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Public Shifting Intention and Behavioural Outcomes for Supporting the Realization of SDG 7: A Theory of Planned Behaviour Framework.

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Abstract

Air pollution both from indoor and outdoor sources is a biggest challenge in recent years. India has been striding hard to control air pollution by promoting clean fuels such as LPG (Liquefied Petroleum Gas) and enacting proper emission norms based on the global standards such as the Bharat Stage Emission (BSES) norms. Sustainable Development Goal 7 (SDG7) relates to the affordable and clean energy. India has also performed pretty well in this respect. Approximately 81 percent of Indian states and Union territories have index value ranging from 80 to 100 for SDG seven. This paper tries to analyse the impact of Attitude (A), Subjective Norm (SN), Perceived Behavioural Control (PBC), Price (P) and Health Benefits (HB) on Shifting Intention (SI) for eco-friendly fuel and purchasing vehicles that are compliant to the latest BS norm i.e. BSVI norm. The present paper tries to understand the psychological factors that govern Shifting Intention and Behavioural Outcomes by using a Theory of Planned Behaviour framework. The impact of SI on BO is also empirically tested in this paper. It is important to understand public perception for adopting clean technologies for supporting the realization of SDG7. The empirical findings of the paper suggest that Attitude has the largest effect on the people's SI. PBC has positive impact on SI. . SI is found to be influenced least by SN and possesses an insignificant impact on SI. The findings also show that P is positively and significantly affecting the consumer's SI towards BS6 compliant vehicles. This indicates that Indian consumers perceive the higher value created by BS6 compliant vehicles and they are ready to pay more for these products. Further, HB is also

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found to possess a significant and positive impact on consumer's SI. HB is also found to possess a significant and positive impact on consumer's SI. The impact of SI on BO is significant and positive.

Keywords: Air Pollution, Theory of Planned Behaviour, Sustainable Development Goals.

Introduction

According to the UN resolution, "Transforming our world: the 2030 Agenda for Sustainable Development", India together with 123 nations committed towards the fulfillment of the Sustainable Development Goals (SDGs). Since then India has been trying towards the fulfillment of the SDGs. The SGDs covers social, economic and environmental goals and can be considered as a holistic approach towards sustainable development. Air pollution both from indoor and outdoor sources is a biggest challenge in recent years. India has been striding hard to control air pollution by promoting clean fuels such as LPG (Liquefied Petroleum Gas) and enacting proper emission norms based on the global standards such as the Bharat Stage Emission (BSES) norms. The percentage of households using LPG and PNG (Piped natural Gas) has increased drastically in recent years. LPG is identified as cleaner, safer and commercially feasible solution for low income nations (Haselip et al. 2021). The government of India has also launched the National Clean Air Programme (NCAP) in 2019 to tackle air pollution in 132 major cities. In India 99.99 percent households has been electrified and 92.02 percent households have LPG and PNG connections. Among the SDGs, goal seven (7) relates to the affordable and clean energy. India has also performed pretty well in this respect. Approximately 81 percent of Indian states and Union territories have index value ranging from 80 to 100 for SDG seven. Table 1 shows a detailed score of the Indian States for SDG seven.

Table 1

Sl. No.	States/UTs	SDG 7(Index Score)
1	Andhra Pradesh	100
2	Arunachal Pradesh	85
3	Assam	98
4	Bihar	78
5	Chhattisgarh	78
6	Goa	100
7	Gujarat	94
8	Haryana	100
9	Himachal Pradesh	100
10	Jharkhand	77
11	Karnataka	100
12	Kerala	100
13	Madhya Pradesh	86
14	Maharashtra	100
15	Manipur	96
16	Meghalaya	50
17	Mizoram	100
18	Nagaland	69
19	Odisha	80
20	Punjab	100
21	Rajasthan	100
22	Sikkim	100
23	Tamil Nadu	100
24	Telangana	100
25	Tripura	83
26	Uttar Pradesh	100
27	Uttarakhand	100
28	West Bengal	98
29	Andaman and Nicobar Islands	100
30	Chandigarh	100
31	Dadra and Nagar Haveli	71
32	Daman and Diu	71
33	Delhi	100
34	Jammu and Kashmir	100
35	Ladakh	100
36	Lakshadweep	83
37	Puducherry	98

