



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



Choosing a package carrier during COVID-19 pandemic: An integration of pro-environmental planned behavior (PEPB) theory and service quality (SERVQUAL)

Josephine D. German^{a,b,*}, Anak Agung Ngurah Perwira Redi^c, Yogi Tri Prasetyo^a, Satria Fadil Persada^d, Ardvin Kester S. Ong^a, Michael N. Young^a, Reny Nadlifatin^e

^a School of Industrial Engineering and Engineering Management, Mapúa University, 658 Muralla St., Intramuros, Manila, 1002, Philippines

^b School of Graduate Studies, Mapúa University, 658 Muralla St., Intramuros, Manila, 1002, Philippines

^c Industrial Engineering Department, BINUS Graduate Program - Master of Industrial Engineering, Bina Nusantara University, Jakarta, 11480, Indonesia

^d Entrepreneurship Department, Binus Business School Undergraduate Program, Bina Nusantara University, Malang, 65154, Indonesia

^e Department of Information System, Institut Teknologi Sepuluh Nopember (ITS), Surabaya, 60111, Indonesia

ARTICLE INFO

Handling Editor: M.T. Moreira

Keywords:

Package delivery service
Pro-environmental activities
Intention to choose
PEPB
SERVQUAL

ABSTRACT

Sustainability and safety have become the two most important considerations of consumers of the current century. The limited movement of consumers and significant shift to online business as effects of the current health pandemic led to an increased demand for package delivery services worldwide. This study investigated the factors that influence the intention of consumers in the Philippines to choose a package delivery or carrying service during the COVID-19 pandemic using the integrated pro-environmental planned behavior (PEPB) theory and service quality (SERVQUAL). An online questionnaire was distributed as the instrument data collection, and 400 respondents who have utilized the package delivery service during the pandemic participated in the study. The theoretical model was examined using the partial least square structural equation modeling (PLS-SEM) with higher-order constructs. Testing the different parameters of structural model, measurement model, and the model fit presented values within the threshold. Moreover, the HTMT and Fornell & Larcker discriminant validity analysis was performed to determine the overall fit of the constructs of the model. These tests demonstrated the acceptability of the model. The findings revealed that perceived environmental concern, perceived authority support, subjective norm, attitude, service quality, customer perceived value, and customer satisfaction significantly influence the consumer's intention to choose a package delivery service during the pandemic. The consumers' perception of pro-environmental activities was also an essential contributor since perceived environmental concern and perceived authority support indirectly affect behavior intention. The findings contribute to developing and validating an integrated model on sustainability and service quality in package delivery services. The study also provides suggestions to service providers to ensure quality and safety on package delivery during the pandemic.

1. Introduction

The COVID-19 pandemic has led to an increase in the movement of different goods worldwide as compensation for social distancing. This increase in the movement was due to the adaptation of the new normal lifestyle of people on shopping and consumption habits (Villa and Monzón, 2021). The habits changed due to the new normal lifestyle, changing traditional business patterns and activities into digital-minded

based. These habits made home deliveries for food, beverages, and the grocery market a viable solution to the pandemic challenges (Figliozzi and Unnikrishnan, 2021) while such change led businesses to shift towards e-commerce as a significant adaptation due to the COVID-19 pandemic (Unnikrishnan and Figliozzi, 2021). The business shift has contributed to the growth of the goods delivery industry (METI and MLIT, 2018) as consumers prefer delivery of goods instead of visiting the actual stores (Wang and Xiao, 2015; Nakayama and Yan, 2019). This

* Corresponding author. School of Industrial Engineering and Engineering Management, Mapúa University, Manila, Philippines. 658 Muralla St., Intramuros, Manila, 1002, Philippines.

E-mail address: jdgerman@mapua.edu.ph (J.D. German).

<https://doi.org/10.1016/j.jclepro.2022.131123>

Received 27 October 2021; Received in revised form 17 February 2022; Accepted 23 February 2022

Available online 7 March 2022

0959-6526/© 2022 Elsevier Ltd. All rights reserved.

growth has made the package carrying or delivery service one of the most in-demand business because people are afraid of going out of their homes to avoid the COVID-19 virus. Not only does this service benefit e-commerce and retailing, but it can also be used for personal consumption such as gift-giving, package delivery, and transfer of goods.

Recent studies have shown that the travel and car usage habits (Beck and Hensher, 2020; Shakibaei et al., 2020), decrease in traffic trend (Lee et al., 2020), and decrease in transit ridership (Simons et al., 2021) during the COVID-19 pandemic are evident in several countries such as Australia, Istanbul, United States of America, and South Korea. Moreover, travel behavior and mobility pattern were also affected by the COVID-19 pandemic as individuals prioritized safety and security, comfort, cleanliness, infection concerns, and use of less congested vehicles even when they had to wait and pay more during the pandemic (Abdullah et al., 2021). Individuals who wish to visit, give presents, or deliver packages to family and friends are hesitant to go out as an effect of the pandemic. This scenario increased the utilization of package carriers to satisfy the retailing and the individual or household delivery service needs.

Package carrying or delivery services, which belong to the third-party logistics (3 PL) sector, are provided by companies that transport tiny packages ranging from letters to cargo weighing up to 150 pounds (Chopra and Meindl, 2013). In 2019, the 3 PL global industry was a US \$951.6 billion market, and package-carrying accounted for about 46.27% (Mazareanu, 2021). Developing countries like the Philippines offer investors a vast opportunity to invest in the 3 PL market. The local market segment of package delivery will reach US\$ 135.9 million by 2023 or a 9% compound annual growth rate (CAGR) from the period of 2018–2023 (Manila Standard, 2020). The dominant players in this sector are DHL, FedEx, UPS, and TNT Express which are some of the international air express firms, while small local players include LBC, J&T, Lalamove, Grab, and Ninjavan. The country's growing population also gives rise to consumer spending and consumption, which drives the logistics and transport industry's growth as more goods are required to distribute.

In the past years, there has been a rise in concerns about rising package delivery and the externalities that come with them (Figliozzi and Unnikrishnan, 2021). Some of the operational issues observed in this sector include failure in providing all the anticipated benefits, especially for convenience stores (Nakayama and Yan, 2019), poor physical facility, lack of responsiveness, poor customer satisfaction (Limboung et al., 2016), insufficient online demand density and high cost of delivery (Wang and Xiao, 2015), poor service quality leading to increasing customer complains (Hayashi et al., 2014), poor customer service and high operating costs (Schenk and Klabjan, 2010), and delivery inefficiencies (Pronello et al., 2017). Another notable area of concern in the 3 PL sector is the concept of being green. Green logistics include the adoption of environment-friendly practices such as reduction of carbon emission and reduction of packaging materials (Kwak et al., 2020), use of green packaging, transport, storage, processing (Seroka-Stolka and Ociepa-Kubicka, 2019), and green information processing and distribution (Agyabeng-Mensah et al., 2020). Green logistics was also recognized as a key driver for reducing environmental damage while also improving business performance (Ali et al., 2018).

A company's performance is considered an essential element in adopting sustainability practices. This is supported by the findings of Wagner (2005), which suggests that improvement incorporating sustainability leads to a positive influence on both environmental and economic performance. Various studies have employed the institutional theory in describing a company's environmental-related practices (Fan et al., 2021) integrated into corporate social responsibility (CSR) to achieve reputation and long-term growth (El Ghoul et al., 2016). Some of the significant findings include improvement in worker productivity which result in a more successful enterprise (Ali and Kaur, 2021), significant favorable influence on organizational performance (Shahzad et al., 2020; Sardana et al., 2020), and an increase in market share and

corporate sustainability (Khosroshahi et al., 2019). Similarly, environmental regulations activities and political and legal regulations, along with management support on CSR and sustainability activities, also contribute to carbon footprint reduction (Ali et al., 2021).

During the COVID-19 pandemic, several researchers have explored studies on environmental sustainability in delivery services. The study of Caspersen and Navrud (2021) looked at how Norwegian female consumers' environmental attitudes and behavior were reflected in their reported preferences for garment rental delivery. They examined whether respondents' preferences for socioeconomic factors, income, and environmental opinions differed. The results showed that consumers had a negative utility from delivery time, delays, local air pollutants, and greenhouse gas emissions using the multinomial logit and latent class models. In contrast, a positive utility is evident from information services. Female consumers were also likely to accept longer delivery times if a reduction in emissions was evident (Caspersen and Navrud, 2021). Jazairy (2020) investigated the shippers' and logistics service providers' (LSP) perceptions of green concerns among companies in a variety of industries, including materials and mining technology, network and telecom equipment, and food and snacks, which outsource their logistics functions to several LSPs. The investigation revealed that shippers' green demands impede green logistics applications due to LSP concerns about asset-sharing tactics, and LSPs can hamper green investments, demonstrating that the green criterion is not the major concern of shippers' outsourcing plans. Using partial least square structural equation modeling (PLS-SEM), another study looked at the direct and indirect consequences of green logistics management strategies on environmental, social, market, and financial performance (Agyabeng-Mensah et al., 2020). Their findings indicate that green logistics management strategies have a considerable impact on environmental performance while having a minor impact on social, market, and financial performance. Similarly, environmental performance mediates the influence of both green logistics management techniques and financial, social, and market performance, whereas social performance fails to mediate both green logistics management methods and financial, social, and market performance.

Other topics in the logistics industry that various researchers examined were service quality (SERVQUAL) and consumer behavior. Mathong et al. (2020) assessed the beverage logistics industry in Thailand and determined the importance of the five (5) dimensions of SERVQUAL, which are tangibles, responsiveness, reliability, assurance, and empathy in beverage transportation. Survey results indicated that the average gap scores on perception (P) and expectation (E) are around zero, indicating that the company's SERVQUAL is generally satisfactory. In addition, retailers and wholesalers of beverages considered reliability as the most critical aspect in the industry. Another study examined the effects of SERVQUAL, the perceived value on customer satisfaction, and the intervening role of trust on customer satisfaction for home delivery personnel in Bangladesh (Uzir et al., 2021). Using PLS-SEM, they discovered that service quality, customer perceived value, and trust all influenced customer satisfaction, with trust partially mediating both the relationship between service quality and customer happiness and the relationship between customer perceived value and contentment.

Customer satisfaction and behavioral intention of consumers are commonly evaluated using the Theory of Planned Behavior (TPB) established by Ajzen (1985). TPB proposed that an individual's intentions to engage in various behaviors can be predicted with high accuracy using attitudes toward the behavior, subjective norms, and perceived behavioral control; and that these intentions, along with perceptions of behavioral control, account for a significant amount of variation in actual behavior (Ajzen, 1991). Several studies have shown the usefulness of TPB in predicting the purchase intentions of consumers of different products such as food (Carfora et al., 2019, 2021; Qi and Ploeger, 2019; Soorani and Ahmadvand, 2019) and the usage intentions of consumers on the services of e-commerce or online retailing (Peña-García et al., 2020; Yakasai and Jusoh, 2015), hotel (Chen and

Tung, 2014), public transportation services (Yuda Bakti et al., 2020) and nuclear powerplant (Ong et al., 2021). An extended version of the TPB model incorporating sustainability and interest in the environment, called the Pro-environmental Planned Behavior (PEPB) model, was evident in several related studies. The PEPB was introduced by Persada and Thesis (2016) after investigating various research on environmental impact assessment and consumer behavior modeling (Nadlifatin et al., 2015; Persada et al., 2015; Chen and Tung, 2014). It considered the addition of environmental concern and authority support factors in the Theory of Planned Behavior in determining an individual's behavior intention towards a particular situation or activity (Lin et al., 2017).

It is essential to determine how sustainability and service quality encourage consumers to utilize a particular service, especially during the pandemic. At present, no specific study incorporated sustainability, service quality, and consumer behavior modeling, particularly integrating the concepts of the PEPB and SERVQUAL for package carrying service. Thus, this study is conducted to determine the intention of consumers in the Philippines to choose package delivery service during the COVID-19 pandemic using the integrated PEPB and SERVQUAL framework. The study investigated the direct influences of perceived authority support (PAS), perceived environmental concern (PEC), perceived behavioral control (PBC), subjective norm (SN), attitude (AT), and behavior intention (BI) as the factors under the PEPB (Persada and Thesis, 2016; Lin et al., 2017) and SERVQUAL developed by Parasuraman et al. (1985) which includes the five (5) dimensions of reliability (RL), assurance (AS), tangibles (TG), empathy (EP), and responsiveness (RS). Subsequently, the study also examined the mediating effects of customer satisfaction (CS) on customer perceived value (CPV) and BI of package delivery or carrying service consumers. The present research is motivated by the following two (2) main research questions: (i) *What factors influence consumers' preference to choose a delivery service during the COVID-19 pandemic?*; and (ii) *are the consumers' behavior intention to choose a delivery service during the COVID-19 pandemic affected by their perception of pro-environmental activities?*

The framework created for this study contributes to consumer behavior modeling by validating the relevant role of service quality and sustainability on customer perceived value and its effect on customer satisfaction in package-carrying service. The results of this study may be beneficial for 3 PL service providers, particularly the package carriers, by providing insights to improve the package delivery service systems, maintain loyal consumers, attract new customers, and ensure customer satisfaction. In addition, business sections and logistics managers could use the findings as a basis for making managerial decisions on sustainable practices and consumer preferences in package delivery.

This study has the following organization — first, the presentation of the theoretical framework. Then, the methodology, including the participants, questionnaire, and modeling tool, is described. The analysis of results comes next. The last section discusses the main findings, the limitations, and the practical implications of the study.

