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Author(s): Bhutto, Maqsood Hussain; Tariq, Beenish; Azhar, Sarwar; Ahmed, Khalid; Khuwaja, Faiz Muhammad; Han, Heesup

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Predicting consumer purchase intention toward Hybrid Vehicles: Testing moderating role of price sensitivity

Maqsood Hussain Bhutto[a], Beenish Tariq[b*], Sarwar Azhar[c], Khalid Ahmed[d], Faiz Muhammad Khuwaja[e] and Heesup Han[f]

Authors' Notes

Maqsood Hussain Bhutto[a]
[a]Doctoral Student, University of Jyväskylä, Jyväskylä University School of Business and Economics, Finland
Email: maqsood.h.bhutto@student.jyu.fi

Dr Beenish Tariq[b]
[b]Assistant Professor of Marketing, National University of Sciences and Technology, NUST Business School, Islamabad, Pakistan
Email: binish_sh@live.com

Prof. Dr. Sarwar Azhar[c]
[c]Professor of Marketing, Sukkur IBA University, Department of Business Administration, Sukkur, Pakistan
Email: sarwar.azhar@iba-suk.edu.pk

Dr Khalid Ahmed[d]
[d]Associate Professor of Economics, Sukkur IBA University, Department of Business Administration, Sukkur, Pakistan
Email: khalid.ahmed@iba-suk.edu.pk

Faiz Muhammad Khuwaja[e]
[e]Assistant Professor of Marketing, Sukkur IBA University, Department of Business Administration, Sukkur, Pakistan
Email: faiz@iba-suk.edu.pk

Heesup Han[f]
[f]Professor, College of Hospitality and Tourism Management, Sejong University, South Korea
E-mail: heesup.han@gmail.com

[*] **Corresponding Author**: Dr Beenish Tariq, please send all inquiries and correspondences to Dr Beenish Tariq at binish_sh@live.com

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Predicting consumer purchase intention toward hybrid vehicles: Testing the moderating role of price sensitivity

Abstract

Purpose: Today, global warming is one of the most acute challenges in the world, prominently caused by Greenhouse-Gases. The introduction of Hybrid-Vehicles (HVs) is thus, one of the industrial initiatives to tackle this challenge by allowing at least some proportionate reduction in global-gas-emissions. Such initiatives like HVs have also affected the consumers' green-purchase-intention (GPI). Hence, underpinned into the theory of planned behaviour (TBP), this study attempts to analyze consumers' response in terms of GPI for HVs, in addition to exploring the moderating-effect of price-sensitivity between independent-variables (attitude, subjective norms, perceived behavioural control) and consumers' GPI for HVs.

Design/Methodology: The data was collected from 266 automobile-consumers with the help of questionnaires. A two-step approach was used to analyse the given hypothesis with the help of PLS-SEM (Smart-PLS 3.2.7).

Findings: Firstly, significant empirical-evidence was secured regarding the impact of given independent-variables (i.e. attitude, subjective norms, perceived behaviour control) on consumer's GPI for HVs. Secondly, the empirical-evidence for the moderating effect of price-sensitivity onto the association between given independent-variables (except for the perceived-behavioural-control) and the consumers' GPI for HVs, also turned out to be quite substantial in this study.

Originality/Value: In-line-with the Theory of Planned Behavior (TPB), this study extends the existing body of literature regarding consumers' GPI as it was significantly contingent to the given independent variables of the study, whereby, the price-sensitivity has been recognized as a key moderator particularly in the context of developing countries like Pakistan. The present study thus provides in depth-insights to guide automobile manufacturers and marketers to redefine their pricing strategies to further strengthen the consumer's GPI for HVs within certain socio-contextual setup. Automobile establishments should thus, invest in HVs' adoption that serves both the eco-system (particularly human-wellbeing) as well as sustainable-organizational-growth.

Keywords: *Hybrid Vehicles; Greenhouse Gases; Consumer Green Purchase Intention; Theory of Planned Behaviour; Automobile Industry; PLS-SEM*

Introduction

Over the past decade, the issue of global warming has become one of the most debated issues in the history of mankind. The serious upsurge of ecological-problems has resulted in several serious concerns including unfavourable-climate-changes, ozone-depletion, energy-crises, global-warming, air-pollution and water-contaminations that have significantly affected the environment and human-health (Shah, 2015). Recognizing the seriousness of this issue, the global community developed international forums e.g. Bonn Climate Conference (2017), Paris Agreement (2015), and Copenhagen Conference (2009) to promote innovative but socially responsible activities/products and services.

Shah (2015) as well as Ramanathan and Feng (2009) attribute such a paradigm-shift to the emission of greenhouse gases leading to cause extreme weather changes resulting into floods, droughts, a steep rise of sea level and a high rate of glacier-melting among many others. Carbon-dioxide (CO_2) is the most emitted greenhouse gas, hence, the most damaging emission for the environment that is proportionately emitted through the transportation industry (Business Insider, 2018; UNICEF, 2018; World Health Organization, 2016; Shah, 2015).

A rising population in a country with a rising per-capita income causes a rising level of vehicular ownership. This subsequent rise of automobile ownership turns into a rising level of CO_2 emissions, ultimately resulting in the rising level of environmental-hazard and natural-resources-depletion (Jain, 2006). Thus, the introduction and further development of hybrid vehicles (HVs) have been recognized as the most commercially as well as environmentally friendly option to control a substantial proportion of CO_2 emission and greenhouse gases (International Energy Association, 2018; Asamer *et al.,* 2016). HVs are referred to as automobiles that rely on two different sources of power, precisely available in three types: full-HVs/parallel HVs, mild-HVs, and plug-in-HVs (Cobb, 2014). Full HVs run on both gasoline/diesel as well as electric-batteries simultaneously or independently. Similar to full HVs, mild HVs also use both electric and gasoline/diesel as a power source, however, both these power sources can't be used

independently of each other. The plug-in HVs take power from electric batteries, while, the plug-in keeps charging their electric-source (Dennis, 2019). Consequently, a new advancement in automotive battery technology, which involves fully sealed batteries that are proofed against leakage or spillage and do not require an acid top-up, is in response to the environmental concerns raised in developed economies: increased environmental consciousness, environmental laws, and increased competition. In other words, automakers not only strive to innovate to gain a share of the market but also contribute to minimizing pollution.

International Energy Association (2018) and Asamer *et al.* (2016) report that transportation-industry accounts for around 21 percent of total CO_2 emissions. Besides, Bill Gates highlighted five global challenges where he highlighted that the transportation sector, is one of those grand challenges, causes around 14 percent of overall greenhouse gas emissions (GGE) (Business Insider US, 2018). Thus, remedial-technological-solutions like HVs can prove to be a substantial way-out to overcome or reduce the intensity of GGE (Galvin, 2016). Hence, it is ever-more important for automobile manufacturers today to understand the purchase intention of consumers for HVs.

By region, the global HV market has been segmented into North America, Asia Pacific, Europe, and Rest of the World (Market Watch, 2019). The USA and Europe are the biggest markets adopting the HVs to reduce the carbon footprints. So far as the availability of research literature is concerned, it is apparently inadequate to define the global-dynamics behind the adoption of or purchase-patterns for technologically innovative vehicles such as HVs, because it is pretty limited to the American sphere (Soltani-Sobh *et al.,* 2017) or European context (Asamer *et al.,* 2016; Rezvani *et al.,* 2015) as evident from a couple of pertinent studies (Degirmenci and Breitner, 2017; Jansson *et al.,* 2017; Asamer *et al.,* 2016; Rezvani *et al.,* 2015; Hahnel *et al.,* 2014;). Literature also suggests that price sensitivity plays an important role in developing the intention to purchase (Fam et al., 2019; Ng *et al.* 2018). However, existing literature did not provide insights into the impact of price sensitivity on consumer purchase intention for hybrid vehicles. Hence this study has addressed the above-mentioned gaps by exploring the determinants of consumers' GPI, regarding HVs, as in line with their economic as well as ecological concerns, particularly, in the context of emerging

economies like Pakistan. Additionally, it also aims to provide an in-depth assessment of price-sensitivity construct as a moderator between consumers' GPI and its determinants.

Research Context

According to Market Watch (2019), the Asia Pacific, with a substantial amount of GGE, is very likely to secure a dominant position in the global market to adopt the HVs in near future (World Bank, 2018). Particularly in the context of Pakistan, the automobile industry has been adding significantly into CO_2 emission levels since 1971 (Refer Figure 1) (World Bank, 2018). Since Pakistan has emerged as more urbanized along-with rapid motorization, it is more prone to air pollution particularly throughout urban Pakistan causing contagious effects to its economy (Bongaarts, 2016). Peshawar and Rawalpindi are placed among the world's top five most polluted cities in Pakistan (Bongaarts, 2016). Pakistan is also reported to be among those countries where increasing pollution levels in large urban areas, caused especially by the traditional automobile industry, is contributing extensively to airborne diseases and premature deaths (Colbeck *et al.,* 2010). The population of Pakistan is reported to increase exponentially by 2018 and onwards, increasing demand for automobiles, leading to incremental environmental-challenges (Hawkes *et al.,* 2017) to be tackled by the supply of more fuel-efficient cars particularly in the form of HVs. The market for HVs is thus, flourishing in Pakistan which is evident by 17% growth in revenue during 2014-15 via HVs, henceforth, projecting the positive trend for acceptance of HVs by automobile consumers in Pakistan (Pakistan Automotive Manufacturers Association, 2018) as presented in Figure 2. PAMA (2018) reports that about 10,000 of HVs are plying on the road in 2017-18, indicating the growth of 26 percent against 2015-16, which is also evident from the fact that HVs comprise 70% of total vehicular (passenger cars) import in Pakistan (Link News, 2019).

