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Antecedents of Behavioral Intentions for Purchasing Hybrid Cars Using Sustainability Theory of Planned Behavior Integrated with UTAUT2

Ardvin Kester S. Ong [1,*], Josephine D. German [1], Anak Agung Ngurah Perwira Redi [2], Lara Nicole Z. Cordova [3], Franscine Althea B. Longanilla [3], Neallo L. Caprecho [3] and Rocksel Andry V. Javier [3]

[1] School of Industrial Engineering and Engineering Management, Mapúa University, 658 Muralla St., Intramuros, Manila 1002, Philippines
[2] Industrial Engineering Department, Faculty of Engineering and Technology, Sampoerna University, Jakarta 12780, Indonesia
[3] Young Innovators Research Center, Mapúa University, 658 Muralla St., Intramuros, Manila 1002, Philippines
* Correspondence: aksong@mapua.edu.ph; Tel.: +63-(2)-8247-5000 (ext. 6202)

Abstract: Hybrid cars were developed and are widely utilized in developed countries due to their sustainability advantages. However, developing countries were seen to underutilize this product where research showed that the economic, societal, and environmental concerns were considered by consumers. The current study aimed to assess the behavioral intentions for purchasing hybrid cars with the use of an established new framework called sustainability theory of planned behavior (STPB) and integrated with the Unified Theory of Acceptance and Use of Technology (UTAUT2) model. A total of 1048 valid respondents were purposely gathered to completely assess the behavioral, technological, and sustainable domains of purchasing intentions of hybrid cars through structural equation modeling. From the results, the perceived economic concerns and perceived authority support showed the most significant factor indirectly affecting behavioral intention to purchase hybrid cars, followed by perceived environmental concern. All domains under the theory of planned behavior were significant. However, only performance expectancy, hedonic motivation, and price value were deemed significant on the technological aspect. With the underutilization of hybrid cars in the country, habit, effort expectancy, and facilitating conditions were insignificant. The theoretical framework can be used independently (STPB), or as a whole, for the evaluation of purchasing intention of eco-friendly or smart technologies products. This study was also able to provide implications on the behavioral, managerial, and sustainability aspects of hybrid cars. Lastly, the theoretical implications suggested that the sustainability theory of planned behavior may be extended or applied in holistically assessing different product evaluation, industries, and related studies—even in different countries.

Keywords: behavioral intentions; hybrid cars; sustainability; sustainability theory of planned behavior; UTAUT2

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1. Introduction

Sustainable manufacturing, products, and usage are widely critical in the current generation. Their engineering development in the modern world is highly needed [1]. It was suggested that the development of smart technology, manufacturing, and production of materials is one way to ensure sustainability. Park and Lin [2] highlighted topics regarding eco-consumerism, beliefs, and attitude for purchasing these sustainable products. However, despite the effort of manufacturing and production industries on developing sustainable and smart technology, the consumer's purchasing intention is still one aspect that is lacking. The achievement of eco-design, practices, and tools should be inclined with consumers' attitude and intention to achieve environmental sustainability [3]. As explained in the

study of Jouzdani and Govindan [4], factors such as environmental and social variables should be considered to have a holistic aspect of sustainability which would also impact the economic aspects. The need to assess purchasing intentions of consumers with smart technologies such as hybrid cars should, therefore, be explored to promote the sustainable aspects of smart technologies being developed.

Hybrid cars are a combined traditional internal combustion engine with an electric propulsion system. This was developed since the transportation sector contributes to the widespread carbon emissions. Tiseo [5] presented that approximately 7.3 billion tons of carbon emission was released by passenger vehicles in 2020. This contributes to 41% of the global emission in the transportation aspect. The report of Wasiak [6] showed the drawbacks of internal combustion engines running on fossil fuels. He indicated that the conversion of energy through combustion produces low efficiency and high carbon emission. Second, the exhaustion of greenhouse gases it emits contribute to global warming. With that, the development of hybrid cars as smart technology and technology advancement to address these concerns were employed. The development of this advancement helped the sustainability aspect by covering three United Nations' global sustainable development goals (SDG), namely affordable and clean energy (7th), decent work and economic growth (8th), and climate action (13th). Therefore, hybrid cars were promoted due to their advantages [7]. Despite the promotion, hybrid cars are still unknown to developing countries and are underutilized; also, consumers' intention is underexplored.

In the Philippines, annual vehicle sales increased in the earlier decades. It was not until recently (2018) that the sales dropped [8]. It was only in 2020 when the Philippine consumers purchased hybrid cars—378 in 2020, 843 in 2021, and 1013 in 2021 [9]. Comparing these purchases worldwide, this accounts only for 0.15% of the purchased electric or hybrid cars with Toyota Motors Corporation, Honda Motor Company Ltd., BYD Co. Ltd., Mercedez-Benz Group, and BMW AG as top players in the vehicle market. However, the challenge in market penetration despite the promising hybrid cars for sustainable transportation is evident in the Philippines [10]. An initial survey was conducted among 2000 drivers and only about 50% responded with their familiarity regarding this sustainable vehicle. This shows that consumers are unaware of this product, which causes their low purchase and utility and, therefore, does not serve its purpose in the Philippines.

Rivera and Felipe [11] explained in an article that the Philippines plans to support the roll-out and utilization of hybrid cars. It was expounded how law-makers wanted to provide hybrid car opportunities by making hybrid cars tax free. Similarly, a recent article by Talavera [12] extended the explanation indicating how foreign companies bat an eye of zero tariff among hybrid cars in the Philippines. This presents economic distress as one of the key factors for why hybrid cars are not totally considered. Among the literature, Kapustin and Rakov [13] expounded on the transportation cost, manufacturing, and production of hybrid cars—expounding on its high economic cost but relatively lower carbon emission. Zamil et al. [14], on the other hand, argued that long-term cost would present lower economic distress with hybrid cars than traditional cars. The problem at hand would, therefore, be consumers' ability to purchase it before experiencing the long-term benefits of hybrid cars. Due to its eco-friendly and environmental impact, studies such as that of Tanwir and Hamzah [15] showcased the positive behavioral intention of people in purchasing hybrid cars, leaning more on the government support, consumer awareness, and environmental impacts. Therefore, economic aspects would be part of the high consideration factors when dealing with pro-environmental behavior [16].

In accordance, since hybrid cars are considered smart technology, measurement of users' perception should also be considered. The study of Yuduang et al. [17] explained how the use of the Unified Theory of Acceptance and Use of Technology (UTAUT2) is common for technologies that are not highly established in the users' perspective, while TAM is used for those who developed the habit of using the system. The aim of this study was to assess the antecedents of behavioral intentions for the purchase of hybrid cars using the STPB integrated with UTAUT2. The promotion of the STPB was considered in this study

as a newly developed framework which could be utilized to assess sustainable-related behaviors among individuals. Using structural equation modelling, this study assessed the different factors under the frameworks considered holistically. This is the first study that considered sustainability domains with the behavioral aspects of an individual through the use of the STPB. In addition, this is considered to be the first study to completely and holistically assess the purchasing intentions of hybrid cars in the Philippines. The theoretical framework can be used independently (STPB), or as a whole, for the evaluation of purchasing intention of eco-friendly or smart technologies products. This study was also able to provide implications on the behavioral, managerial, and sustainability aspects of hybrid cars.

2. Conceptual Framework

2.1. Theories and Literature Review

As suggested by several studies, the behavioral aspect of consumers should be evaluated to assess purchasing intention. One of the highly recommended theories that should be considered is the theory of planned behavior (TPB) [18]. Recent advances in the TPB were evaluated and were seen to cover different aspects [19]. Studies such as that of Hwang et al. [20] and German et al. [21] extended the TPB in order to encompass other factors affecting behavioral aspects. The study of Hwang et al. [20] considered the environmental management aspect in the additional variable to assess eco-friendly food delivery services. In the case of German et al. [21], their study considered an extension of TPB with factors such as perceived environmental concerns and perceived authority support from the government to analyze factors affecting pro-environmental behaviors. With both studies, one factor under the sustainability domains was not considered, the economic variable.

With the recent advancement in technology and smart production and manufacturing, Hajishirzi et al. [22] expounded on the sustainability boost upon consideration of the three domains. The paper review made by Mensah [23] justified the consideration of environmental, economic, and societal domains—which can be considered as support from the government [16]. The incorporation, therefore, if the three sustainability domains would represent a ubiquitous development in the sustainability paradigm [16,21]. With that, this study considered the extension of TPB following the study of German et al. [16] with the extension of economic aspects to present the Sustainability Theory of Planned Behavior (STPB), as seen in Figure 1. The hypotheses for the interrelationships of the variables are explained in the succeeding section.