2. Theoretical background and hypothesis

2.1. The role of package carrying in 3 PL

The transport and logistics sector plays an essential role in distributing finished goods (Ceniga and Sukalova, 2015) as it ensures that the products are accessible and available to consumers. A 3 PL provider may execute one or more logistics activities related to product distribution, such as transportation, warehousing, and information technology (Chopra and Meindl, 2013). Services of 3 PL companies are highly utilized in retail and consumer goods distribution, especially on food, beverages, tobacco, clothing, footwear, and household and personal care (German et al., 2019). In the beginning, 3 PL focused only on the function of package-carrying, but it eventually evolved and expanded the range of services it provides (Chopra and Meindl, 2013). Package carriers, also known as parcel, courier, or express delivery, are best

utilized to distribute small and time-sensitive shipments and are ideally used for online businesses due to the tracking feature and other value-added services they offer to shippers (Chopra and Meindl, 2013). The shift from traditional buying to online shopping and home deliveries, being one of the significant influences of the COVID-19 pandemic worldwide (Unnikrishnan and Figliozzi, 2021), made package-carrying or delivery service a viable option for individual consumers and retailers.

2.2. Pro-environmental planned behavior (PEPB) model

The PEPB model is an extended model of the theory of planned behavior (TPB) (Ajzen, 1991) introduced by Persada and Thesis (2016). The model includes six factors: PAS, PEC, PBC, SN, AT, and BI. PEC describes an individual feeling affecting any physical activities that could lead to pro-environmental consequences (Nadlifatin et al., 2015, 2016; Persada et al., 2015). A consumer is said to exhibit environmental concern if he demonstrates consideration and awareness of environmental issues (Hamzah and Tanwir, 2021). Studies have shown that environmental concern causes consumers to act pro-environmentally (Sreen et al., 2021; Tandon et al., 2020), and it strongly influences BI (Saari et al., 2021; Hamzah and Tanwir, 2021; Kushwah et al., 2019; Taufique and Vaithianathan, 2018). In another study, Lin et al. (2017) found that PEC to SN and PBC both have positive and significant values, while the correlation of PEC to AT in environmental impact assessment (EIA) is insignificant. This relationship suggests that consumers perceived low favor in environmental concern when obliged to engage in a pro-environmental activity. With that, the following were hypothesized:

- H1. PEC has a significant positive relationship to PBC.
- H2. PEC has a significant positive relationship to SN.
- H3. PEC has a positive relationship with AT.

PAS refers to an individual's perception of any resources, regulations, procedures, and actions that may be assisted by an authorized organization or by the government to perform a specific behavior (Persada and Thesis, 2016; Nadlifatin et al., 2015, 2016; Persada et al., 2015). In any country, the government is considered the top-level decision-maker, capable of collecting taxes, reducing the environmental impacts of products and services, and imposing a penalty for harming the environment (Giri et al., 2019). It can also significantly influence the reduction in environmental pollution and firms' profitability (Jolai et al., 2021). The Philippine government is one of the active advocates of sustainability and environmental conservation. It is also an active partner of the United Nations (UN) in ensuring the protection of biological resources, vital ecosystem functions, and environmental quality while development efforts on economic growth are in place (International System for Agricultural Science and Technology, 2012). The country's policies and programs focus on reversing the loss of environmental resources, including reducing energy, carbon dioxide emissions, and chlorofluorocarbons (PSA, 2021). The study of Lin et al. (2017) suggests that the government has a significant influence on its citizens since they found that support from the government has a positive and significant influence on PBC, SN, and AT of ecolabel products. Thus, the study hypothesized that:

- H4. PAS has a significant positive relationship to PBC.
- H5. PAS has a significant positive relationship to SN.
- H6. PAS has a positive relationship with AT.

AT, SN, and PBC can accurately predict BI, according to the TPB (Ajzen, 1991). PBC refers to people's perceptions of how easy or difficult it is to accomplish the desired behavior in a variety of scenarios and actions. SN denotes the degree to which the action or behavior is viewed positively or unfavorably by others, whereas AT denotes the degree to

which the action or behavior is viewed favorably or unfavorably by others (Ajzen, 1991). Recent studies have shown the suitability of applying the TPB model to predict purchase or usage intentions (BI) and CS of consumers of different products and services. Carfora et al. (2021) examined the consumers' purchase intentions of organic milk. The authors found that both PBC and SN presented as significant predictors of consumers' intentions, while a strong significant relationship exists between consumers' food choice motives and intention using the TPB constructs (Dowd and Burke, 2013). The findings of Savari and Gharachae (2020), Qi and Ploeger (2019), and Chen and Tung (2014) also suggested that AT, PBC, and SN significantly influenced and have positive impacts on consumers' purchase intentions. In another study, Fu and Juan (2017) observed that satisfaction is influenced by SN and PBC using the integrated TPB and CS theory. Supported by Persada and Thesis (2016) Ajzen (1991) TPB theory, the following hypotheses were established:

- H7. PBC has a significant positive relationship to CPV.
- H8. PBC has a significant positive relationship to CS.
- H9. PBC has a significant positive relationship to BI.
- H10. SN has a significant positive relationship with the CPV.
- H11. SN has a significant positive relationship to CS.
- H12. SN has a significant positive relationship to BI.
- H13. AT has a significant positive relationship to CPV.
- H14. AT has a significant positive relationship to CS.
- H15. AT has a significant positive relationship to BI.

2.3. Service quality (SERVQUAL)

The SERVQUAL model of Parasuraman et al. (1985) is one of the highly employed SERVQUAL assessment tools to measure the quality of products or services. SERVQUAL characterizes excellent service delivery relative to customer expectation (Parasuraman et al., 1985). It also refers to the difference between the customers' expectations & perceptions of services they have experienced (Asubonteng et al., 1996). SERVQUAL is a multidimensional construct that is measured using the five (5) dimensions of Reliability (RL), Assurance (AS), Tangible (TG), Empathy (EP), and Responsiveness (RS). RL refers to the ability to provide the promised service correctly and consistently; AS is the knowledge and courteousness of employees and their ability to encourage customer trust and confidence; TG includes the physical facilities, equipment, and appearance of personnel offering the service; EP refers to the individualized attention and care provided to the customers; and RS is the enthusiasm and prompt action to assist customer requests and problems (Parasuraman et al., 1988).

Various studies tested the SERVQUAL model and assessed its relationship or effect on customer perception and CS in various industries. Suresh and Vasantha (2021) found that logistics SERVQUAL positively influences CS level, and the five (5) dimensions favorably impact it. Among the dimensions, they identified that RL has the strongest correlation to CS. Rasheed and Abadi (2014) indicated a positive relationship between SERVQUAL and CPV, SERVQUAL and trust to customer loyalty, and CPV towards customer loyalty among consumers of banking, insurance, and telecommunications services in Malaysia. In addition, Tran (2020) assessed the effects of SERVQUAL, experience value, and relationship quality on BI of retail consumers in the middle-level income group in South Korea. The findings confirmed that the SERVQUAL dimensions positively influence consumer experience values, relationship quality, and purchase intention, and SERVQUAL has the most significant impact among all the factors considered. Supported by Ramya et al. (2019), SERVQUAL is regarded as an essential and critical factor in the business's success as it is positively linked to CS, increase in profit, and

increase in market share. With that, the following were hypothesized:

- H16. SQ has a significant positive relationship to CPV.

2.4. Customer perceived value (CPV) and customer satisfaction (CS)

Customer perceived value (CPV) indicates the consumer's total evaluation of a product's utility based on perceptions of what is received and given (Zeithaml, 1988). It results from the consumers' perception before, during, and after the purchase experience (Asgarpour et al., 2015; Sweeney and Soutar, 2001). Literatures indicate that CPV has a significant effect on CS (Uzir et al., 2020, 2021; Kusumawati and Rahayu, 2020) and leads to BI (Liu et al., 2021; Sánchez-Fernández and Iniesta-Bonillo, 2007; Eggert and Ulaga, 2002). Customer satisfaction (CS), on the other hand, is described as an emotional response from the evaluation of service that satisfies an individual's values, needs, or desires (Westbrook and Reilly, 1983). It also demonstrates the consumer's response to assessing his expectations and experience (Tse and Wilton, 1988). Several studies have shown that CS has a positive and substantial influence on a consumer's purchase intention (Dash et al., 2021; Eggert and Ulaga, 2002; Cronin et al., 2000). Thus, the study hypothesized that:

- H17. CPV has a significant positive relationship to CS.
- H18. CS has a significant positive relationship to BI.

2.5. Mediating effects

Previous studies have recognized that PBC, SN, and AT have mediating effects to various constructs. Hamzah and Tanwir (2021) found that environmental concern has an indirect effect on green purchase intention through the PBC. They identified that consumer's awareness of environmental concerns will only lead to a purchasing decision if they are confident in their ability to buy the product. This is supported by the findings of Paul et al. (2016) which affirms that consumers who are concerned about the environment have a favorable attitude toward purchasing green products. In another study, Lin et al. (2017) established that PBC factor significantly contributed to the influence of PEC and PAS to BI for ecolabel products while both PEC and PAS were found to have indirect effects to BI through the mediating effect of the AT factor (Nadlifatin et al., 2016). These findings suggest that the consumer's perception and belief on the role of sustainable products with regards to its environmental benefit contribute to the consumer's intention to buy that product.

CPV and CS have also been found to have mediation effects on intentions in various studies. Liu et al. (2021) realized that perceived value partially mediates the effects of social commerce environmental characteristics to purchase intentions. This signifies that those customers who believe their values are higher are more likely to be satisfied and have purchase intentions. The findings of Eggert and Ulaga (2002) also suggested that perceived value has a direct impact on buying intentions and is mediated by customer satisfaction. Other studies specified the mediating role of CPV to SERVQUAL and CS (Hapsari et al., 2016); Ryu and Han (2010); Uzir et al. (2020) and that CS is a good mediator of BI (Suhail and Srinivasulu, 2021). Following the assumptions needed to perform the Baron and Kenny (1986) test for mediation, only the TPB constructs were considered to have the mediating effects. With that, the following were hypothesized:

- H19. CPV mediates the effect of TPB constructs on CS.
- H20. CS mediates the effect of CPV on BI.

The research framework of this study exhibited in Fig. 1 illustrates the integration of the PEPB model (Persada and Thesis, 2016) and SERVQUAL (Parasuraman et al., 1985) to determine the intention of consumers in the Philippines to choose a package delivery or carrying service during the COVID-19 pandemic.

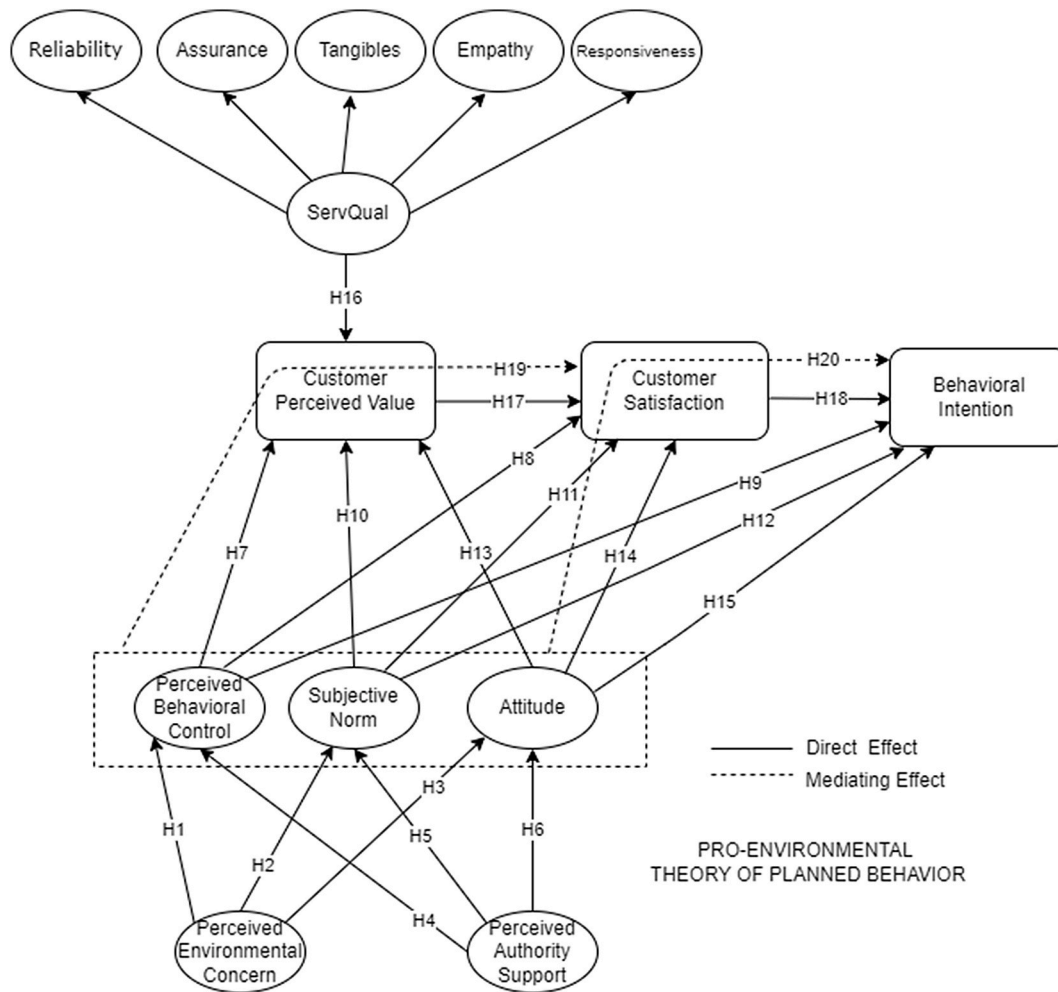


Fig. 1. Theoretical framework.

3. Methodology

3.1. Participants

The present research used the non-probability sampling method, specifically the purposive sampling, which refers to selecting individuals who are most representative of the population (Levy and Lemeshow, 2009) and who are extremely informed or experienced regarding a topic of interest (Cresswell and Plano Clark, 2011). Consumers in the Philippines who are aged 18 and above and have experienced using the package delivery service during the COVID-19 pandemic were the sampling criteria. The sampling was done by distributing the questionnaire using multiple cross-sectional designs (Setia, 2016) in the span of one month, from September 11 to October 10, 2021. The questionnaire was distributed online using Google Forms through different social media platforms. The sample size was calculated using the Yamane Taro (1967) formula in Equation (1).

$$n = \frac{N}{1 + N(e)^2} \quad (1)$$

With a population of 62.6 million Filipino consumers aged 18 years and above (PSA, 2017), the computed sample size for a 95% accuracy is 400. The present research was able to gather the expected number of respondents during the collection period. In addition, there were no non-response rate upon the collection of data as all respondents answered the self-administered questionnaire.