Insert Figure 1 and 2 Here

Currently, the HVs are being imported into Pakistan, Khan (2015), however, recognizes that the prices of HVs are relatively higher, which can also be attributed to the new automotive policy of the Pakistan government, whereby the taxes and duties on

imported vehicles are hiked-up by 50%, ranging from 4800 USD to 27,940 USD for 800cc and 1800cc cars respectively (Federal Board of Revenue, 2008). Although, the government has recently allowed an exemption of up to 50% for the import of HVs, yet the noticeable price difference still prevails as compared to local conventional vehicles. Moreover, the exemption of duties is not applicable on relevant parts and equipment, with a consequent more-expensive HVs' maintenance which has also been affecting the purchase intention of the buyers in Pakistan for HVs' (Ahmad and Khan, 2017). Moreover, the current economic conditions, currency devaluation and increase in fuel price have also caused the overall reduction in automobile sales in Pakistan, projecting it as a very price-sensitive market particularly for HVs (Jamal, 2019).

Though HVs are trending in the Pakistani market, and are an important source of ecological well-being, empirical investigation about the determinants/factors of purchase intention for HVs in Pakistan is missing. Hence this study along with advancing the body of literature in this field will provide useful insights to automobile manufacturers in the Pakistani market where the scope of HVs is increasing over time.

Theoretical Framework

In line with the nature and quintessence of this study, the underpinning theoretical framework adopted by this study is the "Theory of Planned Behavior" (TPB) introduced by Ajzen (1991, 2002) as well as Ajzen and Fishbein (1977), which entails the constructs such as "attitude, subjective norms and perceived behavioural control" as the basic determinants of consumer-purchase-intention. A general rule was developed under this theory – "the stronger the intention to engage in a behaviour, the more likely should be its execution" (Ajzen, 1991, p. 181). This theory also supports the argument that consumer-intention can be defined as the consumers' willingness to buy eco-friendly products and hold the intrinsic-motive to purchase green-products (Dagher and Itani, 2014). Hence based on the theoretical grounds of TPB the framework of this study is presented in Figure 3 for assessing the consumers' purchase intention for HVs in Pakistan.

Insert Figure 3 Here

Moreover, various other studies have confirmed the robustness of TPB as a valid model to predict consumer-behaviour toward ecological-products in Asian market such as organic products and vegetables (Zhao *et al.,* 2014; Zagata, 2012), skincare products (Hsu *et al.,* 2017), energy-efficient products (Ha and Janda, 2012), eco-friendly packaging (Prakash and Pathak, 2017) and general green products (Lai and Cheng, 2016; Yadav and Pathak, 2016).

Hence, after understating the importance of green products for ecological well-being, the next important thing to understand is the factors affecting consumers' purchase intention for eco-friendly products. Therefore, contingent upon TPB, the subsequent section discusses the factors affecting the consumers' purchase intention, followed by the discussion about the assessment of price-sensitivity as a moderating construct through the lens of TPB.

Relationship between Consumer Attitude and Consumer Purchase Intention

Consumer attitude is defined as "the degree to which a person has a favourable or unfavourable appraisal of the behaviour in question for forming consumer-intention and consumer-behaviour" (Ajzen, 1991, 2002). Subsequently, attitude is a result of internal assessment and association process that directs the development of positive or negative intentions (Fishbein and Ajzen, 1975). Attitude can be further categorized into specific and general attitude (Chen and Chai, 2010; Ajzen and Fishbein, 1977).

A specific-attitude is considered as the stronger predictor of a specific-behaviour e.g. green products in this case, while the general-attitude shows the general-predisposition toward a behaviour (Ajzen and Fishbein, 1977). Therefore, a specific-attitude in a given context is considered as the attitude towards green products in ecological consumer research. Consumers have precise feelings towards eco-friendly products, thus, supporting environmental well-being (Riethmuller and Buttriss, 2008).

Several studies have validated the applicability of attitude for consumer purchase intention toward green-products (Higueras-Castillo *et al.,* 2020; Ali *et al.,* 2019; Bashir *et al.,* 2019; Qi and Ploeger, 2019; Tan *et al.,* 2019; Jaiswal, 2018; Lai and Cheng, 2016; Yadav and Pathak, 2016). However, the existing literature lacks to address the role of

attitude to influence consumer purchase intention towards HVs in Pakistan. Accordingly, this study posits that:

H_1. Consumer attitude positively influences consumer purchase intention for Hybrid-Vehicles.

Relationship between Subjective Norms and Consumer Purchase Intention

Subjective-norm is referred to as "the perceived-social-pressure to perform certain behaviour" (Ajzen, 1991, 2002; Fishbein and Ajzen, 1975). Social norms are the forms of pressure which are extended by peers, friends, family members, and other influential members of the society that may consequently compel a person to participate (or not) into a certain activity. Furthermore, social-norms can also impact the choice of consumers' buying-decisions (Ajzen, 1991). Hence based on the literature we have concluded that subjective-norms have a significant influence on consumers to buy (or decline) certain products and services and have more extensive influence on buying-intention compared to buying-behaviour (Ali *et al.,* 2019; Bashir *et al.,* 2019; Qi and Ploeger, 2019; Jaiswal, 2018; Lai and Cheng, 2016; Yadav and Pathak, 2016; Chen and Chai, 2010; Lee, 2008). Hence, the social-structure is considered as a significant factor influencing consumer purchase-intentions (Lim *et al.,* 2019; Jayaraman *et al.,* 2015; Gopi and Ramayah, 2007). Past literature, however, lacks an explanation into the influence of subjective-norms on consumers' purchase-intention regarding HVs in Pakistan. Hence, this study hypothesized that:

H_2. Subjective norms positively influence consumer purchase intention for Hybrid-Vehicles.

Relationship between Perceived Behavioral Control and Consumer Purchase Behavior

Perceived behavioural control refers to the "perceived ease or difficulty of performing certain behaviours" (Ajzen, 2002). Past literature suggests that perceived-behavioural-control signifies the consumers' perception of availability or lack of opportunities and resources needed to behave in a particular way (Farah, 2014; Ajzen, 1991), therefore, for consumers to perform a task, the higher perceived controllability tend to lead towards the

higher purchase intention, ultimately leading towards buying behavioural action (Ali *et al.,* 2019; Bashir *et al.,* 2019; Qi and Ploeger, 2019; Jaiswal, 2018; Lai and Cheng, 2016; Yadav and Pathak, 2016; Ajzen, 1991). Accordingly, it is a significant predictor of consumer purchase intention, whereby, the consumer has greater purchase intention when he/she has ease of use/availability of resources/control to purchase the green products. The lack of pertinent studies in Pakistan to address this phenomenon thus, calls for conducting this assessment by hypothesizing as follows:

H_3. Perceived behavioural control positively influences consumer purchase intention for Hybrid-Vehicles.

Relationship between Price Sensitivity and Consumer Purchase Intention

Price sensitivity is defined as the "extent of consciousness and reaction displayed by consumers when finding differences among the prices of given products or services" (Monroe, 1973). It is "the extent to which a customer accepts rise in price for a specific product in terms of economic and psychological gains" (Anderson, 1996). In line with the context of the current study, the pertinent literature also explains price sensitivity as 'willingness to pay more' for eco-friendly/green products (Hsu *et al.,* 2017; Ling, 2013; Laroche *et al.,* 2001; Kotler and Zaltman, 1971). A study conducted by Ng *et al.* 2018 suggests that price sensitivity is positively related to purchase intention for electric vehicles. Thus, the price for a green product can be kept higher than the conventional product for many reasons, including the green products' higher costs incurred on manufacturing, logistics, eco-labels, dedicated environmental department, adoption of green technology and so on. Moreover, a worldwide survey reported that more than fifty-five percent of consumers are willing to pay extra amount for products and services from companies committed to eco-friendly output and fifty-two percent of global consumers had made at least single purchase in the past six months from one or more eco-friendly companies (Nielsen, 2014). Surprisingly, the positive response of Asia Pacific (64%) to pay extra for green products is even higher than the response from North America (42%) and Europe (40%). Hence, these facts signify the impact of price sensitivity for green products purchase in the context of emerging economies. Hence, this study hypothesized that:

H_4. Price sensitivity positively influences consumer purchase intentions for Hybrid-Vehicles.

Moderating Variable: Price Sensitivity

Some previous studies have tried to explore the potential influence of price sensitivity on consumers' perceptions in consumer behaviour research (Fam *et al.,* 2019; Ha-Brookshire and Yoon, 2012; Veale and Quester, 2009). Based on empirical evidence from previous literature (Hsu *et al.,* 2017; Ling, 2013), this study also takes price-sensitivity as a moderating variable to explore consumers' insights about how it moderates the links between purchase intention and its determinants.

It is very important for academicians and marketers concerned with consumer behaviour, to understand the (extraneous) moderating factors that may enhance the purchase intention for green products, in this case, HVs. As argued earlier, the price of eco-friendly/green products (HVs) are higher than conventional products, thus, the price sensitivity (the willingness to pay premium prices for HVs) (Laroche *et al.,* 2001) has a vital role in translating the attitudes, subjective norms and perceived behavioural control into the purchase intention (Hassan *et al.,* 2018; Kotler and Zaltman, 1971).