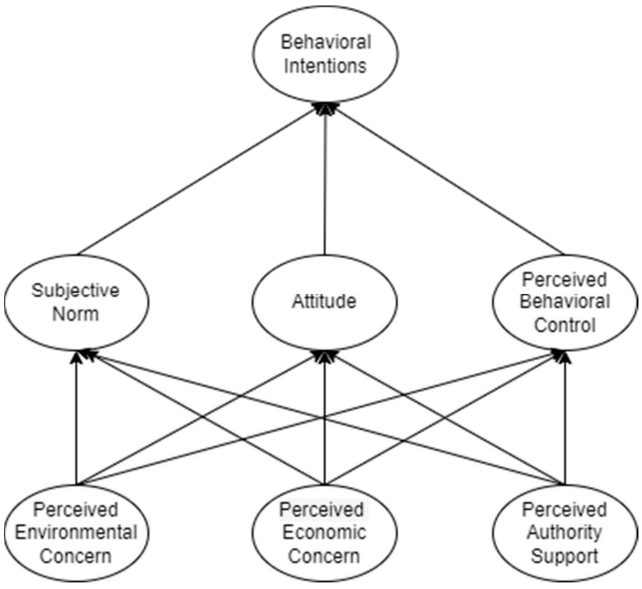

Figure 1. Sustainability Theory of Planned Behavior.

2.2. Conceptual Framework

The integrated Sustainability Theory of Planned Behavior and UTAUT2 utilized in this study are presented in Figure 2. A total of 18 hypotheses were created, encompassing the developed framework: six from the UTAUT2 and twelve from the STPB. The presentation of the creation of hypotheses to support the integration are presented in this section, showing all the emerging interrelationships of latent variables. Based on related studies [17–32], the establishment of UTUAT2 affecting behavioral intentions were established to have a positive significant effect. Moreover, the extension of TPB with environmental factors also presented a positive significant effect on behavioral domains and an indirect effect on behavioral intentions [16,21]. However, like other frameworks, the addition of latent variable should be re-established due to the causal effect it presents when assessed simultaneously [33].

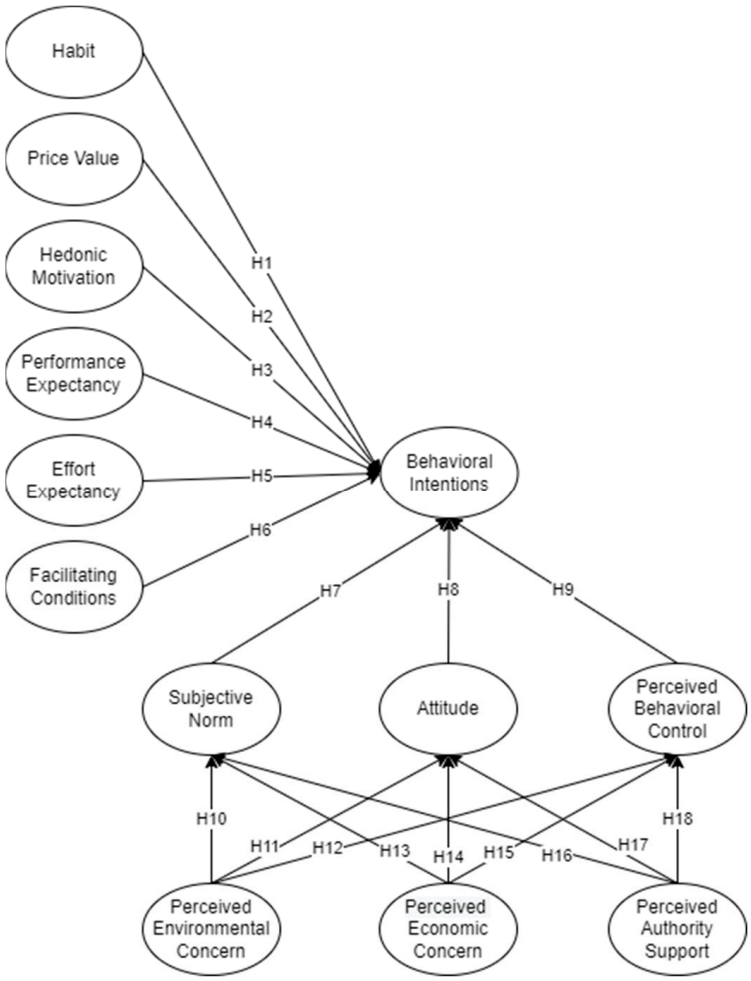

Figure 2. Conceptual Framework of the study.

As presented in the study of Venkatesh et al. [24], the UTAUT2 framework assesses the acceptance of consumers in relation to their acceptance in the use of a certain technology. This established framework was highly utilized in different factor analysis of smart vehicles and transportation. This was similar to the study of Khazaei and Tareq [25], who analyzed the adoption of drivers in Malaysia for the usage of electric cars. Their study showcased the extension of innovativeness as a mediating effect towards the UTAUT2 framework with established measured items relating to sustainability. Their results presented how social influence, perceived enjoyment (i.e., hedonic motivation), facilitating conditions, and environmental concerns affected the adoption of Malaysians towards electric cars.

Khazaei [26] focused on the adoption of battery electric vehicles in Malaysia, while the study of Manutworakit and Choocharukul [27] focused on drivers in Thailand. Utilizing UTAUT2, their results showed effort and performance expectancy, environmental concerns through the item measures, and hedonic motivation as significant factors affecting adoption of battery electric vehicles. On the other hand, Gunawan et al. [28] presented price value and its corresponding risks, performance and effort expectancy, and facilitating conditions as significant factors affecting intention to use. In another study by Curtale et al. [29], the researchers focused on electric car-share services in the Netherlands. Performance expectancy, effort expectancy, and trust directly affected the behavioral intentions of individuals. The study of Roemer and Henseler [30] from Germany showed that the performance of smart vehicles affected people's usage intentions.

Focusing on smart technology acceptance among smart cities, Dirsehan and van Zoonen [31] found that performance and effort expectancy aligning to this study affected people's acceptance. Feys et al. [32] established how hedonic motivation affected people in the Brussels-Capital Region for acceptance of autonomous shuttle rides. In addition, price value, hedonic motivation, performance and effort expectancy, and facilitating conditions affected people in the Himalayan region's adoption to accept electric vehicles. The drivers' adoption in China with electric vehicles showed habit, price value, hedonic motivation, performance expectancy, effort expectancy, and facilitating conditions as latent variables affecting behavioral intentions. Therefore, with the latent variables aforementioned as highly established in smart or electric vehicles, the following were hypothesized in aiming to assess purchasing intention for the use of hybrid cars:

H1. *Habit has a direct significant effect on behavioral intentions;*

H2. *Price Value has a direct significant effect on behavioral intentions;*

H3. *Hedonic Motivation has a direct significant effect on behavioral intentions;*

H4. *Performance Expectancy has a direct significant effect on behavioral intentions;*

H5. *Effort Expectancy has a direct significant effect on behavioral intentions;*

H6. *Facilitating Conditions has a direct significant effect on behavioral intentions.*

A study in Indonesia by Gunawan et al. [28] utilized UTAUT2 and TPB integration for analysis of intention to use electric vehicles. Through TPB, attitude was seen to present the most contributing variable, followed by subjective norm, and perceived behavioral control. Other factors under UTAUT2 were deemed significant for usage intentions from their findings. For purchasing intentions of electric vehicles, Jayasingh et al. [34] established the three domains of TPB as highly influential factors affecting the purchasing intentions of people in India. The study of Karuppiah and Ramayah [35] showed how perceived behavioral control affected people's purchasing intentions of hybrid cars. They expounded on factors such as price which weakened the results for purchasing intentions. Moreover, Wang et al. [36] established how the relationship of the three domains of TPB affected the purchase intention of sustainable cars. Therefore, the following were hypothesized:

H7. *Subjective Norm has a direct significant effect on behavioral intentions.*

H8. *Attitude has a direct significant effect on behavioral intentions.*

H9. *Perceived Behavioral Control has a direct significant effect on behavioral intentions.*