3.2. Questionnaire

The questionnaire included two (2) sections: the demographics and the integrated PEPB and SERVQUAL model, which is the theoretical framework formulated in the study. The demographics section includes the gender, age, status, area of residence, education level, employment, household size, total monthly household income, and package carrying service type. The gender, status, area of residence, employment, and type of usage of the package carrying service are nominal variables, while age, household size, education level, and total monthly household income are ordinal variables. Section two (2) was further divided into 9 sub-sections, representing the latent variables of PEPB and SERVQUAL. For the PEPB model, PAS and PEC had three (3) constructs each, PBC had six (6) constructs, SN had four (4) constructs, and AT had five (5) constructs. For SERVQUAL, the reflective constructs which are the five (5) dimensions of RL, EM, AS, RS, and TG have 29 indicators. In addition, the CPV had four (4) constructs, CS had seven (7) constructs, and BI had five (5) constructs. The survey utilized 5 points type Likert Scale (5 = strongly agree, 1 = strongly disagree) to evaluate the different constructs. All constructs and measure items were adopted from various literatures as presented in Table 1. Moreover, since the model adopted established theories and factor determination, the confirmatory factor analysis (CFA) with SEM was employed (Schreiber et al., 2006) (see Table 2).

Table 1
The construct and measurement items.

Variable	Code	Description	References
Perceived Environmental Concern	PEC1	I am extremely worried about the state of the world's environment and what it will mean for my future, so I suggest the package carriers should participate in the environmental impact assessment (EIA) process.	Lin et al. (2017); Persada et al. (2015)
	PEC2	Mankind is severely abusing the environment hence the package carriers should participate in environmental impact assessment (EIA) process.	Lin et al. (2017); Persada et al. (2015)
	PEC3	When humans interfere with nature, it often produces disastrous consequences, it is concerning me that package carriers should participate in the environmental impact assessment (EIA) process.	Lin et al. (2017); Persada et al. (2015)
Perceived Authority Support	PAS1	I feel that the package carrier has a choice to use the strategies provided by the government for participating in the environmental impact assessment (EIA) process.	Lin et al. (2017); Persada et al. (2015)
	PAS2	I feel that the package carrier has a choice to participate in an environmental program established by the government such as the environmental impact assessment (EIA) process.	Lin et al. (2017); Persada et al. (2015)
	PAS3	The government endorses the regulation to allow citizens to environmental impact assessment (EIA) process.	Lin et al. (2017); Persada et al. (2015)
Perceived Behavior Control	PBC1	I can use package carrier to meet my delivery needs during the COVID-19 pandemic.	Soorani & Ahmadvand (2019)
	PBC2	I believe the use of package carrier improves our society during the COVID-19 pandemic.	Ong et al. (2021)
	PBC3	I am confident with the quality and reliability of service of the package carrier during the COVID-19 pandemic.	Ong et al. (2021)
	PBC4	Using package carrier service is entirely under my control.	Peña-García et al., 2020
	PBC5	I have the resources, knowledge, and skills to use package carrier service.	Peña-García et al., 2020
	PBC6	I have the capability to choose the package carrier I want to utilize during the COVID-19 pandemic.	
Subjective Norm	SN1	People who are important to me think I should use the package carrier service during the COVID-19 pandemic.	Peña-García et al., 2020; Carfora et al. (2019)
	SN2	People who are important to me approve my usage of the package carrier service during the COVID-19 pandemic.	Carfora et al. (2019)
	SN3	People who are important to me wants me to use the package carrier service during the COVID-19 pandemic.	Carfora et al. (2019)
	SN4	I feel under social pressure to use package carrier service	Carfora et al. (2019)

Table 1 (continued)

Variable	Code	Description	References
Attitude		during the COVID-19 pandemic.	
	AT1	I usually think about using a package carrier due to the COVID-19 pandemic.	Soorani & Ahmadvand (2019)
	AT2	Using a package carrier is a good idea for our society especially during the COVID-19 pandemic.	Ong et al. (2021)
	AT3	Using a package carrier will benefit our society especially during the COVID-19 pandemic.	Ong et al. (2021)
	AT4	I think that using a package carrier during the COVID-19 pandemic is valuable.	Ong et al. (2021)
Service Quality Reliability	AT5	I want to be safe that is why I prefer to use a package carrier during the COVID-19 pandemic.	
	RL1	The package carrier delivers the parcels at our convenient location during the COVID-19 pandemic.	Uzir et al. (2021)
	RL2	The package carrier maintains our delivery records (shipper, receiver, contact details, fees, etc.) accurately despite the COVID-19 pandemic.	Uzir et al. (2021)
	RL3	The package carrier delivers our parcels at the time promised despite the COVID-19 pandemic.	Uzir et al. (2021); Mathong et al. (2020)
	RL4	The package carrier ensures customer's request are promptly satisfied despite the COVID-19 pandemic.	Olawole (2021)
Assurance	RL5	The package carrier maintains confidentiality and privacy of customers.	Uzir et al. (2021)
	RL6	The package carrier always informs the customer to confirm delivery/pick-up.	Mathong et al. (2020)
	AS1	The package carrier personnel have experience in their job.	Uzir et al. (2021)
	AS2	The package carrier personnel have proper manners when providing services and communicating with customers.	Mathong et al. (2020)
	AS3	The package carrier personnel have in-depth knowledge of their job.	Olawole (2021)
Tangibles	AS4	The package carrier personnel give complete answers to customer's questions.	Uzir et al. (2021)
	AS5	The package carrier makes customers feel secure and confident when using the service despite the COVID-19 pandemic.	Mathong et al. (2020)
	TG1	The package carrier personnel look decent and well dressed.	Uzir et al. (2021)
	TG2	The package carrier uses information and communications technology or an online system to facilitate shipment/receiving process.	Mathong et al. (2020)
	TG3	The package carrier uses information and communications technology or an online system to track and update delivery status.	Mathong et al. (2020)
	TG4		

(continued on next page)

Table 1 (continued)

Variable	Code	Description	References	
Empathy	TG5	The package carrier uses appropriate vehicles for parcel delivery.	Mathong et al. (2020)	
		The physical facilities or shops of the package carrier have up-to-date equipment to ensure customer service.	Mathong et al. (2020)	
		The physical facilities or shops of the package carrier are visually appealing.	Uzir et al. (2021)	
	TG7	The appearance of the physical facilities or shops of the package carrier matches with the type of services they provide during the COVID-19 pandemic.	Mathong et al. (2020)	
	EP1	EP1	The package carrier uses personal initiative to fulfill customer requests despite the COVID-19 pandemic.	Uzir et al. (2021)
		EP2	The information on the parcel is readily available and accessible despite the COVID-19 pandemic.	Olawole (2021)
		EP3	The operating hours of the package carrier is convenient for me despite the COVID-19 pandemic.	Uzir et al. (2021)
		EP4	The package carrier puts a priority on customers' interests despite the COVID-19 pandemic.	Uzir et al. (2021)
		EP5	The package carrier puts extra effort into serving our special requests despite the COVID-19 pandemic.	Uzir et al. (2021)
		EP6	The package carrier understands the customer's specific needs and difficulties during the COVID-19 pandemic.	Mathong et al. (2020)
Responsiveness	RS1	The package carrier arrived on the promised time despite the COVID-19 pandemic.	Uzir et al. (2021)	
	RS2	The package carrier is always willing to help promptly despite the COVID-19 pandemic.	Uzir et al. (2021); Olawole (2021)	
	RS3	The package carrier delivers the goods as quickly as possible despite the COVID-19 pandemic.	Uzir et al. (2021)	
	RS4	The delivery services of the package carrier is always available despite the COVID-19 pandemic.	Olawole (2021)	
	RS5	Personnel at the physical facilities or shop of the package carrier gives proper attention to their customer despite the COVID-19 pandemic.	Uzir et al. (2021)	
Customer Perceived Value	CPV1	The quality of service of package carrier is high during the COVID-19 pandemic.	Uzir et al. (2021)	
	CPV2	I feel relaxed in receiving/sending parcels from a package carrier during the COVID-19 pandemic.	Uzir et al. (2021)	
	CPV3	I feel delighted in receiving/sending the parcels from a package carrier during the COVID-19 pandemic.	Uzir et al. (2021)	
	CPV4	I feel trust and confidence in receiving/sending parcels from a package delivery/	Uzir et al. (2021)	

Table 1 (continued)

Variable	Code	Description	References
Customer Satisfaction	CS1	carrier during the COVID-19 pandemic. The package delivery/carrier meets my expectations despite the COVID-19 pandemic.	Uzir et al. (2021)
	CS2	I am satisfied with my decision to use a package carrier during the COVID-19 pandemic.	Uzir et al. (2021)
	CS3	I think the package carrier has everything I needed to receive/send parcels during the COVID-19 pandemic.	Suhail and Srinivasulu, 2021
	CS4	I plan to avail or utilize the package carrier during the COVID-19 pandemic.	Uzir et al. (2021)
	CS5	I have easy access to the package carrier I need during the COVID-19 pandemic.	
	CS6	I will recommend to others the use of a package carrier during the COVID-19 pandemic.	Uzir et al. (2021)
	CS7	I am very satisfied with the package carrier service provided to me during the COVID-19 pandemic.	Uzir et al. (2021)
Behavior Intention	BI1	I intend to use the package carrying service especially during the COVID-19 pandemic.	Soorani & Ahmadvand (2019)
	BI2	I intend to encourage others to use the package carrier especially during the COVID-19 pandemic.	Ong et al. (2021)
	BI3	I predict that our society will predominantly support the use of package carrier even after the COVID-19 pandemic.	Ong et al. (2021)
	BI4	I intend to explain the positive aspects of using a package carrier especially during the COVID-19 pandemic.	Kwak et al. (2020)
	BI5	I recommend that other people should use package carrier even after the COVID-19 pandemic.	Ong et al. (2021)

3.3. Structural equation modeling (SEM)

This research analyzed the collected data using the multivariate analysis, specifically structural equation modeling (SEM). There are many benefits in applying SEM that it became one of the most used data analysis tools in various studies, some of which include control on measurement errors, utilization of mediating variables, and statistical evaluation of the theoretical model (Kang and Ahn, 2021). Other studies cited that SEM is also convenient to use when testing a research theory (Savari and Gharechae, 2020) and when modeling the cause-and-effect relationship of different exogenous and endogenous factors/variables of the theoretical hypothesis (Yin and Huang, 2021). The SEM in this study is the variance-based partial least squares SEM (PLS-SEM) employing maximum likelihood estimation. PLS-SEM is a tool for exploring the relationships among abstract concepts (Hair et al., 2021) that deals with complex constructs consists of higher levels of abstraction (Sarstedt et al., 2014). PLS-SEM also generates better construct reliability and validity and is best suited for composite-based models (Dash and Paul, 2021).

Table 2
Respondents' demographic profile (n = 400).

Characteristics	Category	N	%
Gender	Female	245	61.25%
	Male	155	38.75%
	Total	400	100%
Age	18–25	220	55.00%
	26–35	78	19.50%
	36–45	70	17.50%
	46–55	23	5.75%
	56–65	9	2.25%
	Total	400	100%
Status	Single	296	74.00%
	Married	101	25.25%
	Separated	3	0.75%
	Total	400	100%
Area of Residence	Urban	227	56.75%
	Rural	173	43.25%
	Total	400	100%
Employment	Unemployed	25	6.25%
	Student	133	33.25%
	Employed	198	49.50%
	Self-employed/Business owner	44	11.00%
	Total	400	100%
Education level	Finished college or graduate degree	254	63.50%
	Attended college	128	32.00%
	Attended high school/senior high school	17	4.25%
	Attended grade school	1	0.25%
Total	400	100%	
Household size	1–2	32	8.00%
	3–4	148	37.00%
	5–6	150	37.50%
	Above 6	70	17.50%
	Total	400	100%
Total household income (monthly)	less than 20,000	61	15.25%
	20,001–30,000	53	13.25%
	30,001–40,000	43	10.75%
	40,001–50,000	51	12.75%
	Above 50,000	192	48.00%
	Total	400	100%
Type of usage of the package carrying/delivery service	Individual/Personal use	364	91.00%
	I am a Retailer	36	9.00%
	Total	400	100%

3.4. Higher-order constructs analysis

The model in this study was presented using formative-reflective higher-order constructs. Higher-order constructs utilize higher-order and lower-order components to decrease the number of path model relationships (Sarstedt et al., 2019). The latent variables considered to analyze the consumer's intention to choose a package carrier or delivery service were Perceived Environmental Concern, Perceived Authority Support, Perceived Behavioral Control, Subjective Norm, Attitude, Service Quality, Customer Perceived Value, Customer Satisfaction, and Behavior Intention. These variables represent the higher order components or reflective constructs. The SERVQUAL variable manifested the higher order construct analysis with the formative constructs of Reliability, Assurance, Tangible, Empathy, and Responsiveness. These constructs are known as the SERVQUAL dimensions that have been established by Parasuraman et al. (1985) and have been utilized in various studies (Ryu and Han, 2010; Hapsari et al., 2016; Ramya et al., 2019; Tran, 2020; Uzir et al., 2020; Suresh and Vasantha, 2021). The integrated PEPB and SERVQUAL model is comprised of 9 latent variables, 36 constructs, and 29 antecedent constructs.