Moreover, Hsu *et al.* (2017) and Niedrich *et al.* (2009) reported that the "pricing factor has a significant influence on consumers with regards to undertaking price judgments concerning the competing brand-sets, choosing among brands and formats" and the value advertising promotions, help them to improve the price search to compare individual products' perceived worth for their ultimate buying-behaviour (Grewal and Compeau, 2017; Srivastava and Lurie, 2001). Particularly, in the context of emerging markets, a study by Zimmer *et al.* (1994) reported that consumers are very sensitive to the price of the product. Hassan *et al.* (2018) supported this argument in the Pakistani context where the consumers compare the prices of similar kind of products before developing the purchase intention. Similarly, Rizvi *et al.* (2018) highlighted the importance of price sensitivity for the Pakistani market while selling green products to consumers and developing the sustainable competitive advantage. Therefore, understanding the phenomenon of price sensitivity and its sources of influence is of the utmost importance to

be known by both academicians and marketers to mould pricing strategies based on the right understanding regarding the potential level of consumers' price sensitivity.

The empirical findings of some past studies including Ling (2013) regarding personal care products for the assessment of consumers' green purchase intention and its determinants (attitude, subjective norms and perceived behavioural control) also support the role of price-sensitivity as a positive moderator. Furthermore, Hsu *et al.* (2017) used price sensitivity as a moderating variable in Ajzens' TPB model to explore consumer intention towards skincare products in Taiwan and found price sensitivity as a significant moderator. However, the literature appears to provide insufficient empirical evidence to address the impact of price sensitivity as a moderator for HV consumers' purchase intention. Furthermore, the lack of empirical evidence regarding consumers' purchase intention for green products into the emerging markets like Pakistan where the adoption/purchase of HVs is on the rise and is highly influenced by price sensitivity, actually provides a noticeable research potential for the underlying study to fill the knowledge gap in the existing literature. Therefore, the underlying research posits that

H_5. Price sensitivity plays the role of moderator between the relationship of attitude and purchase intention in a way when the price sensitivity is high, the relationship between attitude and purchase intention will be strengthened.

H_6. Price sensitivity plays the role of moderator between the relationship of subjective norm and purchase intention in a way when the price sensitivity is high, the relationship between subjective norm and purchase intention will be strengthened.

H_7. Price sensitivity plays the role of moderator between the relationship of perceived behavioural control and purchase intention in a way when the price sensitivity is high, the relationship between perceived behavioural control and purchase intention will be strengthened.

Methodology

Participants and Sampling Design

The sample design begins with defining the target population that is 1.26 million (from 2010 to 2018) automobile consumers in Pakistan (PAMA, 2018). The targeted sample of this study is automobile consumers. To test our hypotheses, a questionnaire was administered to 640 consumers in urban cities of Pakistan. Since the list of the automobile owners was not present, to conduct this survey, we employed a purposive sampling technique to collect data from respondents who are aware of HVs as owners or have knowledge of HVs. A final sample of 266 responses was collected through social media automobile pages (i.e. using a link of an online google form) recording a response rate of 41.5% (Refer Appendix-1). A back-translation method was also adopted to get valuable responses, using English and local languages of Pakistan.

Measurements

The survey form was segmented into two sections: consumer demographics and questions regarding all constructs to measure the consumer purchase intention. A 5-point Likert scale was used to indicate their responses from disagreement to agreement, the scale ranged from 1 to 5 (Wang *et al.,* 2014; Lin and Huang, 2012). The scale of seventeen items measuring the variables such as attitude (2 items), the subjective norms (2 items), perceived behavioural control (7 items) and consumer purchase intention (3 items) were adapted from Ajzen (2002). Also, the scale of three items to measure the price sensitivity was duly adapted from Laroche *et al.* (2001) (Refer Appendix-1).

Results

Analytical Procedures

The present study used the Partial least squares structural equation modelling (PLS-SEM) to test the conceptual model using Ajzens' theory of planned behaviour model. PLS-SEM modelling has received tremendous appreciation from marketing scholars in interdisciplinary research (Channa *et al.,* 2020; Tariq *et al.,* 2020; Umrani *et al.,* 2019; Hair *et al.,* 2013). Besides, the objective of this study was to predict the consumer

purchase intention, which made PLS-SEM the most suitable choice for conducting the analysis (Memon *et al.,* 2017; Hair *et al.,* 2013). Finally, numerous scholars have considered PLS-SEM path modelling as the "most fully developed and general system" for variance-based SEM (Roldán and Sánchez-Franco, 2012). Therefore, the present study has used Smart PLS 3.2.7 software using the two-step approach (Hair *et al.,* 2013; Ringle *et al.,* 2012).

Measurement Model Assessment

In the measurement model, we assessed the factor loadings, Cronbach's alpha, composite reliability (CR) and average variance extracted (AVE) using the assessment criteria provided by Hair *et al.* (2016). Table 1 and Figure 4 depict detailed results of the measurement model. According to which, all factor loadings were found to be higher than the threshold of 0.5 (Hair *et al.,* 2016; Chin, 1998). Likewise, Cronbach's alpha and composite reliability (CR) values also exceeded the suggested threshold of 0.70 (Hair *et al.,* 2016; Bagozzi and Yi, 1988). Next, we examined AVE to report convergent validity as indicated in Table 1, the AVE scores for each of the latent variables were greater than 0.50 (Hair *et al.,* 2016). Discriminant validity was accessed using Heterotrait-Monotrait (HTMT) ratio of correlation criterion. The results in Table 2 show that all the values were below the threshold of .85 as suggested by Henseler *et al.* (2016). Moreover, a confidence interval with 5000 bootstrap results at 0.05 significance level with a two-tailed test shows that none of the confidence intervals contains 1 hence discriminant validity is established for all the constructs under study. Furthermore, as suggested Kock (2015) common method bias was assessed by conducting the full collinearity test. The results confirmed absence of common method bias.

Insert Figure 4 Here

Insert Table 1 and 2 Here

Assessment of Structural Model

First of all, the variance inflation factor (VIF) was examined to determine multi-collinearity. All the VIF values were less than 5 (Hair *et al.,* 2016), suggesting the absence of the multi-collinearity in the exogenous variables (refer Table 3).

Assessment of Path Co-efficients

The standard bootstrapping procedure was used with 5000 sub-samples, using one-tailed test at 0.05 significance level and 266 cases to regulate the significance of path coefficients as suggested by Hair *et al.* (2016; 2013) and Henseler *et al.* (2009). Table 3, presents complete statistics about the structural model including moderating relationships. H_1 hypothesized that consumer attitude is positively related to consumer purchase intention. Findings reveal a positive relationship between attitude and purchase intention hence supporting H_1 ($\beta = 0.187$, $t = 2.95$, $p < 0.05$). The results also demonstrate a positive relationship between subjective norms and purchase intention ($\beta = 0.116$, $t = 1.810$, $p < 0.05$) thus, supports H_2. Similarly, the relationship between perceived behavioural control and purchase intention found to be positive ($\beta = 0.354$, $t = 5.679$, $p < 0.05$), supporting H_3. Likewise, price sensitivity is reported to be positive cause of purchase intentions ($\beta = 0.311$, $t = 4.904$, $p < 0.05$),thus, H_4 gets supported.

Besides, this study examined the coefficient of determination (R^2) and the predictive relevance (Q^2) of exogenous variables (attitude, subjective norms, perceived behavioural control, price sensitivity) on the endogenous variable (consumer purchase intention). The results (refer Table 3) suggest that R^2 value for consumer purchase intention is 0.579 which is substantial enough (Chin, 1998) to explain variance in consumer purchase intention by attitude, subjective norms, perceived behavioural control and price sensitivity.

Subsequently, Q^2 (measured via cross-validated redundancy) for consumer purchase intention suggests the predictive relevance of independent variables (attitude, subjective norms, perceived behavioural control and price sensitivity) for the dependent variable (consumer purchase intention). According to Henseler *et al.* (2009) the Q^2 should be greater than zero in the research model, Table 3 shows that it's greater than zero (0.392), and hence supports the predictive relevance of the research model.

Moderation Analysis

PLS-SEM was used to analyze the moderating effect of price sensitivity for consumer purchase intention and its determinants (i.e. attitude, subjective norms and perceived behavioural control). In line with Ringle *et al.* (2012) criteria for continuous moderating

variables, this study used the product indicator approach. Additionally, this study followed the guidelines given by Cohen (1988) for performing the moderation analysis.

The H_5 states that price sensitivity moderates the relationship between attitude and consumer purchase intention positively. As reported in Table 3 the interaction terms representing consumer attitude*price sensitivity → consumer purchase intention *(β= -0.12, t = 2.394, $p < 0.05$)* was significant. Thus, H_5 was fully supported. Following the guidelines of Aiken and West (1991), the information from path coefficients was used to plot the moderating effect of price sensitivity on the relationship between attitude and consumer purchase intention (Figure 5), suggesting an improved relationship.

Insert Figure 5 Here

Similarly, H_6 states that price sensitivity moderates the relationship between subjective norms and consumer purchase intention. Table 3 and Figure 6 show that price sensitivity moderates the relationship between subjective norms and consumer purchase intention *(β = -0.096, t = 2.128, $p < 0.05$).* Thus, H_6 was fully supported. Likewise, the information from path coefficients was used for plotting the moderating effect of price sensitivity on the relationship between subjective norms and consumer purchase intention (Figure 6), suggesting improved relationship (Aiken and West, 1991).

Insert Figure 6 Here

Lastly, H_7, price sensitivity moderates the relationship between perceived behavioural control and consumer purchase intention. The results in Table 3 and Figure 7 reported that price sensitivity does not moderate the relationship between perceived behavioural control and consumer purchase intention (β = -0.103, t = 1.298, $p > 0.05$). Therefore, H7 was found to be insignificant. Following the guidelines of Aiken *et al.* (1991), the information from path coefficients was used for plotting the moderating effect of price sensitivity on the relationship between perceived behavioural control and consumer purchase intention (Figure 7), suggesting an insignificant relationship. Consequently, this study argues, in the context of a developing nation like Pakistan, that

the selected group of population is considered as perceived consumers, which are price-conscious and reacting negatively towards increased price sensitivity regarding the purchase of HVs.