Wang et al. [36] expounded on the effect of the three domains of TPB being affected by green product concerns of citizens in China. Their study explained that environmental

concerns affected attitudes with a significant negative effect. It was seen that students negated purchasing hybrid cars to be pleasant, wise, desirable, and good. Arguably, people in the Philippines were seen to have a positive behavioral impact when environmental concerns and authority support are seen [16]. Aligned with the study of Wang et al. [36], Zhou et al. [37] showed how the environmental effects of purchasing green cars would influence perceived behavioral control and subjective norms, while German et al. [16] showed a positive effect of the environmental and authority concerns in purchasing intentions. Different studies and citizens showed different output. This indicates that the environmental concern perception would depict the positive or negative behavior brought upon the behavioral intention of consumers. In the study of Shipley and van Riper [38], the guilt of people, rather than pride, was more significant, i.e., as to why they would have a positive pro-environmental behavior. Thus, to identify the variability of harmful emissions among vehicular technologies, this study opted to evaluate the perception of people regarding environmental concern affecting their behaviors. It was hypothesized that:

H10. *Perceived environmental concern has a direct significant effect on subjective norm;*

H11. *Perceived environmental concern has a direct significant effect on attitude;*

H12. *Perceived environmental concern has a direct significant effect on perceived behavioral control.*

The reduction in carbon emission is a great motivation for consumers to accept the usage of electric vehicles [30]. Their study showed how environmental concerns affected people's behavioral aspects. It was seen that as long as the vehicle achieved its purpose, sustainability would be a significant factor affecting consumer behavior. However, research showed how people are more concerned on the economic aspects when it comes to purchasing green products. Pan et al. [39] showed that the environmental, economic, and societal aspects affected the TPB domains for acceptance of electric vehicles. In another study, Tanwir and Hamzah [15] showed that sustainability domains such as the environmental, societal (e.g., authority support), and economic aspects affected purchasing intentions of electric vehicles. Carlucci et al. [40] justified the consideration of sustainability domains in which green car manufacturing companies are aligning their product, manufacturing, even design with the expected modern transportation with an attempt to reduce costs. Developers of green cars, however, are challenged with the costs and consumer perspective. Chen et al. [41], for example, showed the need for government support, incentives, and a reduction in costs to promote the use and purchase of hybrid cars. Without this support, it was explained in their study how the drop in sales and consideration of hybrid cars among consumers would be evident.

On the other hand, Mahroogi and Narayan [42] expounded on the benefits of using hybrid cars regarding a reduction in fuel costs, carbon emission, and higher performance level compared to traditional cars. However, the challenge would end up with the purchase of consumers due to economic concerns with hybrid cars being more expensive than traditional cars [13]. Evidence on the economic aspects as one of the main issues with hybrid cars were proven [11–15], but its relation to consumers' behavioral intention along with pro-environmental factors are not yet established. Thus, economic factors need to be taken into account. The perceived economic concerns may influence the behaviors of consumers, which is why this study hypothesized that:

H13. *Perceived economic concern has a direct significant effect on subjective norm;*

H14. *Perceived economic concern has a direct significant effect on attitude;*

H15. *Perceived economic concern has a direct significant effect on perceived behavioral control.*

With regard to country development, establishing smart technologies and sustainable aspects, the government can play a large influential role. As explained in the study of German et al. [21], the Philippines have a supportive government with regard to positive sustainable behavior among citizens. For example, the study of Jin and Rainey [43] surveyed government sector employees and showed a positive outcome when incentivized behaviors were presented. This means that the more rewarding and supportive the government is, the more likely people will have positive behaviors on their intended actions. As influential as the government is to the country, Tummers [44] expressed that citizens would change depending on the support given to them by the government. This aspect, therefore, could infer that behaviors of citizens would be affected by the perception of government support. The sustainability theory of planned behavior was considered in this study to promote the holistic measurement of environmental, authority (i.e., societal), and economic concerns with TPB domains, which is hypothesized to affect consumer intention. Therefore, the following were hypothesized:

H16. *Perceived authority support has a direct significant effect on subjective norm;*

H17. *Perceived authority support has a direct significant effect on attitude;*

H18. *Perceived authority support has a direct significant effect on perceived behavioral control.*

3. Methodology

3.1. Participants

A total of 1048 valid responses were gathered through the convenience sampling approach. The survey questionnaire was posted and distributed on different social media platforms such as Facebook groups, Viber, Twitter, and Instagram [14] with captions and an introduction of the study, its objectives, and purpose. Adopting the suggestion of Edgar and Manz [45], the Internet could be utilized to target vehicle-related groups, public posts, and group chats to provide numerous valid responses and limit the bias. This non-probabilistic manner of data collection was indicated to be widely utilized due to its effectivity in collecting varied responses without hassle on the researcher [45]. Out of 2000 participants, only 1048 were considered, which were respondents drive and have a driver's license, own a car, and have the capabilities to purchase whatever type of car.

The survey was made available from October 2022 to December 2022. Filtration of responses was carried out to clean the data and consider only those aligned with the objective of the study. German et al. [16] presented that it only takes 400 valid responses for generalization in the Philippine population of 62.6 million (adults and children) at 95% accuracy. Presented in Table 1 are the descriptive statistics of the demographics.

Table 1. Descriptive statistics of the respondents (n = 1048).

Characteristics	Category	N	%
Gender	Male	902	86.1
	Female	146	13.9
Age	18–22 years old	5	0.50
	23–22 years old	341	32.5
	30–22 years old	365	34.8
	37–22 years old	192	18.3
	44–50 years old	97	9.30
	51 years old and older	48	4.60
Monthly Salary/Allowance	<20,000 PHP	43	4.10
	20,001–30,000 PHP	52	5.00
	30,001–40,000 PHP	310	29.6
	40,001–50,000PHP	495	47.2
	50,001–60,000 PHP	114	10.9
	>60,000 PHP	34	3.20

Table 1. *Cont.*

Characteristics	Category	N	%
Marital Status	Single	487	46.5
	Married	553	52.8
	Separated	4	0.40
	Widowed	4	0.40
Educational Background	High School Graduate	7	0.67
	Technical-Vocation Graduate	2	0.19
	College Graduate	992	94.7
	Master's Degree	45	4.29
	PhD Degree	2	0.19

3.2. Questionnaire

Presented in the appendix section (Appendix A) are the items that were utilized in this study. Obtained from related studies presented in Section 2, 52 adapted questionnaire items were considered; adapting items which considered similar theories and latent variables which should be tested for normality [46]. A total of 24 items were for the UTAUT2 variables [24,47–55], 24 for STPB [16,18,21,32,36,56,57], and 4 for behavioral intentions [53]. Considering a 5-point Likert scale following German et al. [16,21], complete answers from all respondents were obtained.

3.3. Structural Equation Modelling

Behavioral intentions, especially in vehicles related to sustainability are usually measured using structural equation modeling (SEM) [34]. SEM is a tool that depicts the interrelationship among latent variables. As explained from the study of Dash and Paul [58], both CB-SEM and PLS-SEM can produce reliable output. Mostly, CB-SEM is utilized for established frameworks, integrated frameworks, and extended frameworks. Moreover, CB-SEM would be highly applicable for structural relationships [58,59]—which this study wants to prove. Compared to CB-SEM, PLS-SEM is focused more on the factor loading and is better suited for its own developed models. Jayasingh et al. [34] assessed people's purchasing intentions of electric two-wheeler vehicles using SEM. They explained that SEM could be utilized, especially when dealing with social science-related studies such as people's intention. Alongside the explanation, Hair [33] and German et al. [16] explained that SEM is a multivariate tool that is used to assess the intercorrelation of direct, indirect, and total effects of latent variables. In addition, the use of covariance SEM (CB-SEM) was established to be beneficial if a large sample size is considered (>500) [58]. In addition, more sensitive analysis is presented when using CB-SEM due to its factor-based analysis. With a lower threshold, a more holistic measurement is evident in using CB-SEM since the calculation provides better model indices [58]. Karuppiah and Ramayah [35] and Khazaei [26] also utilized SEM in analyzing adoption of electric vehicle in different countries using extended UTAUT2, TPB, and sustainability aspects [14,28].

In this study, the CB-SEM was employed using AMOS v24. Specifically, a maximum likelihood estimation method was used at 95% confidence and modification indices was applied for the final SEM and model fit validity [33,58,59]. To explore on valid items, a threshold of 0.5 among items and p-value ≤ 0.05 among relationships presented significant measures [33]. On the other hand, the additional validity tests such as the Fornell–Larcker criterion, heterotrait-monotrait ratio, MSV, ASV, and VIF, aside from the usual measures, were considered to fully validate both discriminant and convergent validity of the model, including the multicollinearity measures. This would fully attest to the overall SEM output of this study [33,59].