4. Results

4.1. Data analysis

This study integrated the PEPB and SERVQUAL models to assess the factors that affect the Filipino consumers' intention to utilize a package carrying or delivery service during the COVID-19 pandemic. A total of 400 participants voluntarily answered the survey questionnaire administered using Google Forms. Table 1 presents the demographic profile of respondents. From which, 61.25% are female and 38.75% are male. In terms of age, respondents between 18 and 25 years old are 55%, followed by 26–35 years old (19.50%), 17.50% for aged 36 to 45, 5.75% were aged 46 to 55, and 2.25% were between 56 and 65 years old. For the status, most of the respondents are single (74%), followed by married (25.25%), and very few are separated (0.75%). To which, 56.75% of the respondents live in an urban area and 43.25% live in rural. Concerning education level, 63.50% have finished college or graduate degree, 32% attended college, 4.25% attended high school/senior high school, and only 0.25% attended grade school. For the household size, 8% of the respondents have 1 to 2 members, 37% have 3 to 4 members, 37.50% have 5 to 6 members, and 17.50% have above six members. In terms of the household's monthly income, majority of the respondents earn above Php 50,000 (48%), followed by less than Php 20,000 (15.25%), 13.25% has the monthly income of Php 20,001 to 30,000, 12.75% earns Php 40,0001 to 50,000, and 10.75% earns Php 30,001 to 40,000. Lastly, a big number of respondents (91%) stated that they availed the package carrying service for personal use while 9% utilized the service for business purposes, specifically for retail.

The data fit test included the use of three (3) parameters which are Cronbach's α , composite reliability (CR), and average variance extracted (AVE), applied on both the lower-order and higher-order constructs. Cronbach's α is a valuable tool in determining the internal consistency of a question with multiple-item constructs (Cronbach, 1951), while a CR test assesses the composite reliability using factor loadings of the items (Peterson and Kim, 2013). It is essential to report these two (2) tests to indicate the reliability of weighted and unweighted measurements. (Hair et al., 2019). Various studies that have utilized SEM indicate that the value of ≥ 0.70 is the acceptable range of the Cronbach's α and the CR test (Ong et al., 2021; Uzir et al., 2021; Hair et al., 2020; Lin et al., 2017). AVE is one of the indicators used to validate the constructs in a SEM (Dos Santos and Cirillo, 2021; Nadlifatin et al., 2015), and an AVE value of ≥ 0.5 indicates that the measurement is satisfactory (Uzir et al., 2021; Hair et al., 2017). To determine the indicator reliability, Hair et al. (2014) suggests that the outer loading values should be ≥ 0.70 . Tables 3 and 4 summarize the measurement model, item loadings, construct reliability, and convergent validity of the lower-order and higher-order constructs.

For the lower order constructs, the values of Cronbach's α , CR, and AVE range from 0.795 to 0.866, 0.854 to 0.902, and 0.555 to 0.649, respectively, while for the higher order constructs, the values range from 0.790 to 0.956, 0.829 to 0.959, and 0.550 to 0.833, respectively. These values indicate that all measurements are reliable and valid (Hair et al., 2014). For the outer loading shown in Fig. 2, five (5) of the lower order constructs which are RL1, RL3, RL5, RL6, and TG1 and three (3) of the higher order constructs which include PAS3, PBC4, and SN4 were removed due to poor outer loadings. The rest of the factors with values ranging from 0.712 to 0.918 were considered satisfactory (Hair et al., 2014). Common method bias using Harman's single factor test resulted to a value of 26.30%. Hair et al. (2014) indicated that the threshold for available common method bias should be less than 50%. Therefore, no common method bias was present. The test for normality, performed by applying the Shapiro-Wilk statistical test using SPSS 25, indicated that the data is normally distributed since the skewness and kurtosis quotient values were within the range of ± 1.96 .

Table 3
Measurement model, item loadings, construct reliability, and convergent validity of lower-order constructs.

Variables	Items	Mean	Loadings (≥ 0.70)	Cronbach's Alpha (≥ 0.70)	Composite Reliability (≥ 0.70)	Average Variance Extracted (≥ 0.50)
Reliability	RL2	4.221	0.712	0.795	0.854	0.596
	RL4	3.987	0.810			
Assurance	AS1	4.068	0.794	0.865	0.902	0.649
	AS2	4.128	0.816			
	AS3	4.033	0.815			
Tangibles	AS4	3.830	0.784	0.866	0.897	0.555
	AS5	3.975	0.819			
	TG2	4.233	0.731			
	TG3	4.283	0.766			
	TG4	4.188	0.744			
Empathy	TG5	3.875	0.754	0.853	0.891	0.578
	TG6	3.709	0.766			
	TG7	3.772	0.758			
	EP1	3.832	0.734			
	EP2	4.050	0.722			
	EP3	4.013	0.720			
	EP4	3.930	0.781			
Responsiveness	EP5	3.877	0.808	0.841	0.887	0.612
	EP6	3.947	0.790			
	RS1	3.852	0.799			
	RS2	3.885	0.822			
	RS3	3.952	0.815			
	RS4	3.937	0.734			
	RS5	3.870	0.736			

Table 4
Measurement model, item loadings, construct reliability, and convergent validity of higher order constructs.

Variables	Items	Mean	Loadings (≥ 0.70)	Cronbach's Alpha (≥ 0.70)	Composite Reliability (≥ 0.70)	Average Variance Extracted (≥ 0.50)
Perceived Environmental Concern	PEC1	4.341	0.902	0.898	0.936	0.830
	PEC2	4.336	0.914			
	PEC3	4.296	0.917			
Perceived Authority Support	PAS1	3.932	0.871	0.790	0.829	0.624
	PAS2	3.935	0.865			
Perceived Behavior Control	PBC1	4.328	0.802	0.836	0.880	0.553
	PBC2	4.263	0.783			
	PBC3	4.025	0.770			
	PBC5	4.100	0.761			
	PBC6	4.143	0.746			
Subjective Norm	SN1	4.058	0.912	0.900	0.937	0.833
	SN2	4.128	0.907			
	SN3	4.015	0.918			
Attitude	AT1	3.975	0.731	0.899	0.926	0.714
	AT2	4.208	0.888			
	AT3	4.213	0.885			
	AT4	4.258	0.883			
	AT5	4.346	0.827			
Customer Perceived Value	CPV1	4.018	0.755	0.858	0.904	0.703
	CPV2	4.000	0.874			
	CPV3	4.140	0.855			
	CPV4	3.995	0.863			
Customer Satisfaction	CS1	4.015	0.785	0.920	0.936	0.675
	CS2	4.198	0.861			
	CS3	4.090	0.808			
	CS4	4.138	0.800			
	CS5	4.120	0.819			
	CS6	4.183	0.813			
	CS7	4.118	0.862			
Behavior Intention	BI1	4.203	0.878	0.904	0.929	0.723
	BI2	4.163	0.877			
	BI3	4.188	0.841			
	BI4	4.058	0.798			
	BI5	4.143	0.855			

4.2. Structural model assessment

After examining the reliability and validity of the measurement model, the structural model was analyzed for hypothesis testing. Table 5 and Fig. 3 show the structural path analysis of the model, while Table 6

illustrates the results of hypothesis validation.

Sixteen (16) out of eighteen (18) hypotheses were validated for acceptance since the p-values were below the acceptance level of 0.05 (Hair et al., 2014). The PEPB constructs of perceived environmental concern and perceived authority support both have significant positive

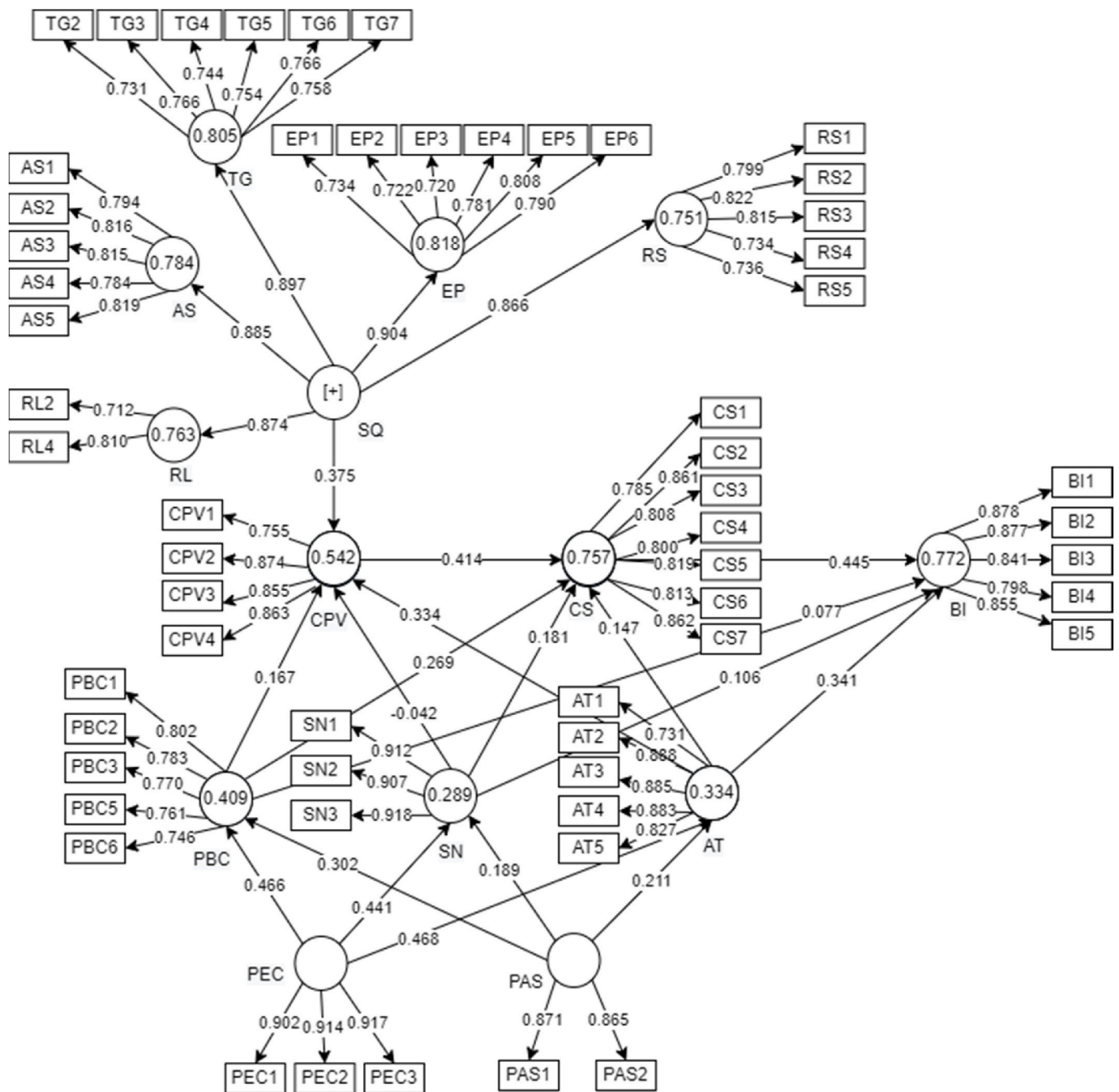


Fig. 2. Measurement model.

relationships to perceived behavioral control ($\beta = 0.466, p < 0.01$; $\beta = 0.302, p < 0.01$), subjective norm ($\beta = 0.441, p < 0.01$; $\beta = 0.189, p < 0.01$), and attitude ($\beta = 0.468, p < 0.01$; $\beta = 0.211, p < 0.01$). Thus, all hypotheses H1 to H6 were accepted. Moreover, perceived behavioral control was found to have a significant positive relationship to customer perceived value ($\beta = 0.167, p < 0.05$) and customer satisfaction ($\beta = 0.269, p < 0.01$), while subjective norm demonstrated a significant positive relationship to both customer satisfaction ($\beta = 0.181, p < 0.01$) and behavior intention ($\beta = 0.106, p < 0.05$). A positive relationship was also observed between attitude and customer perceived value ($\beta = 0.334, p < 0.01$), customer satisfaction ($\beta = 0.147, p < 0.01$), and behavior intention ($\beta = 0.341, p < 0.01$). Hence, H7, H8, H11, H12, H13, H14, and H15 were all justified while H9, and H10 were rejected. The results also indicated that service quality has a significant positive

relationship to customer perceived value ($\beta = 0.375, p < 0.01$). Customer perceived value was also found to have a significant positive relationship to customer satisfaction ($\beta = 0.414, p < 0.01$), while customer satisfaction demonstrated a significant positive relationship to behavior intention ($\beta = 0.445, p < 0.01$). Thus, the acceptance of hypotheses H16, H17, and H18. Table 5 summarizes the hypotheses validation.

The study applied the analysis procedure of Baron and Kenny (1986) to examine the effects of the mediating variables as demonstrated in H19 and H20. The application considered only those paths that has both direct and indirect effects on the dependent variables, a condition prescribed when applying the method. Table 7 presents the summary of beta values using the Baron and Kenny's (1986) method of mediation analysis obtained using SPSS 25. Results indicate that CPV and CS have

Table 5
Structural path analysis: direct effect, indirect effect, and total effects.

Paths	Direct Effect (β)	Indirect Effect (β)	Total Effects	
1	PEC→PBC	0.466	–	0.466
2	PEC→SN	0.441	–	0.441
3	PEC→AT	0.468	–	0.468
4	PEC→CPV	–	0.216	0.216
5	PEC→CS	–	0.363	0.363
6	PEC→BI	–	0.404	0.404
7	PAS→PBC	0.302	–	0.302
8	PAS→SN	0.189	–	0.189
9	PAS→AT	0.211	–	0.211
10	PAS→CPV	–	0.113	0.113
11	PAS→CS	–	0.193	0.193
12	PAS→BI	–	0.202	0.202
13	PBC→CPV	0.167	–	0.167
14	PBC→CS	0.269	0.069	0.338
15	PBC→BI	0.077	0.150	0.227
16	SN→CPV	–0.042	–	–0.042
17	SN→CS	0.181	–0.017	0.164
18	SN→BI	0.106	0.073	0.179
19	AT→CPV	0.334	–	0.334
20	AT→CS	0.147	0.138	0.285
21	AT→BI	0.341	0.127	0.468
22	SQ→CPV	0.375	0.024	0.399
23	SQ→CS	–	0.155	0.155
24	SQ→BI	–	0.069	0.069
25	CPV→CS	0.414	–	0.414
26	CPV→BI	–	0.184	0.184
27	CS→BI	0.445	–	0.445

full mediating effects on SN to CS and SN to BI, respectively, since the beta values of the effect of mediating variable is greater than the beta values of the effect of the independent variable. Partial mediation is present on both PBC and AT to CS and BI. Complete mediation exists when the independent variable no longer influences the dependent variable while partial mediation occurs when the independent variable's influence on the dependent variable is diminished after the mediator is regulated (Baron and Kenny, 1986).