Insert Figure 7 Here

Shaping the Strength of the Moderating Effects

The strength of the moderating effect could be determined by equating coefficient of determination (Wilden *et al.,* 2013; Henseler and Fassot, 2010). The suggested effect size values of 0.35, 0.15 and 0.02 to determine the strength of moderating effect are considered as strong, moderate and weak respectively (Henseler and Fassot, 2010; Cohen, 1988). Based on these guidelines, the strength of moderation was calculated. Table 3 reports the low size of the moderating effect (0.021 and 0.019) (Wilden *et al.,* 2013; Henseler *et al.,* 2009). Though the moderating effect was low however literature suggested that "a low effect size does not necessarily mean that the underlying moderating effect is insignificant, even a small interaction effect can be meaningful under extreme moderating conditions, if the resulting beta changes are meaningful, then it is important to take these conditions into account" (Chin *et al.,* 2003). Thus, this suggests that the moderating role of price sensitivity in association with TPB constructs and consumer purchase intention could be meaningful in the Pakistani market.

Insert Table 3 Here

PLS Predict Assessment

PLS predict assessment helps to analyze the predictive performance of a given model (Shmueli *et al.,* 2019). Hence to assess the predictive performance of consumer purchase intention for HVs, this study conducted the PLS Predict assessment of the conceptual model using the out-of-sample prediction technique (Shmueli *et al.,* 2019). The result reveals that RSME of the PLS-SEM model is smaller compared to LM as shown in Table 4 as suggested by naïve LM benchmark. Similarly, the Q^2 values of the PLS-SEM model

are greater than the LM model. Hence these results suggest enough predictive power of the model of consumer purchase intention for HVs (Shmueli *et al.,* 2019).

Insert Table 4 Here

Discussion

Besides predicting the influence of independent variables (i.e. attitude, subjective norms, and perceived behavioural control) on consumers' green purchase intention to buy HVs, the present study also investigated the moderating effect of price sensitivity (PS) on the association between consumers' GPI and its determinants. Results of this study show that attitude, subjective norms, perceived behavioural control and price sensitivity have a significant positive impact on consumers' purchase intention for HVs. Moreover, price sensitivity appears to play the role of a significant moderator for the relationship between attitude and consumers' GPI; as well as between subjective norms and consumers' GPI. Yet, the empirical findings do not support the moderating impact of price sensitivity as a moderator for the relationship between perceived behavioural control and consumers' GPI. Hence this study supported H_1, H_2, H_3, H_4, H_5 and H_6 respectively but didn't support H_7.

The discoveries of this study depict that when consumers have a positive attitude towards green products, there is an extra chance that the consumers will buy them. Similarly, when peers, friends or the people in society encourage the use of green products, the purchase intention for the HVs will increase. Subsequently, the ease of use for purchasing green products significantly influence the consumers to purchase the HVs. Likewise, if the consumers are willing to pay higher prices for green products, their intention to purchase HVs will be higher.

The results of moderation analysis provide some interesting insights. Usually, the probability of purchase intention for HVs increases based on the individual degree of TPB factors (attitude, subjective norms) if price sensitivity is strong. This study interestingly provides insights for the TPB factors (attitude, subjective norms) and purchase intention when price sensitivity is weak. These results clearly show that individuals living in Pakistan are less likely or less willing to pay more/extra price for the

HVs even if they have a positive attitude towards HVs or even if the social norms around them encourage them to purchase HVs. These findings spotlight a very important aspect of a developing country market like Pakistan, where, the consumers are highly price-conscious and make purchases more considerably based on the prices of automobiles. Furthermore, automobile consumers in Pakistan also make comparisons based on the prices of HVs and conventional vehicles rather than the environmental impact of these vehicles.

Implications

Theoretical Implication

Previous literature extensively explored the determinants of consumer purchase intention for green products. However, consumer purchase intention toward HVs has been neglected particularly in the context of a developing economy. Moreover, price sensitivity being an important factor to develop the intention to purchase HVs has not been addressed in past studies. Hence this study offers three distinctive theoretical contributions. First of all, this study adds to the previous research by analyzing the factors that influence green consumer purchase intention specifically in the context of the automobile market i.e. HVs. Henceforth, this study lays the foreground of empirical evidence of consumer purchase intention in this product category. Secondly, this study has provided insights about the consumer green purchase intention in terms of decision making by adding a moderating variable of price sensitivity in the context of the automotive industry in Pakistan and has hence broadened the theoretical proposition and rigour of the theory of planned behaviour by adding this unique moderator. None have yet seen effects of price sensitivity as a moderating variable in Ajzens' theory of planned behaviour in the automobile industry. Thirdly, this study specifies the empirical evidence of TBP for green purchase intention of HVs in the context of a developing country (e.g. Pakistan) where the adoption of HVs is increasing.

Practical Implication

This study highlights some practical implications for automobile companies selling hybrid vehicles in emerging markets, like Pakistan. This research provides valuable

insights to marketers to shape up the consumer's attitude for green products, particularly for the HVs, by fine-tuning their Marketing Mix strategies, specifically emphasizing attractive price offerings. Hybrid vehicles are more fuel-efficient as compared to conventional vehicles but are more expensive upfront. Hence, the marketing managers, keeping in view the price sensitivity of the Pakistani market, should promote the hybrid vehicles highlighting value for money propositions to increase the purchase intention. Marketers also need to effectively target the right customer segments so price distinction may then help the HV-marketers better handle price sensitive segments for maintaining the long-term profitable relationship with target consumers.

Furthermore, marketers should hire opinion-leaders including reputed community heads, celebrities and social evangelists as their ambassadors and spokespersons to share, both product efficiency and the environmental benefits, to further reinforce the consumer's positive attitude and develop subjective norms towards HVs. Similarly, to create ease of use and confidence onto the purchase of green products, the marketers should also use eco-labels or certifications stating the environmental impact of HVs. This will also help to enhance the confidence of consumers for the purchase of HVs.

Moreover, this study contributes as one of the signatory factors in achieving 'the 2030 sustainable development goals' (SDGs) (Papas, 2017), such as climate change; industry and infrastructure innovation; good health and wellbeing; affordable and clean energy; better life on land and below water, among others. Since the marketers and automobile sellers get clear insights from this study about price sensitivity (other than attitude, subjective norms, and perceived behavioural control in Pakistani market), eventually this study helps to achieve the increased purchase intention for HVs. This will in turn, also help to reduce the negative impact of conventional cars on the climate and support good health, wellbeing and clean energy. Governments should incentivize the purchase of hybrid vehicles aiming to reduce the air pollution which will help to increase the HVs' purchase intention in Pakistan. Furthermore, governments can also subsidize the manufacturing of HVs within Pakistan to lessen the price of HVs in Pakistan.

Limitations and Future Research

The present study has a few limitations. This study has focused only on a specific product which is HVs, and tried to assess the TPB-model-based determinants of purchase intention in the Pakistani market only. Thus, a comparative and cross-sectional study can also be conducted for culturally or economically diverse settings. Similarly, to assess the moderating effect, the constructs other than price-sensitivity could also be assessed that might discover different dynamics behind enhanced or hindered purchase intention for HVs. Besides, this study has used purposive sampling technique for data collection. So, future researchers should consider other sampling techniques to check the robustness of this study's findings and also to increase the findings' generalizability. Finally, this study was bound to a specific timeframe, it could not identify the factors that influence individual purchase intention for HVs over a longer period.

Conclusion

This study explains consumers' green purchase intentions towards HVs through predicting the influence of TPB factors (i.e. attitude, subjective norms, perceived behavioural control and price sensitivity) on the GPI for HVs. Moreover, it also investigates the moderating effect of price sensitivity on the association between consumers' GPI and its determinants (attitude, subjective norms, and perceived behavioural control). Specifically, this study found that attitude, subjective norms, perceived behavioural control and price sensitivity are positively and significantly related to consumer purchase intention for HVs. The results support the moderation of price sensitivity for the relationship between attitude and consumer' GPI; as well as subjective-norms and consumer' GPI. Hence, this study provides substantial practical and theoretical implications where marketers need to work on maintaining the positive attitude towards HVs. Similarly, positive social-values and ease of use of HVs need to be inculcated for their adoption. Also, price sensitivity needs to be carefully addressed to increase the adoption of HVs by consumers.

To sum up, this study suggests that consumers with a high positive attitude, subjective norms, perceived behavioural control and price-sensitivity towards GPI will more likely be induced to purchase HVs. In contrast, with low price sensitivity,

consumers (with either a negative attitude, low subjective norms, or low perceived behavioural control towards HVs) are less likely to purchase HVs. Thus, there is an opportunity for automobile manufacturers to capitalize on this sort of significant fact for protecting the environment and reducing the emission of green-house gases by promoting green products i.e. HVs.