4. Results

The initial SEM for purchasing intentions of hybrid cars is presented in Figure 3. Following the suggestion of Hair [33], he expounded on the threshold for the direct effect of latent variables. The relationship with p-value greater than 0.05 would be deemed

insignificant, which was evident in habit (H1), effort expectancy (H5), and facilitating conditions (H6). In addition, setting a threshold of 0.50 for the measured items was considered [33,58]. From the initial SEM, all items were deemed significant. The detailed initial output of the items and constructs are presented in Appendix B. The factor loading of the initial and final SEM, mean, standard deviation, skewness, kurtosis, and Shapiro–Wilk results are presented. Based on the results, it could be deduced that mean and standard deviation presented acceptable output with positive skewness. This indicates that the right tail was longer and broader, indicating greater mean and median value than the mode [60]. However, the value was within −0.5 and 0.5, which indicates symmetrical results [61]. On the other hand, positive kurtosis indicates a lighter tail compared to normal distribution. As explained [60,61], it pertains to the outlier as a potential, yet it had a less extreme outcome due to the positive values. It presented the positive tail distribution rather than anything else. Justifying the results presents a Shapiro–Wilk value within ±1.96, indicative of a relatively normal distribution [33]. Prior to considering the data collected, Harman's single factor test for common method bias was calculated. The output presented 33.07%, which is within the threshold of less than 50% [46].

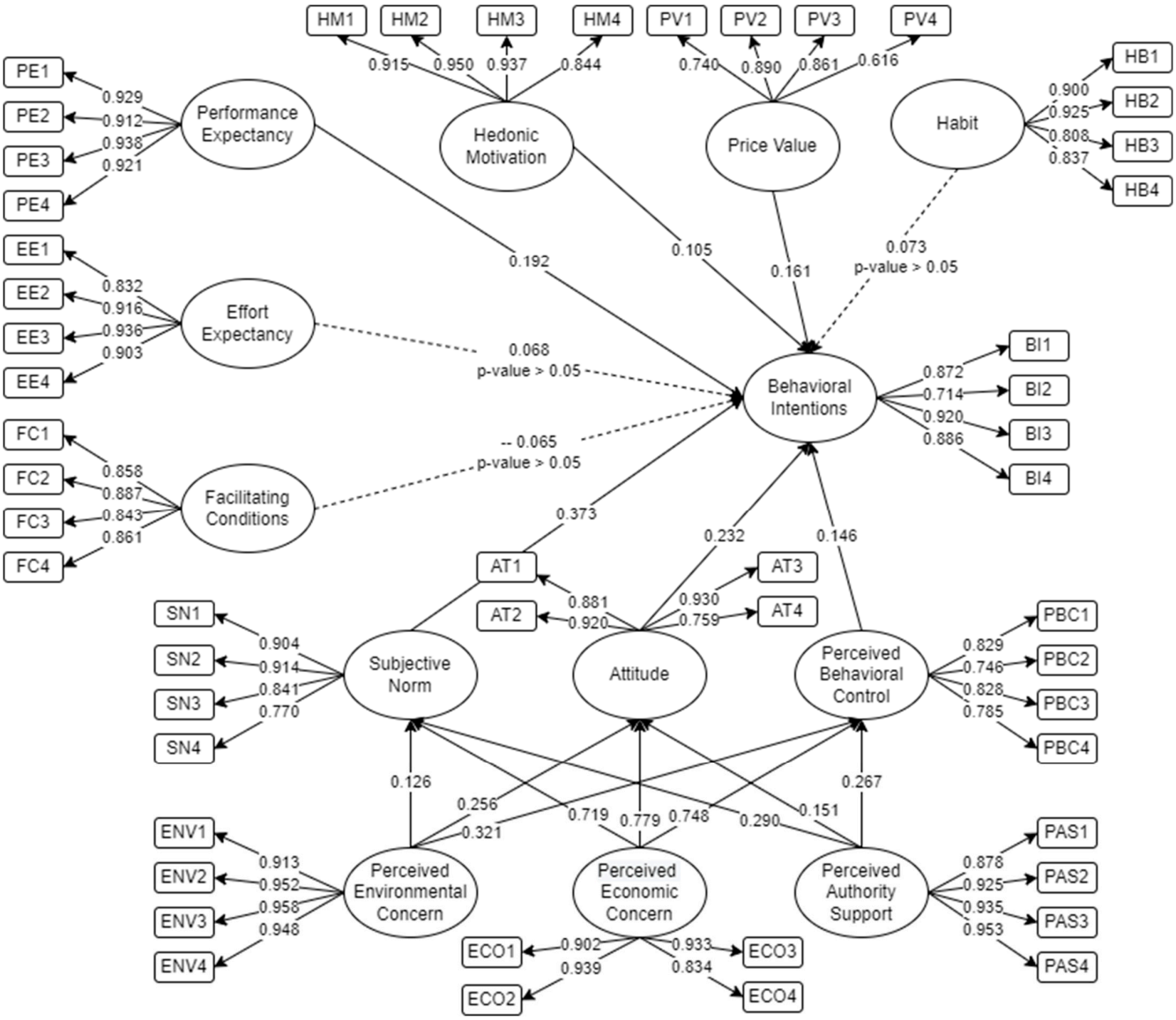

Figure 3. Initial SEM with indicators for behavioral intentions of hybrid car purchase.

In addition, Table 2 presents the initial SEM model fit. According to thresholds set by related studies [62,63], the model fit is not acceptable. Following the suggestion of Hair [33], modification indices could be utilized to enhance the model fit, which is carried out through error reduction. After the removal of the insignificant latent variables, the SEM analysis with modification indices was conducted to present the final model.

Table 2. Model Fit of Initial SEM.

Goodness of Fit Measures of SEM	Parameter Estimates	Minimum Cut-Off	Suggested by
Incremental Fit Index (IFI)	0.853	>0.80	Gefen et al. [64]
Tucker–Lewis Index (TLI)	0.822	>0.80	Gefen et al. [64]
Comparative Fit Index (CFI)	0.853	>0.80	Gefen et al. [64]
Goodness of Fit Index (GFI)	0.725	>0.80	Gefen et al. [64]
Adjusted Goodness of Fit Index (AGFI)	0.779	>0.80	Gefen et al. [64]
Root Mean Square Error (RMSEA)	0.075	<0.07	Steiger [65]

As seen in Figure 4, the remaining latent variables under UTAUT2 were price value (H2), hedonic motivation (H3), and performance expectancy (H4). On the other hand, the STPB interrelationship was still seen to be intact and had a significant effect on behavioral intentions for the purchase of hybrid cars. In addition, the descriptive statistics of the measured items and corresponding factor loadings are presented in detail in Appendix B.

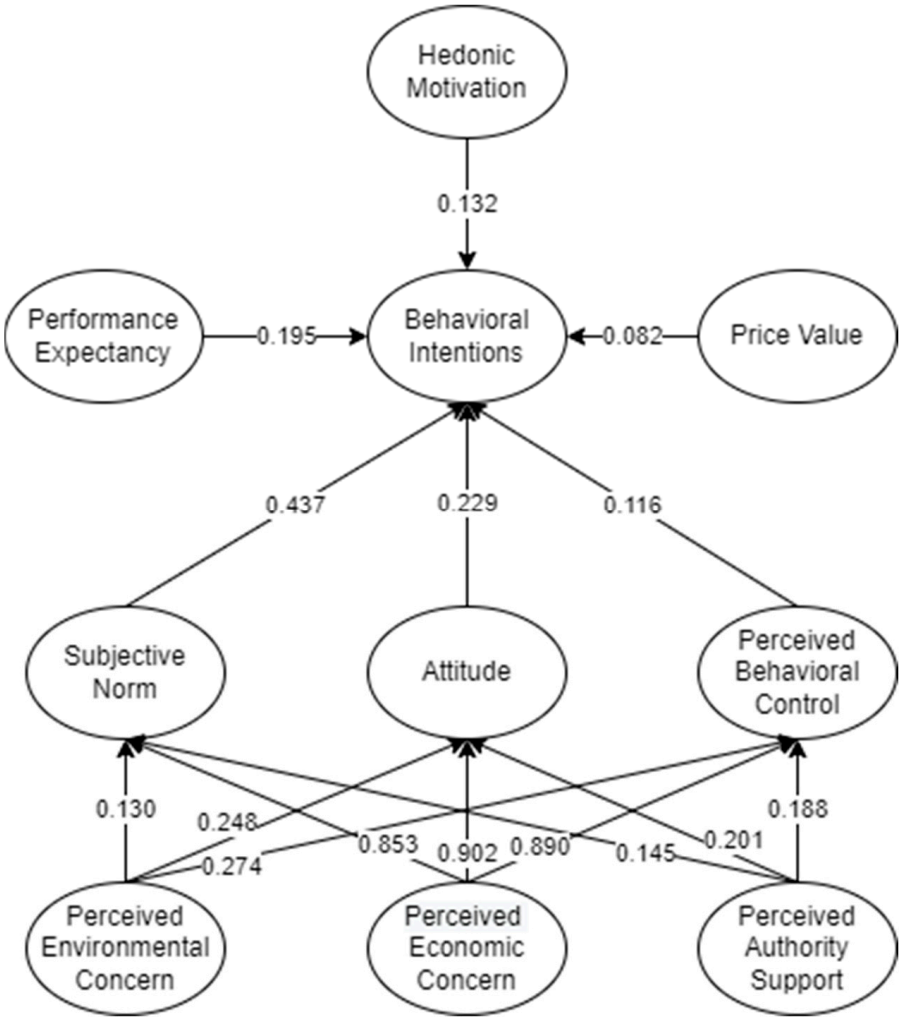

Figure 4. Final SEM for behavioral intentions of hybrid car purchase.