Source: *NITI Aayog*

India has also leapfrogged from BS IV to BS VI skipping BS V emission norms to control vehicular pollution. The Government of India has also approved the Phase –II of the FAME scheme with an approximate expenditure of Rs. 10,000 crore for a period of five years. The Indian emission norms were prototypes of the European emission norms such as EURO I, EURO II etc. The first emission norm was introduced in the year 2000 and was named as India 2000 emission standard. The second and third emission norms, BS II and BS III were introduced in 2005 and 2010 respectively. However, there was a time lapse between the introduction of BS III and BS IV, the BS IV norms were introduced in 2017. Thus, the government skipped the BS V emission

norm and introduced the BSVI emission norms in 2020. Table 2 shows the differences in the emission levels prescribed by BS IV and BSVI emission norms for passenger vehicles.

Table 2

Engine Type	Exhaust Gases	BSIV	BS VI	Percentage Reduction
Petrol	CO(mg/Km)	1000	1000	Nil
	HC(mg/km)	100	100	Nil
	NOx(mg/km)	80	60	25
	PM	-	4.5	
Diesel	CO(mg/Km)	500	500	Nil
	HC(mg/km)	300	170	43
	NOx(mg/km)	250	80	68
	PM	25	4.5	82

Source: *Patil et al. (2019)*

The table 2 clearly shows that implementation of BS VI norms can reduce emissions in both Petrol and Diesel engines. Petrol Vehicles that are BS VI compliant emits 25 percent less Nitrogen Oxides. BS VI compliant diesel engines emit 43 percent less Hydrocarbons, 68 per cent less NOx and 82 percent less Particulate Matter. The government of India is successful to a great extent in implementing the SDG seven (7). However, it is important to analyse the public behavioural outcome towards the implementation of the SDGs. The present paper tries to analyse the behavioural outcomes or intentions for using eco-friendly or cleaner fuels and purchasing vehicles with improved emission norms such as the BS VI emission norms using the Theory of Planned Behaviour (TPB) framework. This paper tries to find the impact of Attitude, Subjective Norm, Perceived Behavioural Control, Price and Health Benefits on the Shifting Intention and Behavioural Outcome. The study is based on the Primary Survey conducted in the Bolpur Municipality, Birbhum (West Bengal, India). It is important to analyse the behavioural outcome for eco-friendly or cleaner fuels and purchasing BS VI vehicles/electrical appliances that reduces air pollution for the SDG seven to be actually successful. The paper also contributes in understanding the impact of public awareness in terms of Health Benefits and effects of Price on Shifting Intentions and Behavioural outcome. This paper uses a Structural Equation Modelling (SEM) approach to analyse the relationships.

The paper consists of sections based on literature review followed by sections on conceptual framework and hypothesis development, methodology, data and measurement of variables. The section on empirical result and discussion consists of the results of the Measurement Model and the Structural Model. The Smart PLS software is used for data analysis. Smart PLS simultaneously determines the Measurement Model and the Structural Model and is robust pertaining to normality assumptions.

Literature Review

The Theory of planned Behaviour (TPB) was developed by Ajzen (1991). It succeeded the Theory of Reasoned action developed by Ajzen and Fishbein (1980). The Theory of Planned Behaviour has been used in different studies to analyse the eco-friendly decision making. It provides a complete framework for understanding the factors that impacts the behaviour for using eco-friendly/cleaner fuels and vehicular norms or for BS VI vehicles (Vats et al., 2021). The TPB framework is a step ahead of the Theory of Reasoned Action as it includes Perceived Behavioural Control (PBC) and takes care of the limitation of Theory of Reasoned Action to deal with incomplete volitional control (Ajzen 1991). Sreen et al. (2021) compared two important behavioural theories The Theory of Planned Behaviour and Social Cognitive Theory. The results indicated and acknowledged The Theory of Planned Behaviour as a better predictor than the theory of Social Cognitive Theory for eco-friendly purchasing intentions.