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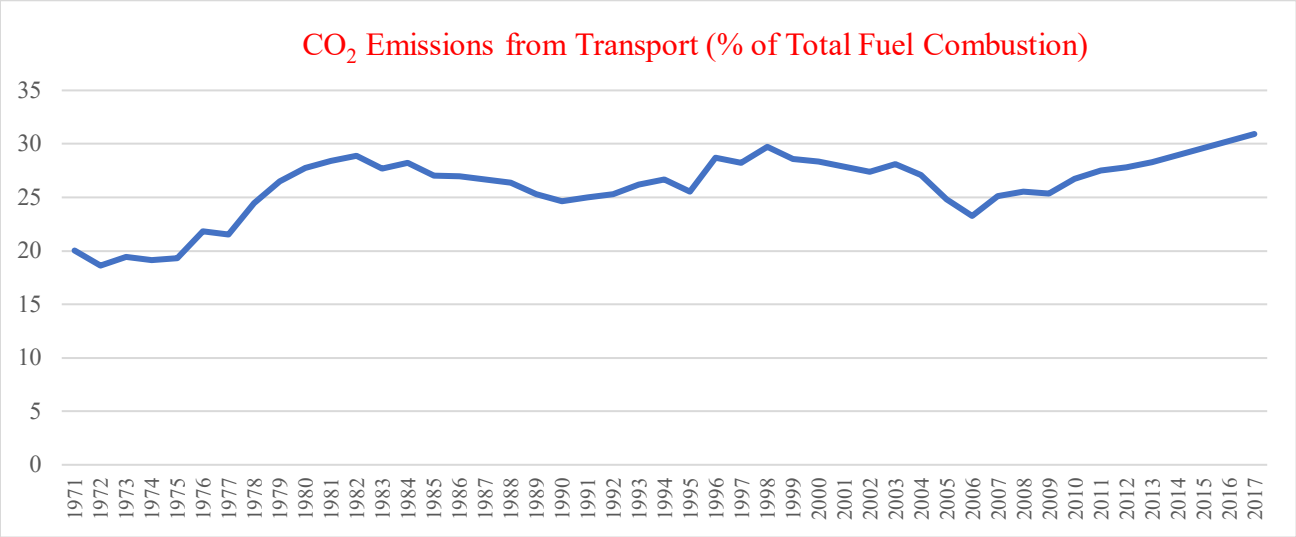
Figures

Figure 1. CO_2 Emissions from Transport (% of Total Fuel Combustion)



Source: World Bank (2018)

Figure 2. Details of Cars Produced and Sold in Pakistan

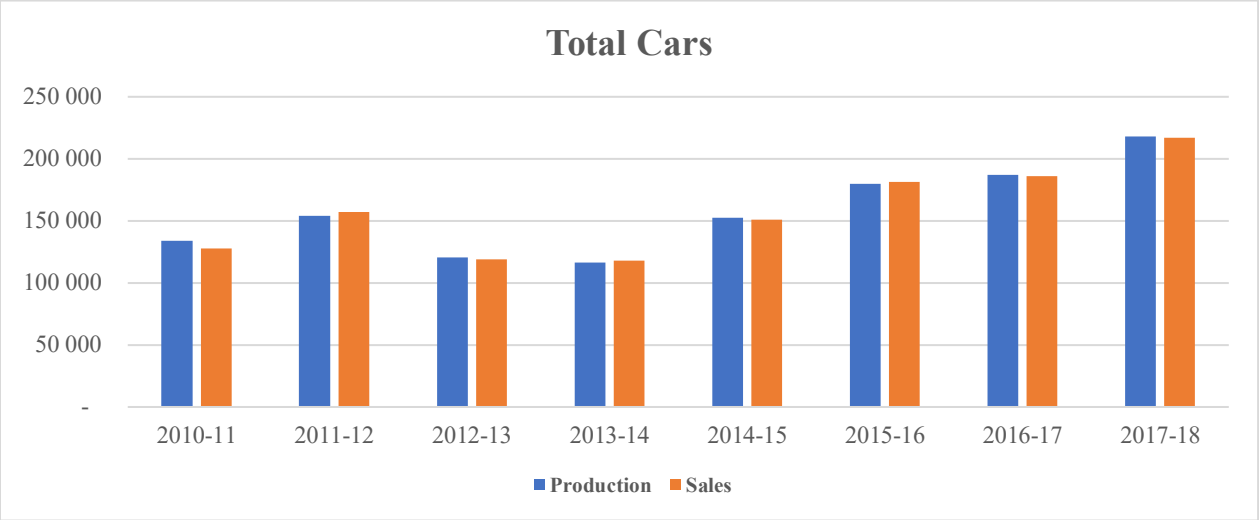


Figure 3. Conceptual Framework

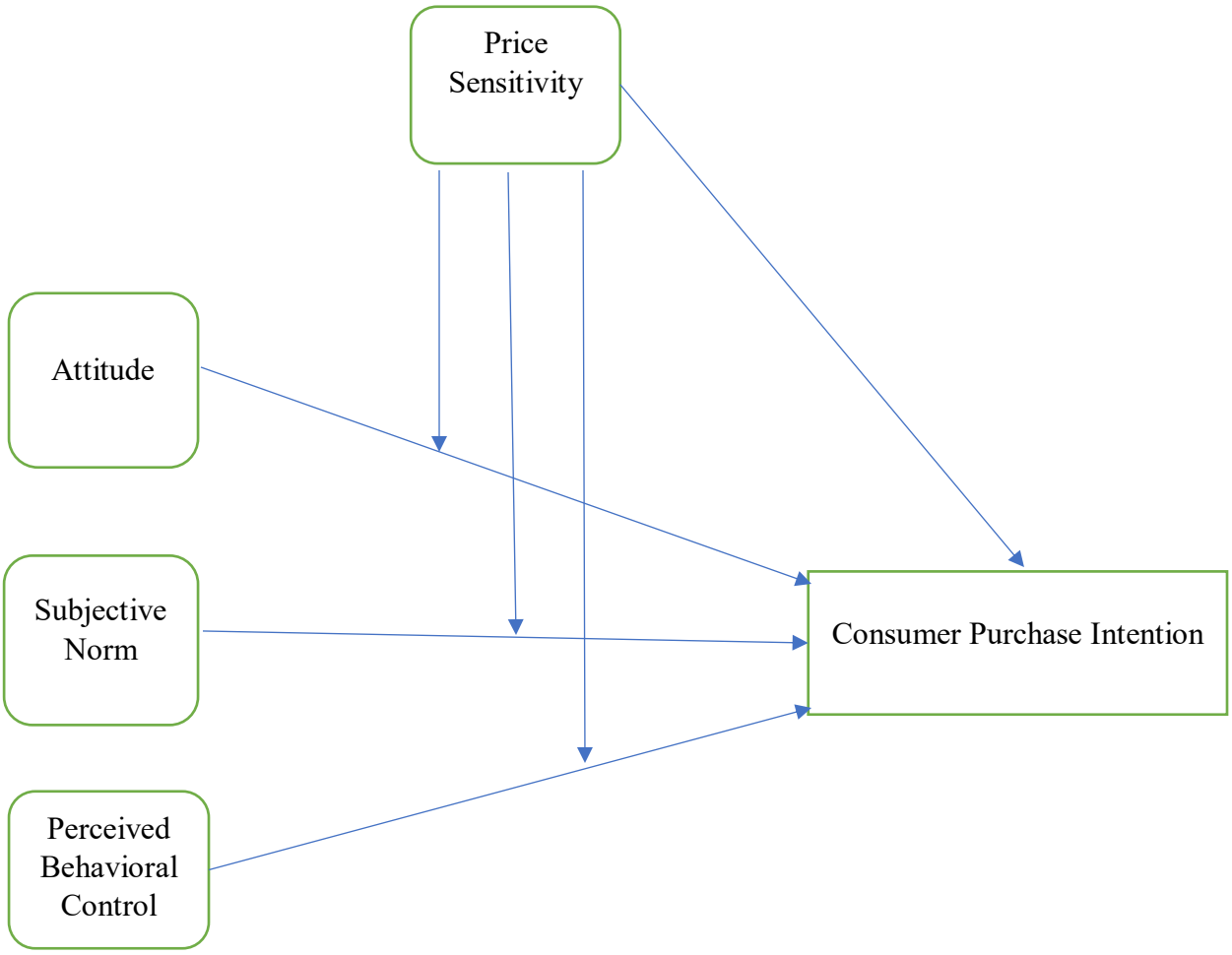
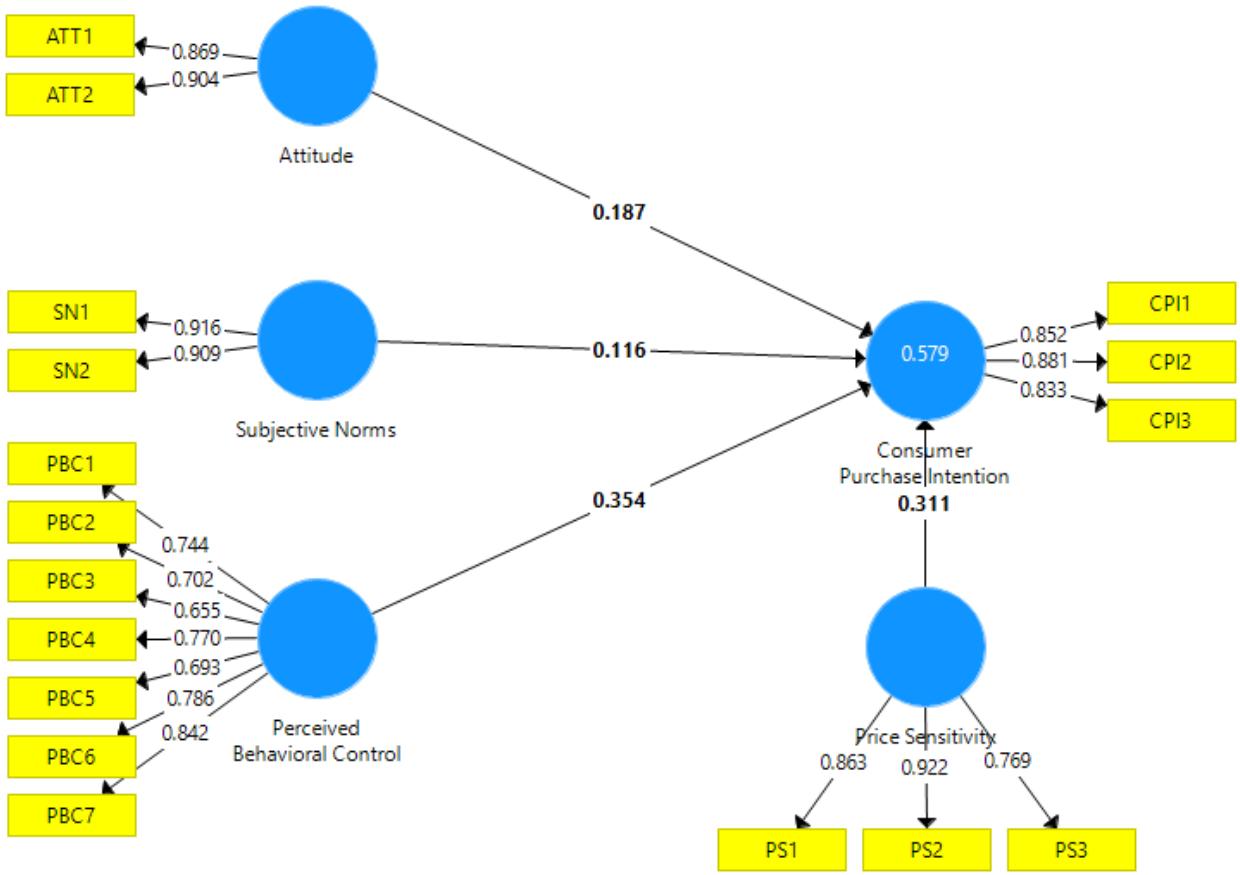