The summary of model fit tests shown in Table 8 illustrates how the theoretical model describes the current situation. The variance inflation factor (VIF) determines the collinearity level among the indicators and values greater than five indicate collinearity (Sarstedt et al., 2014). The highest VIF value among the indicators used in this study is 3.14, thus, indicating that there is no collinearity among the indicators. For the standardized root mean squared residual (SRMR), a value less than 0.08 indicates a better model fit (Dash and Paul, 2021; Carfora et al., 2019; Lin et al., 2017; Hu and Bentler, 1999), and the value of 0.06 for SRMR is within the threshold. The Chi-square upon the degree of freedom (χ^2/df) with a value of 3.15 suggests the goodness of the model fit since the value is less than the tolerance value of five (Dash and Paul, 2021; Lin et al., 2017). Finally, the normed fit index (NFI) of 0.72 is close to the threshold of 0.90 (Dash and Paul, 2021; Lin et al., 2017) and means that it is still acceptable but can be significantly improved (Yusif et al., 2020; Pratono, 2018). Nevertheless, the use of PLS-SEM is applied in exploratory research, thus, the measures of goodness of fit is only used for model projection (Hair et al., 2012).

For the evaluation of discriminant validity, Fornell-Larcker Criterion (FLC) and Heterotrait-Monotrait Ratio (HTMT) were utilized (Hair et al., 2014). FLC is considered as a conservative method for testing the correlation among constructs for each latent. The diagonal result presented in Table 9 shows that they are of greater values as compared to the respective horizontal values. Yang et al. (2020) and Djimesah et al. (2018) indicated that these parameters are considered acceptable. Moreover, HTMT was added for further testing of the discriminant validity. Following the suggestion of Hair et al. (2014), the cut-off for HTMT should be less than 0.900. Presented in Table 10 are the results of HTMT showing values less than 0.900 which signify that the constructs are accepted.

5. Discussion

The result of the integrated SERVQUAL and PEPB model to assess consumer's behavior intention to choose a package delivery service during the COVID-19 pandemic conveys significant positive correlations in the PEPB latent variables and no correlation in the SERVQUAL dimensions.

The first interesting finding in the study is the strong positive correlation of PEC to the TPB factors. PEC has a high and significant positive relationship to PBC ($\beta = 0.466, p < 0.01$), SN ($\beta = 0.441, p < 0.01$), and AT ($\beta = 0.468, p < 0.01$). PEC is also the most significant latent among all the constructs in the model and has a significant and positive indirect effect on BI ($\beta = 0.404$). Filipino consumers regard high importance on the state of the environment at present and in future time and feel that package delivery service providers should participate in programs and activities that will help conserve the environment. Further, with the pandemic outbreak period, the Filipino consumers are consistent in concerning the way they see the importance of pro-environmental matters. This finding is supported by various studies which indicate that consumers tend to act pro-environmentally because of green concern (Sreen et al., 2021; Tandon et al., 2020; Chen and Tung, 2014), and green concern substantially influences behavior intention (Saari et al., 2021; Hamzah and Tanwir, 2021; Kushwah et al., 2019; Taufique and Vaithianathan, 2018).

The second interesting finding in the study is how consumers also give importance to the government's influence and implementation of environmental protection programs. Consumers believe that package delivery service providers can adopt the strategies provided by the government as a way of demonstrating their involvement. This is manifested in the second finding of this study that PAS has a significant positive relationship to PBC ($\beta = 0.302, p < 0.01$), SN ($\beta = 0.189, p < 0.01$), and AT ($\beta = 0.211, p < 0.01$), and a positive indirect relationship to BI ($\beta = 0.202$). As validated by Lin et al. (2017), government support positively influences the PBC, SN, and AT of eco-labelled products. In line with the setting of this study, the Philippine government actively promotes sustainability and environmental conservation through various platforms such as print, television, and social media to increase the awareness of consumers and business owners on the country's policies and programs. The current government advocates the reduction of energy, carbon dioxide emissions, and chlorofluorocarbons reduction.

The third interesting finding in this study is the significant positive correlation of PBC to CPV and CS, and indirect influence on BI. PBC was observed to demonstrate a strong positive influence on customer perceived value ($\beta = 0.167, p < 0.05$) and customer satisfaction ($\beta = 0.269, p < 0.01$), and has an indirect effect on behavior intention ($\beta = 0.150$). Consumers express satisfaction with package delivery services even though there is a pandemic because they feel that their delivery needs are met, and the service providers delivered quality and reliable service. They also feel that the service they experience during the pandemic did not change despite the situation. Consumers are still afraid of acquiring the COVID-19 virus even without going out because recent reports have indicated the continuous rise of COVID-19 cases worldwide, with 85% of confirmed cases for adults and 15% for children (Tapang, 2021). With that, people have a high fear of acquiring the virus, leading to limiting close contact. This result is also supported by the findings of Fu and Juan (2017), as it is observed that PBC influences satisfaction.

The fourth finding is about the significant positive correlation of SN to both CS ($\beta = 0.181, p < 0.01$) and BI ($\beta = 0.106, p < 0.05$), but a weak negative relationship to CPV ($\beta = -0.042$, insignificant). Household members strongly influence consumers' decisions of package delivery service since they live in the same place. The employers, colleagues, and peers of employed consumers also express cautiousness in availing this type of service during the pandemic. The idea of using a package delivery service brings concern to the consumers, their family members, colleagues, peers, and employers because of uncertainty on the safety

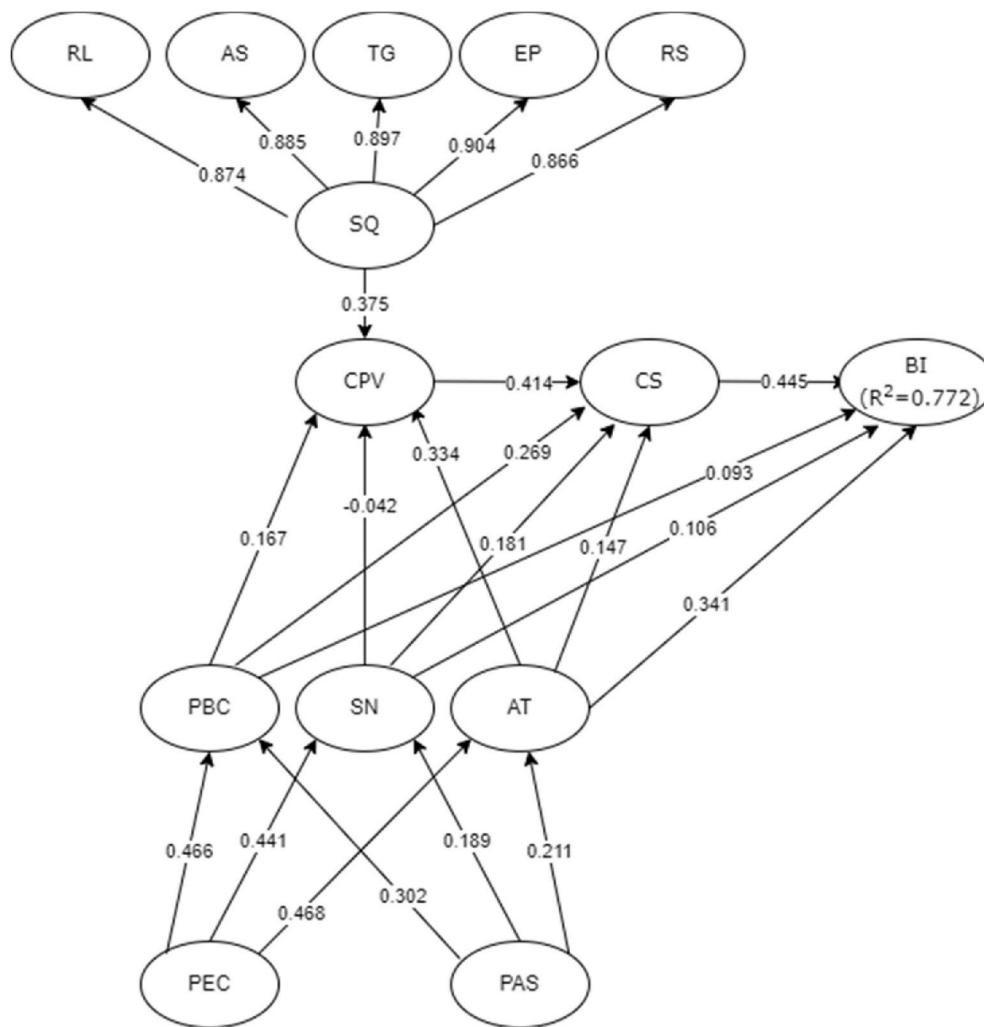


Fig. 3. Model assessment.

Table 6 Hypothesis validation.

Paths	P-Values	Decision
H1: PEC→PBC	0.00	Accepted
H2: PEC→SN	0.00	Accepted
H3: PEC→AT	0.00	Accepted
H4: PAS→PBC	0.00	Accepted
H5: PAS→SN	0.00	Accepted
H6: PAS→AT	0.00	Accepted
H7: PBC→CPV	0.03	Accepted
H8: PBC→CS	0.00	Accepted
H9: PBC→BI	0.17	Rejected
H10: SN→CPV	0.48	Rejected
H11: SN→CS	0.00	Accepted
H12: SN→BI	0.02	Accepted
H13: AT→CPV	0.00	Accepted
H14: AT→CS	0.00	Accepted
H15: AT→BI	0.00	Accepted
H16: SQ→CPV	0.00	Accepted
H17: CPV→CS	0.00	Accepted
H18: CS→BI	0.00	Accepted

protocols that the service provider and the delivery personnel implement. Various studies validated this finding, affirming that SN is an important predictor of customer satisfaction (Fu and Juan, 2017) and consumers' intentions (Carfora et al., 2021; Savari and Gharechae, 2020; Qi and Ploeger, 2019; Chen and Tung, 2014).

Table 7 Result of Baron and Kenny's method for mediation.

Variable (X)	Direct Effect	Indirect Effect	Effect of X on Mediator, CPV	Effect of M on Dependent Variable, CS
PBC	0.761	0.459	0.639	0.472
SN	0.609	0.292	0.515	0.615
AT	0.725	0.400	0.636	0.511
			Effect of X on Mediator, CS	Effect of M on Dependent Variable, BI
PBC	0.871	0.438	0.761	0.569
SN	0.785	0.374	0.609	0.675
AT	0.863	0.440	0.725	0.584

The fifth finding of this study shows that AT exhibited strong positive correlation to CPV ($\beta = 0.334, p < 0.01$), CS ($\beta = 0.147, p < 0.01$), and BI ($\beta = 0.341, p < 0.01$). Consumers perceive that package delivery services during the pandemic would be beneficial and valuable to society. They also consider that the service is safer than going out to do the delivery needs since interaction with the public will be lesser. Support on these results were evident in the studies of Savari and Gharechae (2020), Qi and Ploeger (2019), Nadlifatin et al. (2016), and Chen and Tung (2014).

The sixth finding in this study is the strong positive correlation of service quality ($\beta = 0.375, p < 0.01$) to CPV and positive indirect effects

Table 8
Model fit result.

Parameters	Values	Threshold	Reference
Variance Inflation Factor (VIF)	1.22 to 3.14	≤5.00	Sarstedt et al. (2014)
Standardized Root Mean Squared Residual (SRMR)	0.06	≤0.08	Dash and Paul (2021); Carfora et al. (2019); Lin et al. (2017); Hu and Bentler (1999)
Normed Chi square (χ^2/df)	3.15	≤5.00	Dash and Paul (2021); Lin et al. (2017)
Normed Fit Index (NFI)	0.72	≥0.70	Yusif et al. (2020); Pratono (2018)

on CS ($\beta = 0.155$) and BI ($\beta = 0.069$). Consumers regard that the quality of service they receive from package carrying is similar before and during the COVID-19 pandemic. This belief was evident in the initial finding where consumers experience satisfaction in the services in both situations. The availability of technology and information system infrastructure in package delivery services is an advantage for consumers because it enables information sharing across all parties involved (Marinagi et al., 2014) and provides quality, reliable, and accurate information on products or services (Barros et al., 2015). The results of this study support the findings of Rasheed and Abadi (2014) and Hapsari et al. (2016), which indicate that there is a positive relationship between SERVQUAL and CPV. Other studies were also validated which indicate that SERVQUAL has an indirect effect on both CS and BI (Hapsari et al., 2016; Ryu and Han, 2010; Uzir et al., 2020; Suhail and Srinivasulu, 2021). The process of service providers to deliver packages is the same before and during the COVID-19 pandemic. To which, people did not adjust towards the service being provided by the package carrying services and the service providers cater the same business.

The seventh finding in this study revealed the strong positive influence of CPV on CS ($\beta = 0.414, p < 0.01$), and CPV has a positive indirect

effect on BI ($\beta = 0.184$). Consumers associate their satisfaction with quality, enjoyment, and trust and confidence in the safety and cleanliness of the packages delivered. Consumers believed that the service they experienced was remarkable because of the ability of the service provider to satisfy their needs regardless of the situation. The demand for package delivery service due to the success of e-commerce (Wang and Xiao, 2015; Nakayama and Yan, 2019) has also significantly increased the number of service providers during the pandemic, making this type of service easily accessible to any consumer. This finding is also evident in various studies (Uzir et al., 2020, 2021; Kusumawati and Rahayu, 2020), which indicate that CPV has a significant effect on CS.