To assess the validity of the different latent variables, the composite reliability with 0.70 threshold, together with Cronbach's alpha, and 0.50 for the average variance extracted was considered [33]. As was evident in the results (Table 3), all latent variables showed greater values than the threshold which indicates acceptable measured items. However, these were standard general validity tests. According to Hair [33], similar to the studies of German et al. [16,21], further tests of discriminant and convergent validity are needed for the newly established model for a comprehensive analysis.

Table 3. Composite Reliability and Validity.

Factor	Cronbach's α	Composite Reliability (CR)	Average Variance Extracted (AVE)
Price Value	0.859	0.876	0.642
Hedonic Motivation	0.951	0.949	0.822
Performance Expectancy	0.959	0.957	0.846
Behavioral Intentions	0.951	0.923	0.752
Social Influence	0.945	0.923	0.751
Attitude	0.950	0.936	0.787
Perceived Behavioral Control	0.927	0.899	0.691
Perceived Environmental Concerns	0.970	0.969	0.888
Perceived Economic Concerns	0.947	0.902	0.698
Perceived Authority Support	0.959	0.955	0.841

Both the Fornell–Larcker criterion (FLC) and the heterotrait-monotrait ratio (HTMT) were tested in this study to determine the discriminant validity of the relationship. Adopting the condition discussed by Yang et al. [62] and Djimesah et al. [63], the output of FLC from this study is considered to be acceptable. It was explained that discriminant validity would be achieved if the diagonal values on the top most relationship are higher than the vertical and horizontal correlation coefficient values. All values from the output satisfied the condition, as seen in Table 4.

Table 4. Fornell–Larcker Criterion.

	PV	HM	PE	SN	AT	PBC	ENV	ECO	PAS	BI
PV	0.802									
HM	0.683	0.907								
PE	0.666	0.777	0.920							
SN	0.683	0.739	0.773	0.867						
AT	0.736	0.725	0.750	0.843	0.887					
PBC	0.704	0.698	0.724	0.815	0.825	0.831				
ENV	0.692	0.665	0.670	0.733	0.802	0.81	0.942			
ECO	0.678	0.688	0.718	0.803	0.841	0.848	0.841	0.836		
PAS	0.618	0.652	0.676	0.764	0.768	0.791	0.784	0.815	0.917	
BI	0.686	0.726	0.757	0.820	0.818	0.785	0.752	0.779	0.710	0.867

On the other hand, the HTMT was calculated to further validate and support the FLC output. HTMT adopts the Monte Carlo simulation-based analysis of correlation among latent variable relationship and measures the overall constructs. As explained in the study of Kline [66], a minimum value of the output should be 0.85, while Hair [33] presented 0.90. As seen in Table 5, discriminant validity was achieved with no value lower than 0.85.

Table 5. Heterotrait-Monotrait Ratio.

	HB	PV	HM	PE	EE	FC	SN	AT	PBC	ENV	ECO	PAS
PV	0.753											
HM	0.807	0.740										
PE	0.813	0.780	0.813									
EE	0.814	0.816	0.884	0.836								
FC	0.769	0.646	0.708	0.761	0.784							
SN	0.844	0.836	0.804	0.816	0.843	0.779						
AT	0.763	0.868	0.779	0.813	0.724	0.785	0.887					
PBC	0.844	0.808	0.785	0.787	0.812	0.758	0.826	0.832				
ENV	0.790	0.814	0.832	0.846	0.811	0.685	0.825	0.884	0.855			
ECO	0.836	0.784	0.885	0.789	0.794	0.721	0.627	0.734	0.734	0.774		
PAS	0.749	0.733	0.841	0.724	0.819	0.834	0.763	0.764	0.867	0.778	0.743	
BI	0.766	0.844	0.827	0.846	0.783	0.761	0.847	0.673	0.719	0.846	0.838	0.755

Lastly, for the measurement of convergent validity and multicollinearity, the maximum shared variance (MSV) and average shared variance (ASV) were considered, as explained by Hair [33] and Alumran et al. [67]. Both MSV and ASV should have values less than the AVE output for convergent validity to be achieved. Evidently, all values presented lower values with the variance inflation factor output less than 5. This indicates no multicollinearity among variables, which is evident from the results in Table 6.

Table 6. Convergent and Multicollinearity Validity.

	VIF	MSV	ASV
HB	2.691	0.529	0.463
PV	2.683	0.542	0.450
HM	3.377	0.604	0.494
PE	3.822	0.632	0.524
EE	4.257	0.590	0.543
FC	2.730	0.527	0.433
SN	4.091	0.711	0.636
AT	3.423	0.708	0.675
PBC	4.005	0.719	0.654
ENV	4.360	0.707	0.629
ECO	3.357	0.664	0.665
PAS	4.255	0.504	0.504

For the analysis of model fit indices to verify the acceptability of the final model, the study of Gefen et al. [64] for the CFI, IFI, GFI, TLI, and AGFI was employed. Their study explained that an acceptable model should have indices greater than 0.80, wherein all mentioned parameters are satisfied. In addition, Steiger [65] expressed a value less than 0.07 for RMSEA—wherein, this study showed 0.064 result as seen in Table 7. This means that the final SEM is accepted. Thus, the different measured direct, indirect, and total effects were recorded and are presented in Table 8.

Table 7. Model Fit.

Goodness of Fit Measures of SEM	Parameter Estimates	Minimum Cut-Off	Suggested by
Incremental Fit Index (IFI)	0.891	>0.80	Gefen et al. [64]
Tucker–Lewis Index (TLI)	0.884	>0.80	Gefen et al. [64]
Comparative Fit Index (CFI)	0.890	>0.80	Gefen et al. [64]
Goodness of Fit Index (GFI)	0.857	>0.80	Gefen et al. [64]
Adjusted Goodness of Fit Index (AGFI)	0.821	>0.80	Gefen et al. [64]
Root Mean Square Error (RMSEA)	0.064	<0.07	Steiger [65]

Table 8. Direct, Indirect, and Total Effects.

No	Variable	Direct Effect	*p*-Value	Indirect Effect	*p*-Value	Total Effect	*p*-Value
1	PAS → PBC	0.188	0.047	-	-	0.188	0.047
2	PAS → AT	0.201	0.023	-	-	0.201	0.023
2	PAS → SI	0.145	0.023	-	-	0.145	0.023
3	PAS → BI	-	-	0.074	0.025	0.074	0.025
4	ECO → PBC	0.890	0.014	-	-	0.890	0.014
5	ECO → AT	0.902	0.026	-	-	0.902	0.026
6	ECO → SI	0.853	0.009	-	-	0.853	0.009
7	ECO → BI	-	-	0.683	0.012	0.683	0.012
8	ENV → PBC	0.274	0.009	-	-	0.274	0.009
9	ENV → AT	0.248	0.005	-	-	0.248	0.005
10	ENV → SI	0.130	0.011	-	-	0.130	0.011
11	ENV → BI	-	-	0.145	0.004	0.145	0.004
12	PE → BI	0.195	0.013	-	-	0.195	0.013
13	HM → BI	0.132	0.017	-	-	0.132	0.017
14	PV → BI	0.082	0.044	-	-	0.082	0.044
15	PBC → BI	0.116	0.024	-	-	0.116	0.024
16	AT → BI	0.229	0.006	-	-	0.229	0.006
17	SN → BI	0.437	0.020	-	-	0.437	0.020

5. Discussion

With a focus on sustainable products, different countries (developed or developing) are considering smart technologies, vehicles, and even overall smart cities [68]. The analysis of purchasing intentions should be deeply emphasized by the studies due to the difference in culture and perspective [69]. The integrated STPB and UTAUT2 were successful in assessing determinants of behavioral intentions for purchasing hybrid cars in the Philippines.