Figure 4. Measurement Model Assessment



ATT = Consumer Attitude, SN = Subjective Norm, PBC = Perceived Behavioral Control, PS = Price Sensitivity, CPI = Consumer Purchase Intention

Figure 5. Interaction effect of PS between attitude and CPI

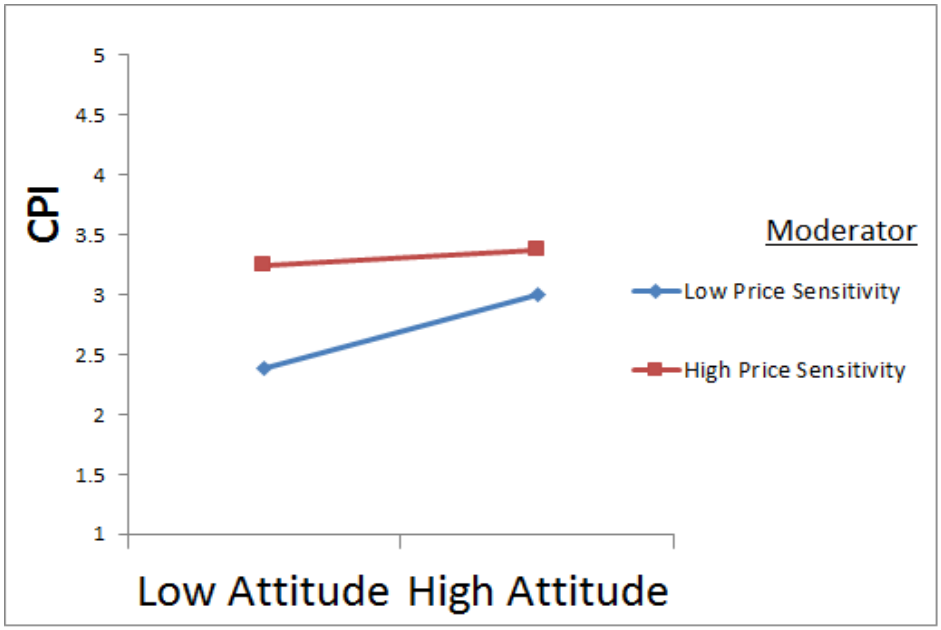


Figure 6. Interaction effect of PS between SN and CPI

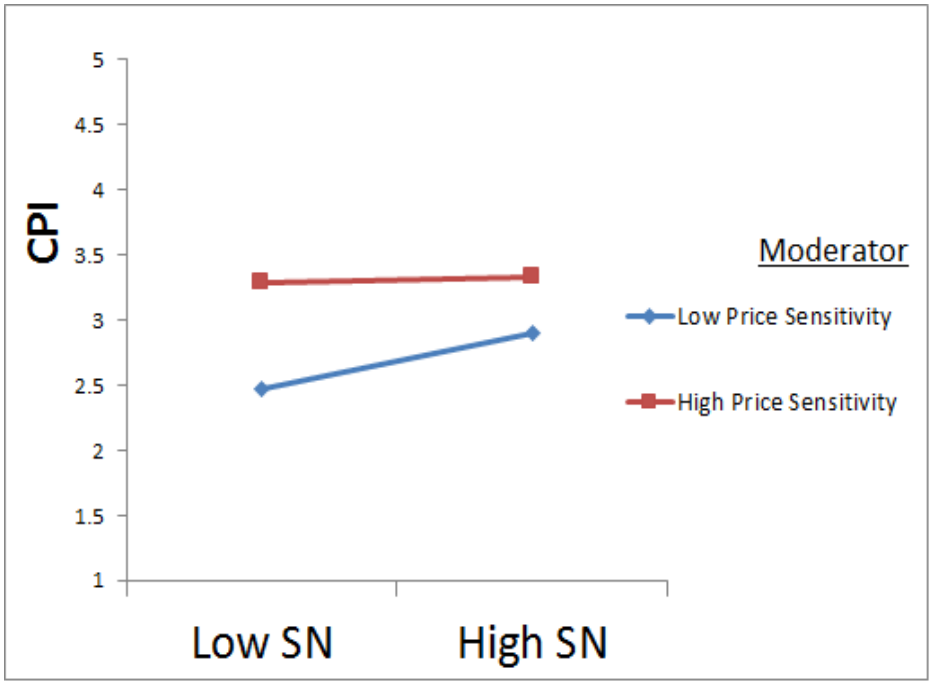
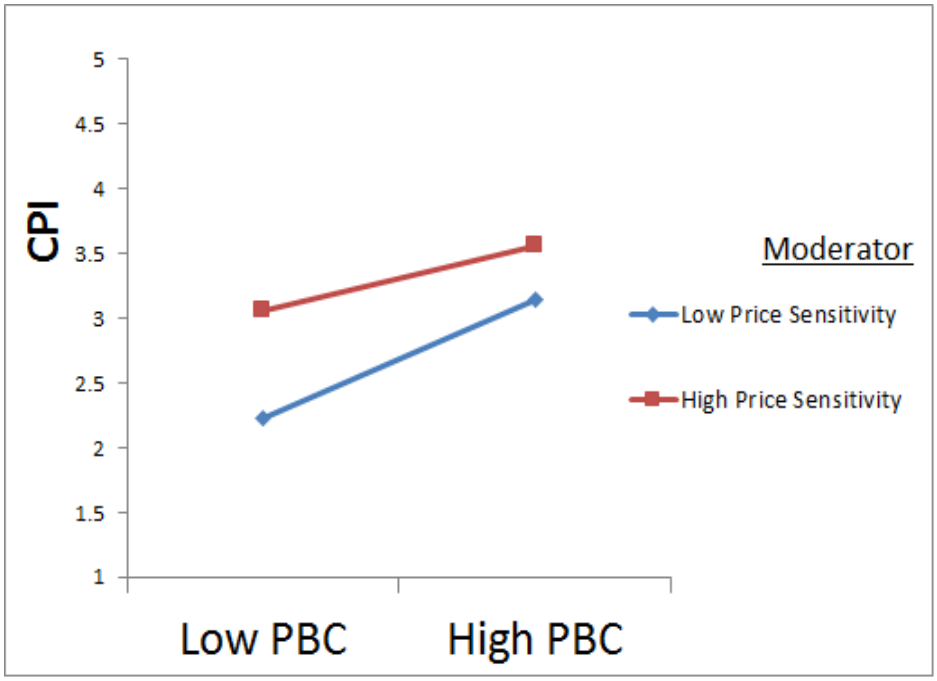


Figure 7. Interaction effect of PS between PBC and CPI



Tables

Table 1. Measurement Model Assessment

Constructs	Item	Loadings	Cronbach's Alpha	Composite Reliability	Average Variance Extracted
Consumer Attitude	ATT1	0.869	0.729	0.880	0.786
	ATT2	0.904			
Consumer Purchase Intention	CPI1	0.852	0.817	0.891	0.732
	CPI2	0.881			
	CPI3	0.833			
Perceived Behavioral Control	PBC1	0.744	0.864	0.896	0.554
	PBC2	0.702			
	PBC3	0.655			
	PBC4	0.770			
	PBC5	0.693			
	PBC6	0.786			
	PBC7	0.842			
Price Sensitivity	PS1	0.863	0.812	0.889	0.729
	PS2	0.922			
	PS3	0.769			
Subjective Norm	SN1	0.916	0.799	0.909	0.833
	SN2	0.909			