The last finding indicated that CS significantly influences BI ($\beta = 0.445, p < 0.01$). During the pandemic, consumers' feeling of fulfillment from package delivery service providers convinced them to recommend and continue using the service to satisfy their delivery needs, whether for personal consumption or business purposes. Consumers also see several positive outcomes in using the service, such as safety, convenience, accessibility, cost efficiency, and faster delivery. From the correlation results (r^2), it was seen that there is a strong relationship with a value equal to 0.772 (Hair et al., 2014). This indicates that CS strongly influences BI, which is supported by different studies (Dash et al., 2021; Eggert and Ulaga, 2002; Cronin et al., 2000).

Overall, the study demonstrated that several factors influence consumers in the Philippines, which led to their intention to choose package delivery service during the COVID-19 pandemic. These factors include perceived environmental concern, perceived authority support, subjective norm, attitude, service quality, customer perceived value, and customer satisfaction. Consumers also consider that the most important among these factors is the ability of the service provider to demonstrate their concern for the environment, which provides benefits not only on the environment but also on societal context. Consumers are influenced to utilize products and services with less environmental impact to

Table 9
Fornell-Larcker criterion (FLC).

Factors	BI	CS	CPV	SQ	RL	AS	TG	EP	RS	PBC	SN	AT	PAS	PEC
BI	0.850													
CS	0.827	0.822												
CPV	0.646	0.770	0.838											
SQ	0.609	0.702	0.648	0.904										
RL	0.551	0.635	0.565	0.874	0.754									
AS	0.533	0.601	0.565	0.885	0.747	0.806								
TG	0.557	0.629	0.566	0.897	0.672	0.780	0.745							
EP	0.540	0.624	0.598	0.871	0.732	0.724	0.729	0.760						
RS	0.513	0.623	0.578	0.866	0.689	0.669	0.687	0.715	0.782					
PBC	0.754	0.774	0.643	0.678	0.608	0.594	0.625	0.587	0.585	0.743				
SN	0.671	0.675	0.494	0.516	0.464	0.457	0.474	0.451	0.440	0.708	0.912			
AT	0.798	0.734	0.636	0.546	0.522	0.482	0.497	0.469	0.447	0.734	0.671	0.845		
PAS	0.431	0.466	0.393	0.518	0.429	0.441	0.486	0.456	0.478	0.358	0.346	0.379	0.790	
PEC	0.552	0.490	0.371	0.453	0.455	0.392	0.414	0.378	0.372	0.711	0.508	0.544	0.358	0.911

Table 10
Heterotrait-Monotrait Ratio (HTMT).

Factors	BI	CS	CPV	SQ	RL	AS	TG	EP	RS	PBC	SN	AT	PAS
CS	0.898												
CPV	0.731	0.866											
SQ	0.658	0.753	0.716										
RL	0.682	0.745	0.681	0.883									
AS	0.602	0.674	0.653	0.869	0.897								
TG	0.631	0.704	0.656	0.878	0.844	0.866							
EP	0.616	0.706	0.700	0.854	0.809	0.839	0.837						
RS	0.589	0.711	0.682	0.862	0.881	0.777	0.796	0.860					
PBC	0.853	0.874	0.756	0.750	0.666	0.694	0.724	0.674	0.686				
SN	0.765	0.738	0.560	0.559	0.520	0.517	0.814	0.516	0.506	0.814			
AT	0.882	0.802	0.725	0.592	0.552	0.544	0.875	0.537	0.515	0.875	0.747		
PAS	0.528	0.575	0.515	0.649	0.434	0.497	0.537	0.505	0.523	0.551	0.394	0.464	
PEC	0.612	0.536	0.420	0.495	0.465	0.444	0.479	0.435	0.428	0.678	0.565	0.599	0.430

demonstrate responsibility and consciousness. In turn, service providers engaged in such sustainability practices are rewarded by increasing market share and retaining loyal customers.

5.1. Theoretical contribution

The Pro-Environmental Theory of Planned Behavior (PEPB) of [Persada and Thesis \(2016\)](#) and the service quality (SERVQUAL) model of [Parasuraman et al. \(1985\)](#) could be integrated to holistically determine the intention of Filipino consumers to choose a package delivery service during the COVID-19 pandemic. The study extends the integrated SERVQUAL and PEPB model to include the customer perceived value and customer satisfaction, displaying a higher level of investigation. It confirmed the application and exploration of the SERVQUAL dimensions in package delivery at a non-conventional scenario which is seldom experienced in the service industry. Additionally, the integrated model demonstrated the use of higher-order constructs to show the relationship between higher-order and lower-order components as an illustration of an extended standard construct conceptualization. This method has characterized that service quality is measured by its dimensions of reliability, assurance, tangible, empathy, and responsiveness. The study also contributes to the application of PEPB as it determines not only the consumers' behavior intention to avail the package delivery service but also their perception of the value of this type of service and their level of satisfaction. Finally, the study highlights that the perceived concern for the environment is a significant driving force to consumers' behavior intention. Integrating the two (2) theories gives an understanding of the perspective and experience of consumers in utilizing the service of package delivery in a different situation. The findings of this study are relevant and applicable not only for the Philippine setting but also for other countries, as they have also experienced the impact of the COVID-19 pandemic in the package delivery service sector. Finally, the study highlights that the perceived concern for the environment is a significant driving force to consumers' behavior intention. Integrating the two (2) theories gives an understanding of the perspective and experience of consumers in utilizing the service of package delivery in a different situation.

5.2. Policy implications

The PEPB model identifies several factors that influence consumers' intention to choose a package delivery service during the COVID-19 pandemic. Policymakers, such as the government and business owners, can motivate consumers to utilize this type of service, especially during a health outbreak. The findings of perceived environmental concern and perceived authority support being significant factors of consumer's intention will bring knowledge on package delivery service that pro-environmental attitude impacts consumer's behavior. Service providers must actively demonstrate their participation in environmental protection campaigns and make it public information so that consumers will be aware of the company's green practices, which will help attract and retain loyal consumers. Many companies at present are advocates of environmental conservation and sustainability, such as Amazon. Amazon has built wind farms to create renewable energy ([Pomerantz, 2017](#)) and has designed electric delivery vehicles to reduce carbon emissions ([Coyle, 2020](#)). Their efficient and sustainable operations protect the environment and attract more consumers to their market, making them the leading online retailer in the US. On the other hand, the government may provide incentives such as discounts on taxes, fees, permits, and licenses to business owners who will demonstrate active participation and implementation of environmental protection campaigns.

The second recommendation is for package delivery service providers to focus on how subjective norm, and attitude directly affect intention to choose. Service providers should continue to ensure the quality aspects of their service and the health and safety of their

customers in sending or receiving deliveries. They should continuously adhere to the government's mandate on proper implementation of safety protocols and constantly monitor the health status of their delivery personnel since they are engaged in physical interaction with consumers.

The third managerial suggestion accounts for service quality as an influential factor to customer perceived value. The dimensions of reliability, attitude, tangible, empathy, and responsiveness are deemed important by consumers when rendering a service, especially during difficult situations when it is most needed. Package service providers are expected to deliver their service at the promised time, make customers feel confident about the service that they get, utilize appropriate and up-to-date resources, understand the customer's needs and difficulties with or without a pandemic, and always maintain availability of service.

The fourth recommendation accounts for customer perceived value as a substantial contributor to customer satisfaction, leading to customers' choice. Consumers regard safety and cleanliness of packages as the most valuable concerns in package delivery during the pandemic. Therefore, package delivery service providers should continue to ensure not only the quality aspects of their service but also the health and safety of their customers in sending or receiving deliveries so that consumers will continuously utilize their service. As a proposal, the service providers may create a seal of safety and cleanliness on packages such as a sticker to indicate that the package has been completely sanitized and is safe to deliver.

Lastly, the strong influence of customer satisfaction on intention to choose implies that customers will continue to utilize and seek package delivery service even during the COVID-19 pandemic because of the various advantages or benefits it offers. Engaging in this type of business opens an opportunity for investors or entrepreneurs since the potential for growth and income in this sector is promising.

5.3. Limitations

Despite its hopeful findings, the current study raises several limitations. First, the specific locations of the respondents were not collected since they were only asked to identify their area of residence as rural or urban. The specific location or residence of the respondents might have affected the weight of some factors and may lead to a different result. Future researchers may explore the intention of Filipino consumers to choose package delivery services in area-specific settings and compare the experiences of consumers residing in areas with a high number of confirmed COVID-19 cases to those living in areas with a low number of confirmed cases. Second, the data collection period was only for one month with 400 respondents. A more extended data collection period and a higher number of respondents will lead to more reliable and accurate findings. Lastly, the present research only considered integrating the SERVQUAL dimensions and the PEPB model. Further studies on integrating other models or theories that consider factors not cited in this research, such as CSR, trust, health consciousness, safety, and technology, may be conducted. Future researchers may also apply this study's constructs in other service-providing industries even after the COVID-19 pandemic. Although the present research used one country to avoid the potential bias of cross-culture, the opportunity to compare the result with the similar country characteristic by multigroup is suggested. The comparison can enhance analysis and provide a wide range of practical decisions, primarily when the enterprises work multinational in several countries.

6. Conclusion

The present research investigated the intention of Filipino consumers to choose a package delivery or carrying service during the COVID-19 pandemic integrating the PEPB and SERVQUAL framework. The results conveyed significant positive correlations in the PEPB factors and SERVQUAL. In addition, the findings revealed that perceived

environmental concern, perceived authority support, subjective norm, attitude, service quality, customer perceived value, and customer satisfaction significantly influence the consumer's intention to choose a package delivery to satisfy their delivery needs during the pandemic. The consumers' perception of pro-environmental activities also affected their intention to utilize the service since both perceived environmental concern and perceived authority support indirectly affect the consumers' intention to choose. Service providers of package delivery are encouraged to publicly demonstrate their participation and implementation of environmental conservation campaigns to attract more consumers and retain their loyalty. Being the authority and significant influencer of environmental conservation, the government must continuously monitor the implementation of green practices in the logistics sector and across all industries. It may also provide incentives to encourage more business owners to participate in conservation programs. Service providers of package delivery should continue to demonstrate their company's high regard for the health and safety of their employees and customers and should maintain the quality of service they give to their customers even during the pandemic.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgment

The authors would like to express their gratitude to the 400 consumers who sincerely responded to the survey questionnaire and share their experiences even during this challenging time.

