived effectiveness of e-commerce platforms.

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