On the technology aspect, users presented performance expectancy as the most significant variable with direct effect on behavioral intentions (β: 0.195; $p = 0.013$), followed by hedonic motivation (β: 0.132; $p = 0.017$), and price value (β: 0.082; $p = 0.044$). From the constructs, people expressed that the use of hybrid cars would help them reach their destination safely, comfortably, and would increase their productivity. This means that hybrid cars would serve their purpose, which is why people will consider them as a means for transportation. It could be deduced that if new technology would be beneficial, i.e., it serves its purpose with more benefits, people will be more likely to consider it [27]. However, it was found that the conditional significance of performance expectancy was seen with the results due to the limitations of battery-operated vehicles. In line with this study, since charging stations will be available upon the acquired hybrid cars, consumers still considered this to be acceptable. This will, therefore, help in the hedonic motivation of people.

From the indicators, people perceived using hybrid cars as something enjoyable, fun, entertaining, and beneficial. Thus, this highlights the hedonic motivation of people since they will be satisfied with the operation of hybrid cars. In contrast, Feys et al. [32] explained that people would consider not owning hybrid or electric cars if public utility vehicles would be eco-friendly. However, in this study, it was seen that people would accept and

have intentions to purchase hybrid cars due to their purpose, environmental impact, and hedonic motivators. Similarly, Motak et al. [70] showed that, aside from performance expectancy, hedonic motivation is one of the key factors in technology acceptance when assessing intentions for use of autonomous vehicles. An interesting discussion is quite available with price value.

It was believed by the respondents of this study that hybrid cars are reasonably priced, have good value for money, and are a valuable purchase. Despite being an important factor affecting purchase intention, Richarson [71] argued that people still have the intention to purchase it. However, their result showed that socio-demographic factors played an important role. Those with higher income would obviously consider hybrid or electric vehicles despite its price. In accordance, Simsekoglu [72] expressed people's hesitant purchasing intention due to economic issues. In a study focusing on consumers of electric vehicles, developing countries such as India would hesitate in purchasing these types of technology due to its price. Since sustainability domains have direct and indirect effects on behavioral intentions, people would be willing to purchase hybrid cars despite their price. The utility of hybrid cars is not evident in the Philippines; therefore, it would be likely that habit was not developed, experience in using is not available, and, thus, justifies why habit, effort expectancy, and facilitating conditions were not significant latent variables.

Under the behavioral domains, subjective norm presented the highest significant direct effect on behavioral intentions (β: 0.437; $p = 0.020$), followed by attitude (β: 0.229; $p = 0.006$), and perceived behavioral control (β: 0.116; $p = 0.024$). It was presented that people's influence in using a hybrid car, its good impression, and a prestige image were considered. In addition, they perceived purchasing hybrid cars as a wise choice, pleasant, and rewarding. Feys et al. [32] explained that the three domains greatly affected behavioral intentions when it comes to acceptance of this technology. This is because the pleasure of current users of the related vehicle has pleasurable experiences. In addition, Simsekoglu [72] showed the egoistic factor among users of highly advance technology to be an influencing factor. This justifies the findings of the prestige attribute people want to attain with hybrid car ownership. Moreover, respondents presented that they have the decision to purchase hybrid cars when they want to, and they are confident that utilizing hybrid cars would be easy. Since the respondents were within the middle to high income bracket with experience in driving, it supports the constructs presented. This is similar to the findings of different studies [68,71,73]. It was added by Ng and Kim [73] that sustainability factors played an important role for the acceptance and intention to use these vehicles.

For the sustainability domains, perceived economic concerns showed the highest direct effects on all behavioral domains, followed by perceived environmental concerns, and perceived authority support. The perception of respondents suggested that economic incentives would be evident with hybrid car purchase, societal standing, easy to obtain, and that it promotes efficiency for their everyday lives. With the government regulation enactment, facilities, accommodation, and encouragement, behavioral intentions were evidently positive. Barbosa Junior et al. [74] presented the economic dimension of the financial viability of providing production continuity with economic resources obtained through sustainable practices. Similarly, economic concerns or perceived economic concerns directly impact social influence and attitude [75]. This supports why perceived economic concerns have an indirect significant effect on behavioral intentions (β: 0.683; $p = 0.012$). With the current government programs implementing activities and processes to reduce carbon emissions, it could be deduced that authoritative support is positively correlated, as in the findings of German et al. [16]. According to Lin et al. [76], support from the government has a positive and substantial effect on social influence, attitude, and perceived behavioral control; demonstrating that the government has a significant impact on its population. Thus, it could be deduced that the sustainability domains of societal concerns are well represented by authoritative support—which has an indirect significant effect on behavioral intentions (β: 0.145; $p = 0.004$).

Highlights on the perceived economic concerns were observed among different study. In line with this study, respondents wanted to reduce the carbon emission impact through the utilization of hybrid cars, especially because they are worried about the future state. As explained in the study of Rossi and Rivetti [77], people of the younger generation, such as the demographic results of this study, are more concerned with sustainability, have a collective purchasing power, and are becoming an increasingly crucial consumer demographic. Ong et al. [78] also demonstrated that current generation manufacturers are challenged to present eco-friendly products since most consumers of this generation are inclined to purchase sustainable products. Thus, it could be deduced that hybrid cars could be viable as a highly efficient form of transportation due to their positive environmental effects. An indirect effect of perceived environmental concern was seen on behavioral intentions (β: 0.074; $p = 0.025$).

On the other hand, perceived economic concerns should be among the factors considered when evaluating sustainability behavior which is evidently dominant in this study. Close relationships of high significance were seen among both behavioral domains of attitude and perceived behavioral control, and significant on subjective norm. Even in the development of industry 4.0, the economic aspect of sustainability was a variable that was presented to be a crucial aspect among global economy measurement [79]. Cricelli and Strazzullo [79] expressed how the economic aspect among digital transformation on a global scale affects the connection of products and their manufacturing industries. Both the consumers and the producers of sustainable products expressed a significant relationship on economic aspects for increase in market shares, innovation, reduction in waste, promotion of material reuse, and entrepreneurship. Similar to the study of German et al. [16], it was posited that economic aspects should be evaluated together with other sustainability domains which presents a significant effect among consumer behavior. In this study, sustainability domains related to behavioral domains such as attitude and behavioral control on human and productivity aspects. On the other hand, attitude and subjective norm on the social aspects of sustainability. However, TPB domains cannot fully measure productivity due to existing laws and policies every country has [21]; thus, the perceived authority support was embedded in the STPB framework established in this study, while environmental concerns reflect the environmental aspects on sustainability. Under the sustainability domains, four out of five factors were related but the economic aspect affecting sustainability was mostly undermined in research. Thus, the perceived economic concern closed this gap by reflecting as the highest and most contributing factor affecting behavioral intentions among consumers wanting to practice sustainability.

5.1. Practical Implications and Managerial Insights

It could be deduced that with the sustainability benefits of hybrid cars, consumers would intend to purchase the vehicle. A travel intention with hybrid cars was also evident from the constructs, presenting future intention and use. The results, therefore, proved that social (i.e., authority support), environmental, and economic concerns affected current generations' purchasing intentions. With sustainability being the current concerns among consumers despite the generation, manufacturers, and industries, a rehash is needed when it comes to promotion, development, and utility. Manufacturers and developers should consider sustainability aspects when it comes to advertising products such as hybrid cars. Common advertisements focused on safety, fuel consumption, and the technical components of cars. With the evident establishment of vehicles in the current generation, the fuel consumption aspect of advertisement should be reduced since the development of technology among vehicles is evident. As such, the sustainability aspects when it comes to economic and environmental advantages should be employed.

Aside from the economic and environmental aspects, government support, promotion, and encouragement should be developed. Especially in developing countries [80], support such as loans with little interest may be given to the community to help in the promotion of sustainable hybrid car purchase and utility. In addition, partnership with manufacturers

may help in cost reduction, encouragement, and overall deployment. To become a smart city, the community, utilities, and infrastructure would be some aspects that a country may want to consider. With developing countries promoting their city plans, effective and functional transportation and resources should be encouraged by the government. This would end up promoting the overall sustainability of a country.