References

- Abdullah, M., Ali, N., Bilal Aslam, A., Ashraf Javid, M., Arif Hussain, S., 2021. Factors affecting the mode choice behavior before and during COVID-19 pandemic in Pakistan. *Int. J. Transport. Sci. Technol.* <https://doi.org/10.1016/j.ijst.2021.06.005>.
- Agyabeng-Mensah, Y., Afum, E., Ahenkorah, E., 2020. Exploring financial performance and green logistics management practices: examining the mediating influences of market, environmental and social performances. *J. Clean. Prod.* 258, 120613. <https://doi.org/10.1016/j.jclepro.2020.120613>.
- Ajzen, I., 1985. From intentions to actions: a theory of planned behavior. In: *Action Control*. Springer, Berlin/Heidelberg, Germany, pp. 11–39.
- Ajzen, I., 1991. The theory of planned behavior. *Organ. Behav. Hum. Decis. Process.* 50, 179–211.
- Ali, S.S., Kaur, R., 2021. Effectiveness of Corporate Social Responsibility (CSR) in implementation of social sustainability in warehousing of developing countries: a hybrid approach. *J. Clean. Prod.* 324, 129154. <https://doi.org/10.1016/j.jclepro.2021.129154>.
- Ali, S.S., Ersöz, F., Kaur, R., Altaf, B., Weber, G.-W., 2021. A quantitative analysis of low carbon performance in industrial sectors of developing world. *J. Clean. Prod.* 284, 125268. <https://doi.org/10.1016/j.jclepro.2020.125268>.
- Ali, S.S., Kaur, R., Ersöz, F., Lotero, L., Weber, G.-W., 2018. Evaluation of the effectiveness of green practices in manufacturing sector using CHAID analysis. *J. Remanuf.* 9 (1), 3–27. <https://doi.org/10.1007/s13243-018-0053-y>.
- Asgarova, R., Abdul Hamid, A.B., Sulaiman, Z., 2015. A review on customer perceived value and its main components. *Global J. Busin. Social Sci. Rev.* 1, 632–640. [https://doi.org/10.35609/gjbsr.2014.2.2\(1\)](https://doi.org/10.35609/gjbsr.2014.2.2(1)).
- Asubonteng, P., McCleary, K.J., Swan, J.E., 1996. SERVQUAL revisited: a critical review of service quality. *J. Serv. Market.* 10 (6), 62–81.
- Baron, R.M., Kenny, D.A., 1986. The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. *J. Pers. Soc. Psychol.* 51, 1173–1182.
- Barros, A.P., Satiko, Ishikiriyama, C.S., Peres, R.C., Gomes, C.F.S., 2015. Processes and benefits of the application of information technology in supply chain management: an analysis of the literature. *Procedia Comput. Sci.* 55, 698–705.
- Beck, M.J., Hensher, D.A., 2020. Insights into the impact of COVID-19 on household travel and activities in Australia – the early days under restrictions. *Transport Pol.* 96, 76–93. <https://doi.org/10.1016/j.tranpol.2020.07.001>.
- Carfora, V., Cavallo, C., Caso, D., Del Giudice, T., De Devitiis, B., Viscecchia, R., Nardone, G., Cicia, G., 2019. Explaining consumer purchase behavior for organic milk: including trust and green self-identity within the theory of planned behavior. *Food Qual. Prefer.* 76, 1–9. <https://doi.org/10.1016/j.foodqual.2019.03.006>.
- Carfora, V., Cavallo, C., Catellani, P., Del Giudice, T., Cicia, G., 2021. Why do consumers intend to purchase natural food? Integrating theory of planned behavior, value-belief-norm theory, and trust. *Nutrients* 13 (6), 1904. <https://doi.org/10.3390/nu13061904>.
- Caspersen, E., Navrud, S., 2021. The sharing economy and consumer preferences for environmentally sustainable last mile deliveries. *Transport. Res. Transport Environ.* 95, 102863. <https://doi.org/10.1016/j.trd.2021.102863>.
- Ceniga, P., Sukalova, V., 2015. Future of logistics management in the process of globalization, 4th world conference on business, economics and management. *Procedia Econ. Fin.* 26, 160–166.
- Chen, M.F., Tung, P.J., 2014. Developing an extended theory of planned behavior model to predict consumers' intention to visit green hotels. *Int. J. Hospit. Manag.* 36, 221–230.
- Chopra, S., Meindl, P., 2013. *Supply Chain Management: Strategy, Planning, and Operation*. Pearson.
- Coyle, M., 2020, February 4. Go behind the scenes as Amazon develops a new electric vehicle. US about Amazon. Retrieved October 20, 2021, from <https://www.aboutamazon.com/news/sustainability/go-behind-the-scenes-as-amazon-develops-a-new-electric-vehicle>.
- Cresswell, J.W., Plano Clark, V.L., 2011. *Designing and Conducting Mixed Method Research*. 2nd Sage, Thousand Oaks, CA.
- Cronbach, L.J., 1951. Coefficient alpha and the internal structure of tests. *Psychometrika* 16, 297–334.
- Cronin, J.J., Brady, M.K., Hult, G.T.M., 2000. Assessing the effects of quality, value, and customer satisfaction on consumer behavioral intentions in service environments. *J. Retailing* 76 (2), 193–218. [https://doi.org/10.1016/s0022-4359\(00\)00028-2](https://doi.org/10.1016/s0022-4359(00)00028-2).
- Dash, G., Paul, J., 2021. CB-SEM vs PLS-SEM methods for research in Social Sciences and Technology forecasting. *Technol. Forecast. Soc. Change* 173, 121092. <https://doi.org/10.1016/j.techfore.2021.121092>.
- Dash, G., Kiefer, K., Paul, J., 2021. Marketing-to-millennials: marketing 4.0, customer satisfaction, and purchase intention. *J. Bus. Res.* 122, 608–620. <https://doi.org/10.1016/j.jbusres.2020.10.016>.
- Djimesah, I.E., Okine, A.N.D., Mireku, K.K., 2018. Influential factors in creating warning systems towards flood disaster management in Ghana: an analysis of 2007 Northern flood. *Int. J. Disaster Risk Reduc.* 28, 318–326. <https://doi.org/10.1016/j.ijdrr.2018.03.012>.
- Dos Santos, P.M., Cirillo, M.Á., 2021. Construction of the average variance extracted index for construct validation in structural equation models with adaptive regressions. *Commun. Stat. Simulat. Comput.* 1–13. <https://doi.org/10.1080/03610918.2021.1888122>.
- Dowd, K., Burke, K.J., 2013. The influence of ethical values and food choice motivations on intentions to purchase sustainably Sourced Foods. *Appetite* 69, 137–144. <https://doi.org/10.1016/j.appet.2013.05.024>.
- Eggert, A., Ulaga, W., 2002. Customer perceived value: a substitute for satisfaction in business markets? *J. Bus. Ind. Market.* 17 (2/3), 107–118. <https://doi.org/10.1108/08858620210419754>.
- El Ghoul, S., Guedhami, O., Kwok, C.C.Y., Wang, H., 2016. Family control and corporate social responsibility. *J. Bank. Finance* 73, 131–146. <https://doi.org/10.1016/j.jbankfin.2016.08.008>.
- Fan, Y., Zhang, F., Zhu, L., 2021. Do family firms invest more in pollution prevention strategy than non-family firms? an integration of agency and institutional theories. *J. Clean. Prod.* 286, 124988. <https://doi.org/10.1016/j.jclepro.2020.124988>.
- Figliozzi, M., Unnikrishnan, A., 2021. Exploring the impact of socio-demographic characteristics, health concerns, and product type on home delivery rates and expenditures during a strict COVID-19 lockdown period: a case study from Portland, OR. *Transport. Res. Pol. Pract.* 153, 1–19. <https://doi.org/10.1016/j.tra.2021.08.012>.
- Fu, X., Juan, Z., 2017. Understanding public transit use behavior: integration of the theory of planned behavior and the customer satisfaction theory. *Transportation* 44, 1021–1042.
- German, J.D., Asuncion, M.K.T., Pacheco, L.E., 2019. Increasing productivity and efficiency for third party logistics service. *Proc. Int. Conf. Industr. Eng. Oper. Manag.* 2019 (Mar), 3392–3399.
- Giri, R.N., Mondal, S.K., Maiti, M., 2019. Government intervention on a competing supply chain with two green manufacturers and a retailer. *Comput. Ind. Eng.* 128, 104–121. <https://doi.org/10.1016/j.cie.2018.12.030>.
- Hair, J.F., Astrachan, C.B., Moisesescu, O.I., Radomir, L., Sarstedt, M., Vaithilingam, S., Ringle, C.M., 2021. Executing and interpreting applications of PLS-SEM: updates for family business researchers. *J. Family Busin. Strat.* 12 (3), 100392. <https://doi.org/10.1016/j.jfbs.2020.100392>.
- Hair, J.F., Hult, G.T.M., Ringle, C.M., Sarstedt, M., 2014. *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. SAGE Publications Ltd, Thousand Oaks, CA.
- Hair, J.F., Risher, J.J., Sarstedt, M., Ringle, C.M., 2019. When to use and how to report the results of PLS-SEM. *Eur. Bus. Rev.* 31 (1), 2–24. <https://doi.org/10.1108/eb-11-2018-0203>.
- Hair, J.F., Howard, M.C., Nitzl, C., 2020. Assessing measurement model quality in PLS-SEM using confirmatory composite analysis. *J. Bus. Res.* 109, 101–110.
- Hair, J.F., Hult, G.T.M., Ringle, C.M., Sarstedt, M., Thiele, K.O., 2017. Mirror, mirror on the wall: a comparative evaluation of composite-based structural equation modeling methods. *J. Acad. Market. Sci.* 45 (5), 616–632. <https://doi.org/10.1007/s11747-017-0517-x>.
- Hair, J.F., Sarstedt, M., Ringle, C., Mena, J., 2012. An assessment of the use of partial least squares structural equation model in marketing research. *J. Acad. Market. Sci.* 40 (3), 414–433.
- Hamzah, M.I., Tanwir, N.S., 2021. Do pro-environmental factors lead to purchase intention of hybrid vehicles? The moderating effects of environmental knowledge. *J. Clean. Prod.* 279, 123643. <https://doi.org/10.1016/j.jclepro.2020.123643>.

- Hapsari, R., Clemes, M., Dean, D., 2016. The mediating role of perceived value on the relationship between service quality and Customer Satisfaction: evidence from Indonesian airline passengers. *Procedia Econ. Fin.* 35, 388–395. [https://doi.org/10.1016/s2212-5671\(16\)00048-4](https://doi.org/10.1016/s2212-5671(16)00048-4).
- Hayashi, K., Nemoto, T., Nakaharai, S., 2014. The development of the parcel delivery service and its regulations in China. *Procedia - Social Behav. Sci.* 125, 186–198. <https://doi.org/10.1016/j.sbspro.2014.01.1466>.
- Hu, L.T., Bentler, P.M., 1999. Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Struct. Equ. Model.* 6 (1), 1–55. <https://doi.org/10.1080/10705519909540118>.
- International System for Agricultural Science and Technology (Agris), 2012. *Philippine Strategy for Sustainable Development: a Conceptual Framework*. The World Bank, 0-8213-1691-5.
- Jazairy, A., 2020. Aligning the purchase of green logistics practices between shippers and logistics service providers. *Transport. Res. Transport Environ.* 82, 102305. <https://doi.org/10.1016/j.trd.2020.102305>.
- Jolai, H., Hafezalkotob, A., Reza-Gharehbagh, R., 2021. Pricing and greening decisions of competitive forward and reverse supply chains under government financial intervention: Iranian motorcycle industry case study. *Comput. Ind. Eng.* 157, 107329. <https://doi.org/10.1016/j.cie.2021.107329>.
- Kang, H., Ahn, J.-W., 2021. Model setting and interpretation of results in research using structural equation modeling: a checklist with Guiding Questions for Reporting. *Asian Nurs. Res.* 15 (3), 157–162. <https://doi.org/10.1016/j.anr.2021.06.001>.
- Khosroshahi, H., Rasti-Barzoki, M., Hejazi, S.R., 2019. A game theoretic approach for pricing decisions considering CSR and a new consumer satisfaction index using transparency-dependent demand in sustainable supply chains. *J. Clean. Prod.* 208, 1065–1080. <https://doi.org/10.1016/j.jclepro.2018.10.123>.
- Kushwah, S., Dhir, A., Sagar, M., Gupta, B., 2019. Determinants of organic food consumption: a systematic literature review on motives and barriers. *Appetite* 143, 104402. <https://doi.org/10.1016/j.appet.2019.104402>.
- Kusumawati, A., Rahayu, K.S., 2020. The effect of experience quality on customer perceived value and customer satisfaction and its impact on customer loyalty. *TQM J.* 32 (6), 1525–1540. <https://doi.org/10.1108/TQM-05-2019-0150>.
- Kwak, S.-Y., Cho, W.-S., Seok, G.-A., Yoo, S.-G., 2020. Intention to use sustainable green logistics platforms. *Sustainability* 12 (8), 3502. <https://doi.org/10.3390/su12083502>.
- Lee, H., Park, S.J., Lee, G.R., Kim, J.E., Lee, J.H., Jung, Y., Nam, E.W., 2020. The relationship between trends in COVID-19 prevalence and traffic levels in South Korea. *Int. J. Infect. Dis.* 96, 399–407. <https://doi.org/10.1016/j.ijid.2020.05.031>.
- Levy, P.S., Lemeshow, S., 2009. *Solutions Manual to Accompany Sampling of Populations: Methods and Applications*. Wiley.
- Limboung, S., Giang, H.T., Cools, M., 2016. Logistics service quality: the case of Da Nang city. *Procedia Eng.* 142, 124–130. <https://doi.org/10.1016/j.proeng.2016.02.022>.
- Lin, S.-C., Nadlifatin, R., Amna, A., Persada, S., Razif, M., 2017. Investigating citizen behavior intention on mandatory and voluntary pro-environmental programs through a pro-environmental planned behavior model. *Sustainability* 9 (7), 1289. <https://doi.org/10.3390/su9071289>.
- Liu, P., Li, M., Dai, D., Guo, L., 2021. The effects of social commerce environmental characteristics on customers' purchase intentions: the chain mediating effect of customer-to-customer interaction and customer-perceived value. *Electron. Commer. Res. Appl.* 48, 101073. <https://doi.org/10.1016/j.elerap.2021.101073>.
- Manila Standard, 2020. PH logistics and warehousing industry will continue to grow as e-commerce surges. Retrieved from. <https://www.manilastandard.net/spotlight/325257/ph-logistics-and-warehousing-industry-will-continue-to-grow-as-e-commerce-surges.html>.
- Marinagi, C., Trivellas, P., Sakas, D.P., 2014. The impact of information technology on the development of supply chain competitive advantage. *Procedia - Social Behav. Sci.* 147, 586–591.
- Mathong, P., Sureeyatanapas, P., Arunyanart, S., Niyamosoth, T., 2020. The assessment of service quality for third-party logistics providers in the beverage industry. *Cogent Eng.* 7 (1), 1785214. <https://doi.org/10.1080/23311916.2020.1785214>.
- Mazareanu, E., 2021. Courier, express and parcel (CEP) market size worldwide between 2009 and 2024. Statista. Retrieved from: <https://www.statista.com/statistic/723986/cep-market-total-revenue-worldwide/#statisticContainer>.
- METI, MLIT, 2018. *Productivity Improvement Liaison Conference for Home Delivery Business and EC Business*.
- Nadlifatin, R., Lin, S.C., Rachmaniaty, Y.P., Persada, S.F., Razif, M., 2016. A pro-environmental reasoned action model for measuring citizens' intentions regarding ecolabel product usage. *Sustainability* 8, 1165.
- Nadlifatin, R., Razif, M., Lin, S.C., Persada, S.F., Belgiawan, P.F., 2015. An assessment model of Indonesian citizens' intention to participate on environmental impact assessment (EIA): a behavioral perspective. *Procedia Environ. Sci.* 28, 3–10.
- Nakayama, S., Yan, W., 2019. The package redelivery problem, convenience store solution, and the delivery desert: case study in Aoba Ward, Yokohama. *J. Urban Manag.* 8 (3), 355–363. <https://doi.org/10.1016/j.jum.2019.08.001>.
- Olawole, M.O., 2021. An empirical study of commuters' satisfactions with Taxi Service Quality in Abeokuta, Nigeria. *Transport. Res. Interdiscipl. Persp.* 11, 100434. <https://doi.org/10.1016/j.trip.2021.100434>.
- Ong, A.K., Prasetyo, Y.T., Salazar, J.M., Erfe, J.J., Abella, A.A., Young, M.N., Chuenyindee, T., Nadlifatin, R., Ngrah Perwira Redi, A.A., 2021. Investigating the Acceptance of the Reopening Bataan Nuclear Power Plant: Integrating Protection Motivation Theory and Extended Theory of Planned Behavior. *Nuclear Engineering and Technology*. <https://doi.org/10.1016/j.net.2021.08.032>.
- Parasuraman, A., Zeithaml, V.A., Berry, L., 1988. SERVQUAL: a multi-item scale for measuring customer perceptions of service quality. *J. Retailing* 64 (1), 12–40.
- Parasuraman, A., Zeithaml, V.A., Berry, L.L., 1985. A conceptual model of service quality and its implications for future research. *J. Market.* 49 (4), 41. <https://doi.org/10.1177/002224298504900403>, 1985.
- Paul, J., Modi, A., Patel, J., 2016. Predicting green product consumption using theory of planned behavior and reasoned action. *J. Retailing Consum. Serv.* 29, 123–134. <https://doi.org/10.1016/j.jretconser.2015.11.006>.
- Peña-García, N., Gil-Saura, I., Rodríguez-Orejuela, A., Siqueira-Junior, J.R., 2020. Purchase intention and purchase behavior online: a cross-cultural approach. *Heliyon* 6 (6). <https://doi.org/10.1016/j.heliyon.2020.e04284>.
- Persada, S.F., 2016. *Pro Environmental Planned Behavior Model to Explore the Citizens' Participation Intention in Environmental Impact Assessment: an Evidence Case in Indonesia*. Ph.D. Thesis. Industrial Management Department, National Taiwan University of Science and Technology, Taipei, Taiwan, 2016.
- Persada, S.F., Lin, S.C., Nadlifatin, R., Razif, M., 2015. Investigating the citizens' intention level in environmental impact assessment participation through an extended theory of planned behavior model. *Global NEST J.* 17, 847–857.
- Peterson, R.A., Kim, Y., 2013. On the relationship between coefficient alpha and composite reliability. *J. Appl. Psychol.* 98 (1), 194–198. <https://doi.org/10.1037/a0030767>.
- Philippine Statistics Authority, 2017. *Philippine population surpassed the 100 million mark (Results from the 2015 census of population)* - psa.gov.ph. Retrieved September 22, 2021, from. <https://psa.gov.ph/content/philippine-population-surpassed-100-million-mark-results-2015-census-population>.
- Philippine Statistics Authority, 2021. *Goal 7. Ensure environmental sustainability* - psa.gov.ph. Retrieved October 02, 2021, from. <https://psa.gov.ph/content/goal-7-ensure-environmental-sustainability>.
- Pomerantz, D., 2017, October 19. Amazon Turns to Wind to Power its Business. *GE News*. Retrieved October 20, 2021, from. <https://www.ge.com/news/reports/amazon-tur-ns-ge-wind-turbines-power-business>.
- Pratono, A.H., 2018. Linking religiosity to citizenship behaviour under materialism attitude: empirical evidence from Indonesia. *Int. J. Ethics and Syst.* <https://doi.org/10.1108/IJOES-07-2018-0104>.
- Pronello, C., Camusso, C., Valentina, R., 2017. Last mile freight distribution and transport operators' needs: which targets and challenges? *Transport. Res. Procedia* 25, 888–899. <https://doi.org/10.1016/j.trpro.2017.05.464>.
- Qi, X., Ploeger, A., 2019. Explaining consumers' intentions towards purchasing green food in Qingdao, China: the amendment and extension of the theory of planned behavior. *Appetite* 133, 414–422. <https://doi.org/10.1016/j.appet.2018.12.004>.
- Ramya, N., Kowsalya, A., Dharanipriya, K., 2019. Service quality and its dimensions. *Int. J. Res. Dev.* 4 (2), 39–41.
- Rasheed, F.A., Abadi, M.F., 2014. Impact of service quality, trust, and perceived value on customer loyalty in Malaysia services industries. *Procedia - Social Behav. Sci.* 164, 298–304. <https://doi.org/10.1016/j.sbspro.2014.11.080>.
- Ryu, K., Han, H., 2010. Influence of the quality of food, service, and physical environment on customer satisfaction and behavioral intention in quick-casual restaurants: moderating role of perceived price. *J. Hospit. Tourism Res.* 34 (3), 310–329.
- Saari, U.A., Damberg, S., Frömbing, L., Ringle, C.M., 2021. Sustainable consumption behavior of Europeans: the influence of environmental knowledge and risk perception on environmental concern and behavioral intention. *Ecol. Econ.* 189, 107155. <https://doi.org/10.1016/j.ecolecon.2021.107155>.
- Sánchez-Fernández, R., Niesta-Bonillo, M.Á., 2007. The concept of perceived value: a systematic review of the research. *Market. Theor.* 7 (4), 427–451. <https://doi.org/10.1177/1470593107083165>.
- Sardana, D., Gupta, N., Kumar, V., Terziovski, M., 2020. CSR 'sustainability' practices and firm performance in an emerging economy. *J. Clean. Prod.* 258, 120766. <https://doi.org/10.1016/j.jclepro.2020.120766>.
- Sarstedt, M., Hair, J.F., Cheah, J.-H., Becker, J.-M., Ringle, C.M., 2019. How to specify, estimate, and validate higher-order constructs in PLS-SEM. *Australas. Market J.* 27 (3), 197–211. <https://doi.org/10.1016/j.usmj.2019.05.003>.
- Sarstedt, M., Ringle, C.M., Smith, D., Reams, R., Hair, J.F., 2014. Partial least squares structural equation modeling (PLS-SEM): a useful tool for family business researchers. *J. Family Busin. Strat.* 5 (1), 105–115. <https://doi.org/10.1016/j.jfbs.2014.01.002>.
- Savari, M., Gharechae, H., 2020. Application of the extended theory of planned behavior to predict Iranian farmers' intention for safe use of chemical fertilizers. *J. Clean. Prod.* 263 <https://doi.org/10.1016/j.jclepro.2020.121512>.
- Schenk, L., Klabjan, D., 2010. Intra market optimization for express package carriers with station to station travel and proportional sorting. *Comput. Oper. Res.* 37 (10), 1749–1761. <https://doi.org/10.1016/j.cor.2010.01.003>.
- Schreiber, J.B., Nora, A., Stage, F.K., Barlow, E.A., King, J., 2006. Reporting structural equation modeling and confirmatory factor analysis results: a review. *J. Educ. Res.* 99 (6), 323–338. <https://doi.org/10.3200/joer.99.6.323-338>.
- Seroka-Stolka, O., Ociepa-Kubicka, A., 2019. Green logistics and circular economy. *Transport. Res. Procedia* 39, 471–479, 2019.
- Setia, M.S., 2016. *Methodology series module 3: cross-sectional studies*. Indian J. Dermatol. 61 (3), 261. <https://doi.org/10.4103/0019-5154.182410>.
- Shahzad, M., Qu, Y., Javed, S.A., Zafar, A.U., Rehman, S.U., 2020. Relation of environment sustainability to CSR and green innovation: a case of Pakistani manufacturing industry. *J. Clean. Prod.* 253, 119938. <https://doi.org/10.1016/j.jclepro.2019.119938>.
- Shakibaei, S., de Jong, G.C., Alpkökin, P., Rashidi, T.H., 2020. Impact of the COVID-19 pandemic on travel behavior in Istanbul: a panel data analysis. *Sustain. Cities Soc.* 65, 102619. <https://doi.org/10.1016/j.scs.2020.102619>.
- Simons, R.A., Henning, M., Poeske, A., Trier, M., Conrad, K., 2021. Covid-19 and its effect on trip mode and destination decisions of transit riders: experience from Ohio.