Table 2: Discriminant Validity Assessment

	Att	CPI	PCB	PS	SN
Att					
CPI	0.684 [0.504;0.83]				
PCB	0.488 [0.313;0.638]	0.746 [0.621;0.848]			
PS	0.588 [0.638;0.739]	0.76 [0.654;0.852]	0.589 [0.47;0.698]		
SN	0.718 [0.57;0.848]	0.664 [0.515;0.782]	0.574 [0.428;0.694]	0.601 [0.459;0.719]	

Note: The values in the brackets represent the lower and the upper bounds of the 95% confidence interval

Table 3. Structure Model Assessment

Paths	VIF	Beta	SD	T Values	P Values	R Square	Q Square	F Square
H1: Att→SN	1.55	0.186	0.064	2.950	0.002			0.054
H2: SN→CPI	1.69	0.115	0.065	1.810	0.035			0.202
H3: PCB→CPI	1.47	0.353	0.062	5.679	0.000			0.150
H4: PS→CPI	1.53	0.311	0.063	4.904	0.000	0.579	0.410	0.019
H5: Att*PS→CPI	-	-0.120	0.050	2.394	0.008			0.021
H6: SN*PS→CPI	-	-0.096	0.045	2.128	0.017			0.019
H7:PBC*PS→CPI	-	-0.103	0.079	1.298	0.097			0.000

Table 4. PLS Predict Assessment of Dependent Variable

	PLS SEM		LM	PLS SEM-LM	
	RMSE	Q^2_predict	RMSE	RMSE	Q^2_predict
CPI1	0.682	0.382	0.723	-0.041	0.305
CPI2	0.573	0.404	0.586	-0.013	0.378
CPI3	0.682	0.427	0.695	-0.013	0.406

Appendix – 1

Behavioral Intention towards Hybrid vehicles

Greetings!

My name is Maqsood Hussain and I am a research student of Sukkur IBA University. This survey questionnaire is designed to predict consumer purchase intention toward Hybrid vehicles in Pakistan.

An honest response is required for results.

Demographics

Gender	Male	°	Female	°
Age	25 or less	°	26 to 30	°
	31 to 35	°	36 to 40	°
	41 to 45	°	More than 45	°

Education

Matriculation	°	Intermediate	°
Under-Graduate	°	Masters	°
Post-Graduate	°		

Marital Status

Single	°	Married	°

Family Income (Rs.)