5.2. Theoretical Implications

From the theoretical perspective, the results presented that UTAUT2, similar to other studies, would cater highly important latent variables. For example, the study of Wang et al. [36] presented a negative effect on people's attitude when students were evaluated with purchasing hybrid cars. This study was conducted in China, and the current study considered citizens of the Philippines. In accordance with this, the current study considered those who are able to purchase and are capable of handling hybrid cars which oppose the findings. This means that those who are not able to purchase may present negative connotation on behavioral intentions as evident among students in the study of Wang et al. [36]. Other latent variables were positive, but highlights are placed on the nonsignificant factors (i.e., Habit, EE, and FC). Compared to the studies of Khazaei and Tareq [25] and Manutworakit and Choocharukul [27], these latent variables were positive due to experience among these types of vehicles, which is why habit was positive, also with EE and FC. With the least utilized vehicle in the Philippines, presenting least experience and usage, it is quite obvious that these latent variables were insignificant as consumers are unaware of the benefits and effort needed to utilize the hybrid cars. As justified by Venkatesh et al. [24], these latent variables need experience and utilization before technology may relate to a positive relationship.

However, highlighting on the STPB is deemed necessary to be utilized to cover both behavioral and sustainability aspects holistically. Since air pollution, greenhouse gases, and total solids are evident from fossil fuel burns [81], sustainability domains are currently being considered in evaluation for different aspects of supply chains. As explained in the study of Ong et al. [71], holistic measurement of cognitive and behavioral aspects should be employed to promote the production and manufacturing of green products. If the behavioral intentions are widely evaluated with sustainability factors incorporated, supply chains would have a better perspective on the product development, advertisement, and promotion. Similarly, Arpaci et al. [82] evaluated that a positive outlook among consumers on green practices will be evident if the five big personality traits are practiced. Thus, it should be considered among the evaluation of researchers that extraversion, conscientiousness, agreeableness, openness, and neuroticism should be explored. Therefore, the current study established the sustainability theory of planned behavior for the holistic measurement of behavior and sustainability factors. With the extension complete, it could also be considered and utilized in different aspects of studies that may be applied by different product evaluation, industries, and related studies—even in different countries.

5.3. Limitations and Future Research

Although promising results were presented, several limitations were still found in this study. First, the study assessed the STPB with an extension. Due to the analysis, it is suggested to consider utilizing STPB solely to prove the applicability of the theoretical framework. Second, only limited items were present to measure the different latent variables to not exhaust respondents. It is suggested to consider qualitative studies such as interviews to establish constructs for item measure in the sustainability and behavioral aspects. Third, SEM was solely utilized in this study. As explained from different studies [21,81], the utilization of machine learning algorithm can promote and justify the findings since other studies also presented the limitations of SEM [58]. Lastly, the sole machine learning analysis would be beneficial to compare the results of both theoretical frameworks for its establishment, utility, and applicability.

6. Conclusions

The consideration of sustainable products, manufacturing, and production was evident in the current generation. However, the purchasing intentions of these products such as hybrid cars are underexplored, especially for developing countries. The current study established a holistic framework to assess the sustainability and behavioral aspects of purchasing intentions through the sustainability theory of planned behavior. With the analysis of technology through hybrid cars, this study also integrated the UTAUT2 model. With a total of 1048 valid responses, the sustainability domains were presented to be the most significant factors affecting purchasing intentions, followed by the domains in the TPB. Lastly, the factors under UTAUT2 only showed performance expectancy, hedonic motivation, and price value as directly significant on behavioral intentions to purchase hybrid cars among Filipinos.

With the results of this study, it was recommended that the sustainable aspects should be advertised to promote the intention to purchase hybrid cars among developing countries. Since perceived economic concerns presented the highest contributing factor, followed by perceived authority support, it was suggested that the government should employ programs and assistance to promote the utility of hybrid cars in the country. In addition, the perceived environmental concerns were also deemed significant, which is why this study also suggested that the eco-friendly products being sold in the market should be promoted with the products to encourage purchasing intentions. Lastly, the theoretical implications suggested that the sustainability theory of planned behavior may be extended or applied in holistically assessing different product evaluation, industries, and related studies—even in different countries. With the established framework and its validity, this study promoted the consideration of sustainable behavior evaluation with the use of the Sustainability Theory of Planned Behavior, which is aligned with the current behaviors of consumers.

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Appendix A. Questionnaire Items

Latent Variable	Item	Measurement	References
Habit	HB1	Using a hybrid car would become a habit for me.	[47]
	HB2	I would be addicted to driving a hybrid car.	[47]
	HB3	I am willing to pay more for a hybrid car.	[47]
	HB4	I would think that I have to use a hybrid car.	[47]
Price Value	PV1	The use of hybrid cars would be reasonably priced.	[47]
	PV2	Hybrid cars would be a good value for money.	[47]
	PV3	I consider a hybrid car a valuable purchase.	[24]
	PV4	The price of a hybrid car is an important factor to consider before purchasing.	[24]
Hedonic Motivation	HM1	Using a hybrid car is fun.	[48]
	HM2	Using a hybrid car is entertaining.	[48]
	HM3	Using a hybrid car is enjoyable.	[48]
	HM4	I feel more satisfied when I use a hybrid car.	[49]
Performance Expectancy	PE1	Using a hybrid car would help me reach my destination more safely.	[50]
	PE2	Using a hybrid car would help me reach my destination more comfortably.	[50]
	PE3	Using a hybrid car would help me accomplish things more quickly.	[24]
	PE4	Using a hybrid car would increase my productivity.	[24]
Effort Expectancy	EE1	My interaction with a hybrid car is clear and understandable.	[24]
	EE2	Learning to operate a hybrid car is easy for me.	[24]
	EE3	I find hybrid cars easy to adopt.	[24]
	EE4	It is easy for me to become skillful at using hybrid cars.	[24]
Facilitating Conditions	FC1	I have the necessary resources to use a hybrid car.	[50]
	FC2	I have the necessary knowledge to use a hybrid car.	[50]
	FC3	I do not need assistance to use hybrid cars.	[51]
	FC4	If I have trouble using a hybrid car, I can easily look for a solution.	[50]
Behavioral Intentions	BI1	I intend to use hybrid cars in the future.	[52]
	BI2	I will always try to use a hybrid car in my travel.	[52]
	BI3	I plan to use hybrid cars in the future.	[52]
	BI4	I predict I would use a hybrid car in the future	[52]
Social Influence	SI1	I assume that people whose opinions I value would prefer that I use a hybrid car	[49]
	SI2	I expect that people who influence my behavior think that I should use a hybrid car	[49]
	SI3	Driving a hybrid car would make a good impression about me on the other people	[53]
	SI4	I assume that people who use hybrid cars enjoy more prestige than those who do not	[54]
Attitude	AT1	Buying a hybrid car is a wise choice.	[36]
	AT2	I like the idea of buying a hybrid car.	[36]
	AT3	Buying a hybrid car would be pleasant.	[36]
	AT4	Learning to use hybrid cars can be a rewarding experience.	[36]
Perceived Behavioral Control	PBC1	I have no doubt that, if I so want, I will be able to select a hybrid car as my next purchase.	[18]
	PBC2	Whether or not I choose to purchase a hybrid car is mostly up to me.	[18]
	PBC3	I could purchase a hybrid car instead of a normal car if I wanted to.	[18]
	PBC4	I am confident that I can drive a hybrid car.	[18]
Perceived Environmental Concerns	PENC1	Mankind is severely abusing the environment, hence hybrid cars should be utilized.	[16,21]
	PENC2	I am worried about the state of the world's environment and what it will mean for my future, so I suggest using hybrid cars more.	[16,21]
	PENC3	Humans are often misusing/damaging the environment, so it is necessary for me to help save the environment by using hybrid cars.	[16,21]
	PENC4	When humans interfere with nature, nature produces disastrous consequences, which is why I need to participate by operating hybrid cars to avoid the disruption of nature.	[16,21]
Perceived Economic Concerns	PECC1	There are good warranties and economic incentives for purchasing hybrid cars.	[55]
	PECC2	Hybrid cars can generate more savings for me, thus improving my economic standing in society, in the long run.	[55]
	PECC3	Hybrid cars can help me drive more efficiently so I can save up for more important endeavors in the future.	[55]
	PECC4	I can easily acquire a hybrid car, given its competitive industry.	[55]
Perceived Authority Support	PAS1	Government enacts regulations to allow me as a citizen to use hybrid cars.	[56]
	PAS2	The Philippine government is active in setting up the facilities that allow me to use hybrid cars.	[56]
	PAS3	The Philippine government encourages me to use hybrid cars.	[56]
	PAS4	The government endorses the regulation to allow citizens in utilizing hybrid cars.	[56]