- Transport. Res. Interdiscipl. Persp. 11, 100417. <https://doi.org/10.1016/j.trip.2021.100417>.
- Soorani, F., Ahmadvand, M., 2019. Determinants of consumers' food management behavior: applying and extending the theory of planned behavior. *Waste Manag.* 98, 151–159. <https://doi.org/10.1016/j.wasman.2019.08.025>.
- Sreen, N., Dhir, A., Talwar, S., Tan, T.M., Alharbi, F., 2021. Behavioral reasoning perspectives to brand love toward natural products: moderating role of environmental concern and household size. *J. Retailing Consum. Serv.* 61, 102549. <https://doi.org/10.1016/j.jretconser.2021.102549>.
- Suhail, P., Srinivasulu, Y., 2021. Perception of service quality, satisfaction, and behavioral intentions in Ayurveda healthcare. *J. Ayurveda Integr. Med.* 12 (1), 93–101. <https://doi.org/10.1016/j.jaim.2020.10.011>.
- Suresh, S., Vasantha, S., 2021. Influence of logistics service quality among customer satisfaction using IoT based techniques. *Mater. Today Proc.* <https://doi.org/10.1016/j.matpr.2020.11.764>.
- Sweeney, J.C., Soutar, G.N., 2001. Consumer perceived value: the development of a multiple item scale. *J. Retailing* 77, 203–220. [https://doi.org/10.1016/S0022-4359\(01\)00041-0](https://doi.org/10.1016/S0022-4359(01)00041-0).
- Tandon, A., Dhir, A., Kaur, P., Kushwah, S., Salo, J., 2020. Why do people buy organic food? The moderating role of environmental concerns and trust. *J. Retailing Consum. Serv.* 57, 102247. <https://doi.org/10.1016/j.jretconser.2020.102247>.
- Tapang, L., 2021. Save the children Philippines raises concern on increasing number of children with COVID-19; calls for immediate action and protection by government and general public, Save the children Philippines. Retrieved from. <https://reliefweb.int/report/philippines/save-children-philippines-raises-concern-increasing-number-children-covid-19>.
- Taufique, K.M.R., Vaithianathan, S., 2018. A fresh look at understanding green consumer behavior among young urban Indian consumers through the lens of theory of planned behavior. *J. Clean. Prod.* 183, 46–55. <https://doi.org/10.1016/j.jclepro.2018.02.097>.
- Tran, V.D., 2020. Assessing the effects of service quality, experience value, relationship quality on behavioral intentions. *J. Asian Finan. Econ. Busin.* 7 (3), 167–175. <https://doi.org/10.13106/jafeb.2020.vol7.no3.167>.
- Tse, D.K., Wilton, P.C., 1988. Models of consumer satisfaction formation: an extension. *J. Market. Res.* 25 (2), 204. <https://doi.org/10.2307/3172652>.
- Unnikrishnan, A., Figliozzi, M., 2021. Exploratory analysis of factors affecting levels of home deliveries before, during, and post- COVID-19. *Transport. Res. Interdiscipl. Persp.* 10, 100402. <https://doi.org/10.1016/j.trip.2021.100402>.
- Uzir, M.U., Al Halbusi, H., Thurasamy, R., Thiam Hock, R.L., Aljaberi, M.A., Hasan, N., Hamid, M., 2021. The effects of service quality, perceived value, and trust in home delivery service personnel on customer satisfaction: evidence from a developing country. *J. Retailing Consum. Serv.* 63, 102721. <https://doi.org/10.1016/j.jretconser.2021.102721>.
- Uzir, M.U., Jerin, I., Al Halbusi, H., Hamid, A.B., Latiff, A.S., 2020. Does quality stimulate customer satisfaction where perceived value mediates and the usage of social media moderates? *Heliyon* 6 (12). <https://doi.org/10.1016/j.heliyon.2020.e05710>.
- Villa, R., Monzón, A., 2021. Mobility restrictions and e-commerce: holistic balance in Madrid centre during COVID-19 lockdown. *Economies* 9 (2), 57. <https://doi.org/10.3390/economies9020057>.
- Wagner, M., 2005. How to reconcile environmental and economic performance to improve corporate sustainability: corporate Environmental Strategies in the European Paper Industry. *J. Environ. Manag.* 76 (2), 105–118. <https://doi.org/10.1016/j.jenvman.2004.11.021>.
- Wang, J.J., Xiao, Z., 2015. Co-evolution between e-tailing and parcel express industry and its geographical imprints: the case of China. *J. Transport Geogr.* 46, 20–34. <https://doi.org/10.1016/j.jtrangeo.2015.05.005>.
- Westbrook, R.A., Reilly, M.D., 1983. Value-percept disparity: an alternative to the disconfirmation of expectations theory of consumer satisfaction, in NA - advances in Consumer Research. In: Bagozzi, Richard P., Tybout, Alice M., Ann Abor, M.I. (Eds.), *Association for Consumer Research*, vol. 10, pp. 256–261.
- Yakasai, A.B., Jusoh, W.J., 2015. Testing the theory of Planned behavior in determining intention to use digital coupon among university students. *Procedia Econ. Fin.* 31, 186–193. [https://doi.org/10.1016/s2212-5671\(15\)01145-4](https://doi.org/10.1016/s2212-5671(15)01145-4).
- Yamane, Taro, 1967. *Statistics: an Introductory Analysis*, second ed. Harper and Row, New York.
- Yang, F., Tan, J., Peng, L., 2020. The effect of risk perception on the willingness to purchase hazard insurance—a case study in the Three Gorges Reservoir region, China. *Int. J. Disaster Risk Reduc.* 45, 101379. <https://doi.org/10.1016/j.ijdrr.2019.101379>.
- Yin, H., Huang, S., 2021. Applying structural equation modelling to research on teaching and teacher education: looking back and forward. *Teach. Teach. Educ.* <https://doi.org/10.1016/j.tate.2021.103438>, 103438.
- Yuda Bakti, I.G., Rakhmawati, T., Sumaedi, S., Widiati, T., Yarmen, M., Astrini, N.J., 2020. Public transport users' WOM: an integration model of the theory of planned behavior, customer satisfaction theory, and personal norm theory. *Transport. Res. Procedia* 48, 3365–3379. <https://doi.org/10.1016/j.trpro.2020.08.117>.
- Yusif, S., Hafeez-Baig, A., Soar, J., Teik, D.O., 2020. PLS-SEM path analysis to determine the predictive relevance of e-health readiness assessment model. *Health Technol.* 10 (6), 1497–1513. <https://doi.org/10.1007/s12553-020-00484-9>.
- Zeithaml, V.A., 1988. Consumer perceptions of price, quality, and value: a means-end model and synthesis of evidence. *J. Market.* 2–22.
- Josephine D. German** is a PhD in Industrial Engineering candidate and an Instructor in Mapúa University. Research Interest: Logistics and Supply Chain Management.
- Anak Agung Ngurah Perwira Redi** is an Assistant Professor in Bina Nusantara University. Research Interest: Supply chain management.
- Yogi Tri Prasetyo** is an Associate Professor/Distinguished Professor in Mapúa University. Research Interest: Human Factors and Ergonomics.
- Satria Fadil Persada** is an Assistant Professor in Bina Nusantara University. Research Interest: Behavioral Science, Consumer Behavior, Organizational Behavior, Marketing.
- Ardvin Kester S. Ong** is a graduate of PhD in Industrial Engineering in Mapúa University. Research Interest: Consumer Behavior, Data Mining, Machine Learning.
- Michael N. Young** is an Associate Professor/Dean in Mapúa University. Research Interest: Financial Engineering and Portfolio Selection.
- Reny Nadlifatin** is an Assistant Professor in Institut Teknologi Sepuluh Nopember. Research Interest: Technology Adoption, Behavioral Technology.