Below – 30,000	°	31,000 – 60,000	°
61,000 – 100,000	°	100,000 above	°

District ----------

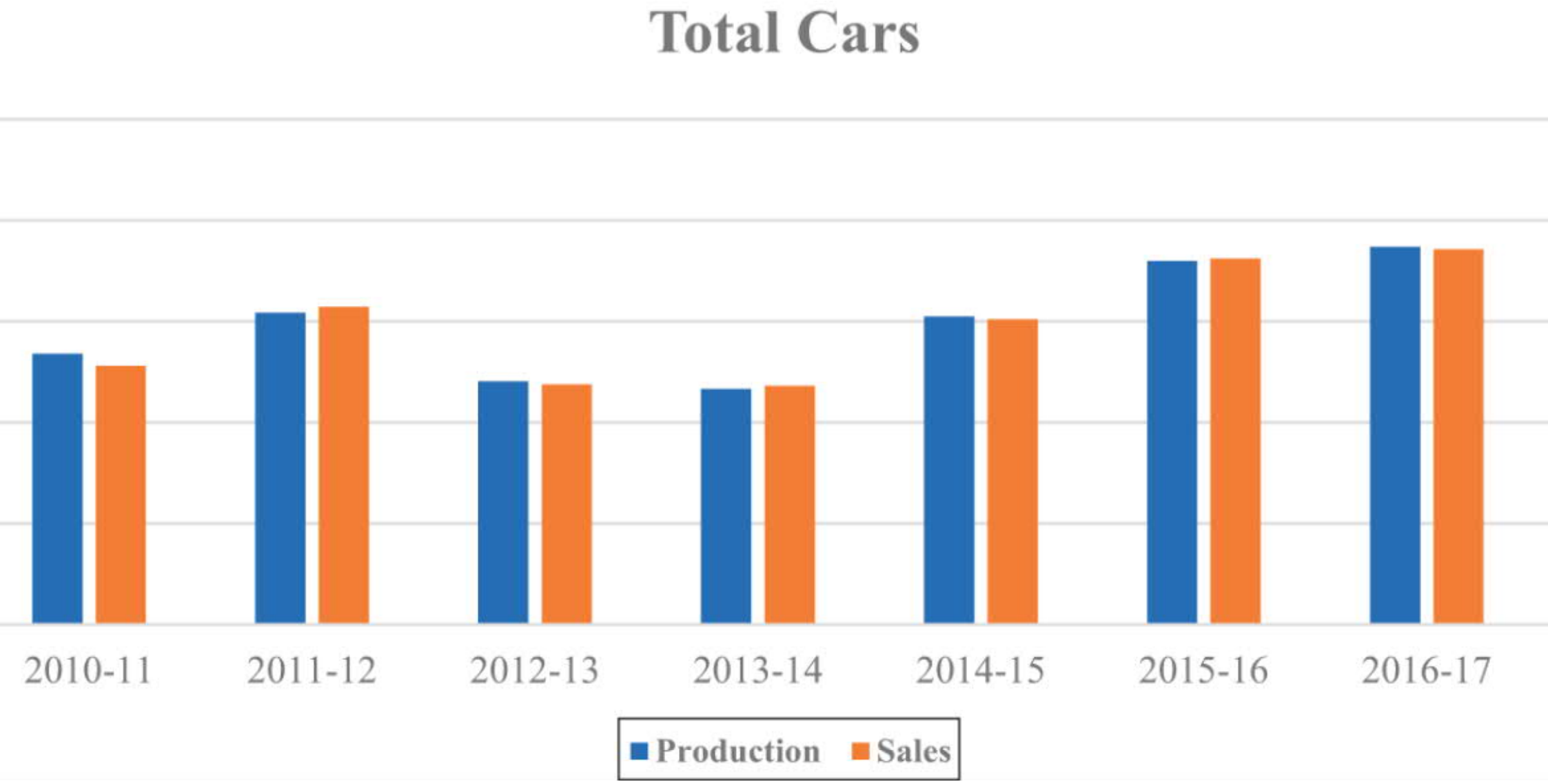
Province ----------

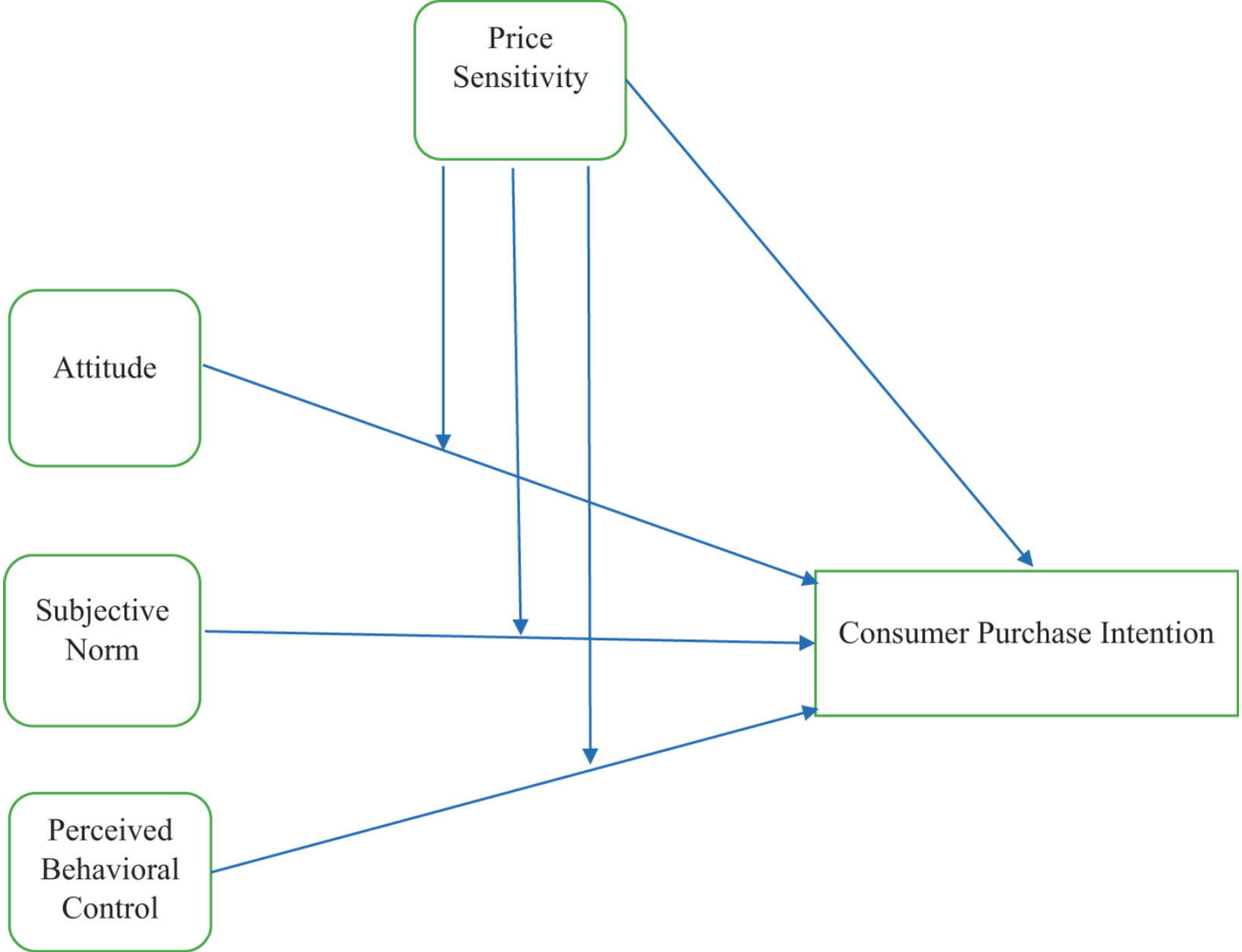
Survey Questions

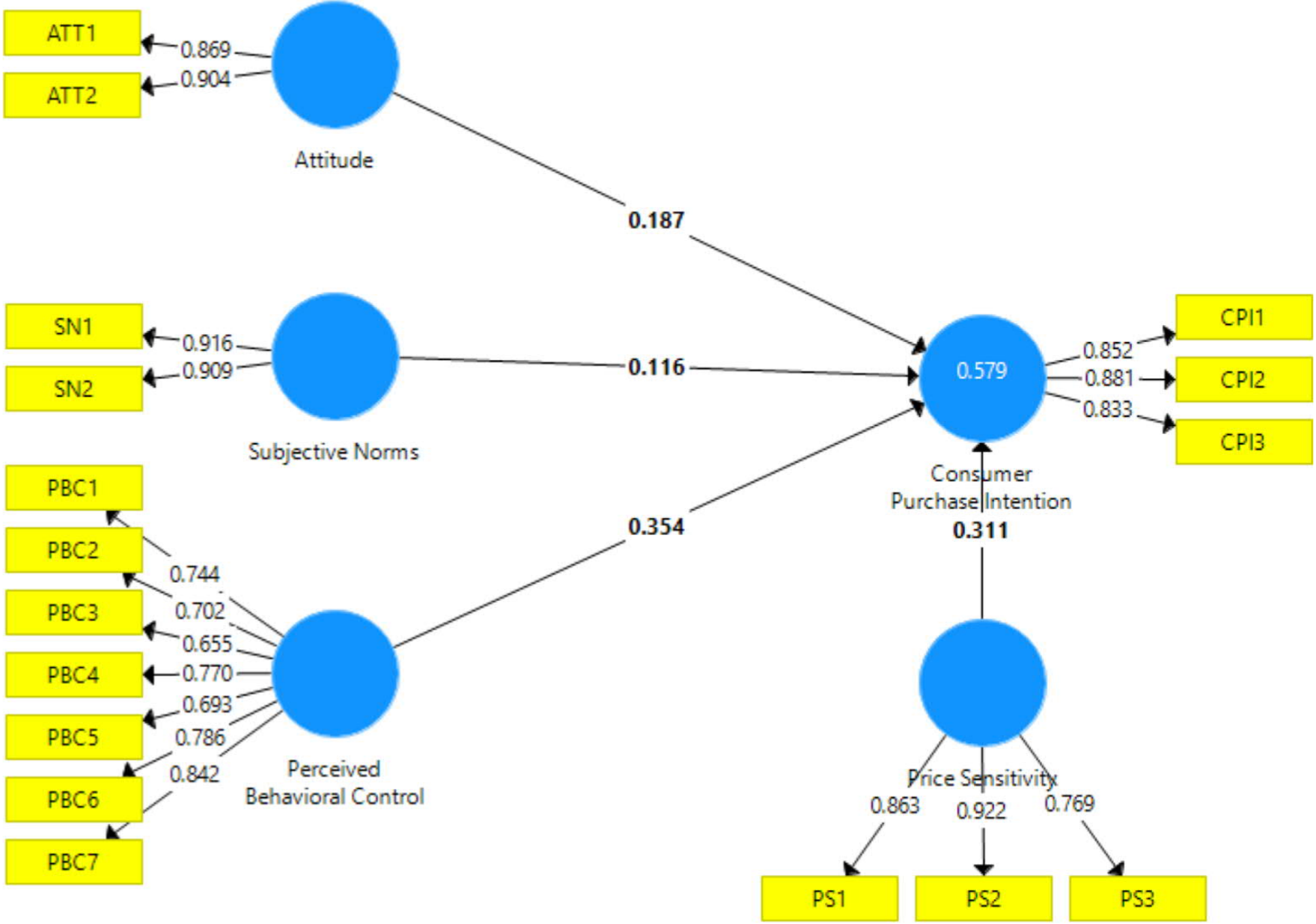
S. No	Measurement Variables	5-point Likert Scale

	Attitude	
1	It is environment-friendly to buy green automobile products.	Strongly Agree 5 to 1 Strongly Disagree
3	It is fuel-efficient to purchase green automobile products.	Strongly Agree 5 to 1 Strongly Disagree
	Subjective Norm	
4	Most people who are important to me think I should use green automobile products.	Strongly Agree 5 to 1 Strongly Disagree
5	Because I care about the people whom I value influence me to use green automobile products.	Strongly Agree 5 to 1 Strongly Disagree
	Perceived Behavioral Control	
8	I can buy green automobile product If I want to…	Definitely True 5 to 1 Definitely False
9	For me to buy green automobile product, it would be …….	Very Easy 5 to 1 Very Difficult
10	I am confident that I would be able to buy green automobile product if it were entirely up to me.	Strongly Agree 5 to 1 Strongly Disagree
11	How confident are you that you will be able to buy green automobile product?	Completely Confident 5 to 1 Completely Unconfident
12	It is mostly up to me to buy or not to buy green automobile product.	Strongly Agree 5 to 1 Strongly Disagree
13	How much personal control do you feel over buying green automobile product?	Complete Control 5 to 1 No Control at all
14	I have full control over buying green automobile product.	Strongly Agree 5 to 1 Strongly Disagree
	Consumer Purchase Intention	
15	I intend to purchase green automobile product in the future.	Strongly Agree 5 to 1 Strongly Disagree
16	I will try to consider buying green automobile product.	Strongly Agree 5 to 1 Strongly Disagree
17	I plan to switch my conventional automobile product with green automobile product in the future.	Strongly Agree 5 to 1 Strongly Disagree
	Price Sensitivity	
18	It is acceptable to pay 30% more for green automobile product than for non-green automobile product.	Strongly Agree 5 to 1 Strongly Disagree
19	I am willing to pay 30% more for green automobile product than for non-green automobile product.	Strongly Agree 5 to 1 Strongly Disagree
21	I can afford to spend an extra Rs.300,000 in order to buy green automobile product.	Strongly Agree 5 to 1 Strongly Disagree

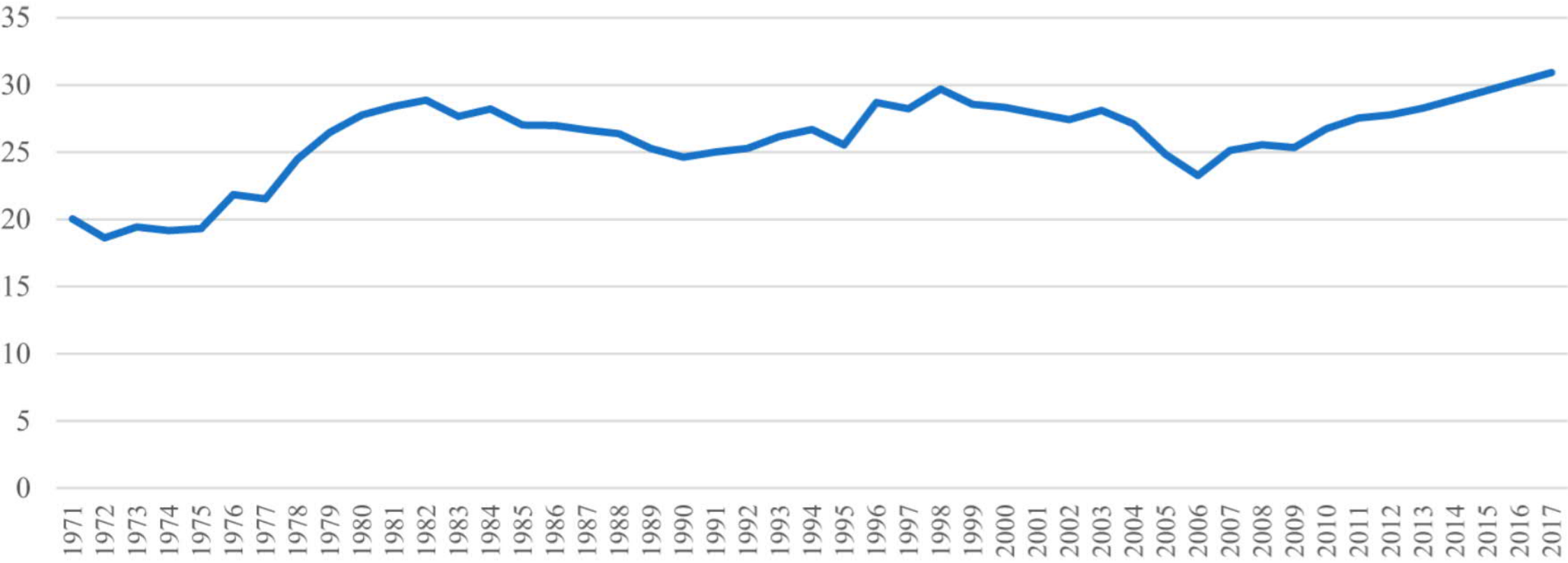
Source: (Ajzen, 2002; Larochi et al., 2001)


Total Cars
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17
Production
Sales


Price Sensitivity
Attitude
Subjective Norm
Perceived Behavioral Control
Consumer Purchase Intention



Notes: ATT = consumer attitude, SN = subjective norm, PBC = perceived behavioural control, PS = price sensitivity, CPI = consumer purchase intention



Source: World Bank (2018)