Appendix B. Descriptive Statistics of Measured Items

Factor	Items	Mean	Std. Deviation	Factor Loading	
				Initial	Final
Habit	HB1	3.2242	1.17451	0.900	-
	HB2	3.1307	1.15432	0.925	-
	HB3	2.8292	1.20902	0.808	-
	HB4	3.2032	1.24071	0.837	-
Price Value	PV1	3.4666	1.11379	0.740	0.725
	PV2	3.3788	1.12648	0.890	0.925
	PV3	3.4370	1.11935	0.861	0.836
	PV4	3.7901	1.14716	0.616	0.700
Hedonic Motivation	HM1	3.3893	1.09839	0.915	0.888
	HM2	3.4399	1.07334	0.950	0.925
	HM3	3.4924	1.06428	0.937	0.957
	HM4	3.3540	1.07310	0.844	0.854
Performance Expectancy	PE1	3.4179	1.07189	0.929	0.944
	PE2	3.5057	1.04345	0.912	0.926
	PE3	3.4074	1.04210	0.938	0.912
	PE4	3.3645	1.06376	0.921	0.896
Effort Expectancy	EE1	3.4179	0.99134	0.832	-
	EE2	3.3731	1.02459	0.916	-
	EE3	3.3903	1.02657	0.936	-
	EE4	3.3826	1.04510	0.903	-
Facilitating Conditions	FC1	2.9981	1.09701	0.858	-
	FC2	3.1031	1.11037	0.887	-
	FC3	2.9504	1.13443	0.843	-
	FC4	3.0057	1.07856	0.861	-
Behavioral Intentions	BI1	3.5649	1.11154	0.872	0.868
	BI2	3.3130	1.11057	0.714	0.801
	BI3	3.5840	1.10422	0.920	0.917
	BI4	3.5697	1.10867	0.886	0.878
Subjective Norm	SN1	3.3406	1.03952	0.904	0.917
	SN2	3.2882	1.04665	0.914	0.905
	SN3	3.2872	1.08676	0.841	0.866
	SN4	3.3092	1.06603	0.77	0.772
Attitude	AT1	3.2710	1.13427	0.881	0.899
	AT2	3.2948	1.11938	0.920	0.922
	AT3	3.3025	1.09750	0.930	0.925
	AT4	3.4866	1.07849	0.759	0.796
Perceived Behavioral Control	PBC1	3.2719	1.09679	0.829	0.89
	PBC2	3.4332	1.09498	0.746	0.776
	PBC3	3.2443	1.13949	0.828	0.844
	PBC4	3.4676	1.07720	0.785	0.810
Perceived Environmental Concerns	ENV1	3.5658	1.04961	0.913	0.922
	ENV2	3.5420	1.06169	0.952	0.956
	ENV3	3.5525	1.05309	0.958	0.953
	ENV4	3.5658	1.05052	0.948	0.937
Perceived Economic Concerns	ECO1	3.4580	1.02693	0.902	0.819
	ECO2	3.4179	1.06474	0.939	0.853
	ECO3	3.4427	1.05465	0.933	0.846
	ECO4	3.2748	1.08249	0.834	0.824
Perceived Authority Support	PAS1	3.4065	1.02446	0.878	0.894
	PAS2	3.3435	1.02515	0.928	0.953
	PAS3	3.2624	1.07451	0.935	0.899
	PAS4	3.3187	1.07305	0.953	0.922

Appendix C. Descriptive Statistics of Measured Items

	Mean	St.Dev.	Skewness		Kurtosis		Shapiro–Wilk	
	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error	Statistic	Sig.
HB1	3.2242	1.17451	0.201	0.076	0.515	0.151	0.891	0.000
HB2	3.1307	1.15432	0.100	0.076	0.471	0.151	0.892	0.000
HB3	2.8292	1.20902	0.067	0.076	0.712	0.151	0.898	0.000
HB4	3.2032	1.24071	0.180	0.076	0.757	0.151	0.897	0.000
PV1	3.4666	1.11379	0.238	0.076	0.528	0.151	0.890	0.000
PV2	3.3788	1.12648	0.229	0.076	0.437	0.151	0.888	0.000
PV3	3.4370	1.11935	0.262	0.076	0.495	0.151	0.894	0.000
PV4	3.7901	1.14716	0.591	0.076	0.427	0.151	0.847	0.000
HM1	3.3893	1.09839	0.174	0.076	0.363	0.151	0.879	0.000
HM2	3.4399	1.07334	0.224	0.076	0.273	0.151	0.878	0.000
HM3	3.4924	1.06428	0.175	0.076	0.391	0.151	0.875	0.000
HM4	3.3540	1.07310	0.146	0.076	0.308	0.151	0.885	0.000
PE1	3.4179	1.07189	0.238	0.076	0.245	0.151	0.882	0.000
PE2	3.5057	1.04345	0.225	0.076	0.278	0.151	0.878	0.000
PE3	3.4074	1.04210	0.149	0.076	0.278	0.151	0.885	0.000
PE4	3.3645	1.06376	0.170	0.076	0.244	0.151	0.883	0.000
EE1	3.4179	0.99134	0.028	0.076	0.210	0.151	0.873	0.000
EE2	3.3731	1.02459	0.080	0.076	0.198	0.151	0.877	0.000
EE3	3.3903	1.02657	0.109	0.076	0.183	0.151	0.876	0.000
EE4	3.3826	1.04510	0.109	0.076	0.196	0.151	0.870	0.000
FC1	2.9981	1.09701	0.053	0.076	0.319	0.151	0.894	0.000
FC2	3.1031	1.11037	0.057	0.076	0.404	0.151	0.900	0.000
FC3	2.9504	1.13443	0.027	0.076	0.465	0.151	0.900	0.000
FC4	3.0057	1.07856	−0.039	0.076	0.194	0.151	0.885	0.000
BI1	3.5649	1.11154	0.364	0.076	0.412	0.151	0.880	0.000
BI2	3.3130	1.11057	0.167	0.076	0.417	0.151	0.893	0.000
BI3	3.5840	1.10422	0.378	0.076	0.382	0.151	0.877	0.000
BI4	3.5697	1.10867	0.347	0.076	0.411	0.151	0.875	0.000
SI1	3.3406	1.03952	0.123	0.076	0.146	0.151	0.877	0.000
SI2	3.2882	1.04665	0.106	0.076	0.158	0.151	0.881	0.000
SI3	3.2872	1.08676	0.132	0.076	0.301	0.151	0.887	0.000
SI4	3.3092	1.06603	0.105	0.076	0.255	0.151	0.882	0.000
AT1	3.2710	1.13427	0.207	0.076	0.395	0.151	0.889	0.000
AT2	3.2948	1.11938	0.182	0.076	0.370	0.151	0.887	0.000
AT3	3.3025	1.09750	0.177	0.076	0.297	0.151	0.885	0.000
AT4	3.4866	1.07849	0.240	0.076	0.358	0.151	0.880	0.000
PBC1	3.2719	1.09679	0.197	0.076	0.276	0.151	0.888	0.000
PBC2	3.4332	1.09498	0.216	0.076	0.395	0.151	0.884	0.000
PBC3	3.2443	1.13949	0.163	0.076	0.437	0.151	0.891	0.000
PBC4	3.4676	1.07720	0.235	0.076	0.335	0.151	0.881	0.000
ENV1	3.5658	1.04961	0.279	0.076	0.283	0.151	0.872	0.000
ENV2	3.5420	1.06169	0.278	0.076	0.333	0.151	0.879	0.000

	Mean	St.Dev.	Skewness		Kurtosis		Shapiro–Wilk	
	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error	Statistic	Sig.
ENV3	3.5525	1.05309	0.294	0.076	0.271	0.151	0.876	0.000
ENV4	3.5658	1.05052	0.281	0.076	0.250	0.151	0.868	0.000
ECO1	3.4580	1.02693	0.221	0.076	0.119	0.151	0.875	0.000
ECO2	3.4179	1.06474	0.213	0.076	0.172	0.151	0.869	0.000
ECO3	3.4427	1.05465	0.214	0.076	0.183	0.151	0.871	0.000
ECO4	3.2748	1.08249	0.132	0.076	0.280	0.151	0.887	0.000
PAS1	3.4065	1.02446	0.091	0.076	0.228	0.151	0.876	0.000
PAS2	3.3435	1.02515	0.128	0.076	0.082	0.151	0.875	0.000
PAS3	3.2624	1.07451	0.125	0.076	0.225	0.151	0.884	0.000
PAS4	3.3187	1.07305	0.182	0.076	0.199	0.151	0.881	0.000

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