The study by Kumar and Bipul (2012) examined the environment conciouscess by using Theory of Planned Behaviour. It investigated the factors that determine purchase intentions for environmentally sustainable products leading to their purchase behavior for such products. Structural Equation Modelling (SEM) was used to analyze the data. The results indicated environment knowledge has a positive relationship with attitude for environmentally sustainable products. The relationship between purchase intention for environmentally sustainable products and attitude is strongly significant as compared to the relationship between perceived behavioural control and purchase intention. Subjective Norm was insignificantly related to purchase intention. The study also found a positive and significant relationship between purchase intention and purchase behavior. This study helped to identify factors that determine the purchase intentions for environmentally sustainable products.

Liu et al. (2018) also investigated the impact of attitude, subjective norms and perceived behavioural control on the protective behavioural intentions for PM2.5. Online survey data was collected from 1277 respondents from parents of young children from rural and urban areas of Beijing. The study found different results for the parents of rural areas and urban areas. The results of data analysis for parents of urban areas showed that Subjective Norms and Perceived behavioural Control had significant direct impact on a anti-PM2.5 behavioural intentions. For parents of young children from rural areas attitude and subjective norms were found to influence anti-PM2.5 behaviour directly.

Parveen et al (2020) did research on the similar lines and investigated the impact of intentions of people to consume clean and green products on the actual behavior in reducing air pollution. This research also used The Theory of Planned behavior framework and showed attitude, perceived behavior control and knowledge about green products significantly affect their behavior. The research provided a direction for marketing green products by identifying the significant factors for policy framing.

The review of the above literature shows the importance of the Theory of Planned Behaviour framework for studying sustainable behavior, eco-friendly behavior and purchase intentions for clean and green products. The significant factors that affect behavior identified in the above literature included Attitude, Subjective norms and Perceived Behaviour Control. Some studies also used an extended version of the TPB famework and included different other factors such as knowledge, green benefits, price etc in studying the intentions and consequently the behavioural outcomes. The study by Mehmood et al. (2021) in Mexico used an extended format of TPB and included ecological conscience, moral obligation and willingness to pay as additional variables.

TPB studies also included the predicting adoption intention for Electronic Vehicles (EV). The empirical study by Shalendra et al. (2021) revealed positive relation of attitude, subjective norm, perceived behavioural control, moral norm and environmental concern with adoption intention. This study suggested that the extended version of TPB is most suitable in predicting the adoption intention of EVs. The data analysis in most researches carried along the Theory of Planned behavior framework used softwares like IBM SPSS and Smart PLS. Most recent studies used the smart PLS software due to its robustness pertaining to normality assumptions and simultaneous determination of measurement model and structural model. Bhutto et al. (2022) used smart PLS 3.2.7 to analyse data collected from 266 automobile consumers. Significant relationship was observed between attitude, subjective norm and perceived behavioural control and green purchase intentions for hybrid vehicles to reduce emissions.

Conceptual Framework and Hypothesis Development

The conceptual framework of the present study is derived from the Ajzen, 1991. Human behavior is guided by three considerations or beliefs, behavioural beliefs, normative beliefs and control beliefs. The behavioural beliefs generate desirable and undesirable attitude towards behavior, normative beliefs generate social pressures or subjective norms and control beliefs generate perceived behavior control.

The combination of attitude, subjective norms and perceived behavior control leads to the formation of intentions. The intentions in turn determine the actual behavior. The perceived behavior control makes Theory of Planned Behaviour (TPB) framework different from the Theory of Reasoned Action (TRA).

The mathematical form of the TPB framework is as follows (Ajzen, 1991):

$$\boldsymbol{BI = w_A A + w_{SN} SN + w_{PBC} PBC}$$

Where,

BI stands for Behavioural Intention

A stands for Attitude

SN stands for subjective Norm

PBC stands for Perceived Behaviour Control

w stands for the empirically derived weight or co-efficient for attitude, subjective norm and perceived behavior control.

Attitude (A), Subjective Norm (SN), Perceived Behaviour Control (PBC) is proportional to their underlying beliefs as,

$\boldsymbol{A \propto \sum_{i=1}^{n} b_i e_i}$. Where, **b** stands for strength of each belief towards an outcome or attribute and **e** stands for evaluation of the outcome or attribute.

$\boldsymbol{SN \propto \sum_{i=1}^{n} nr_i m_i}$. Where, **nr** stands for strength of each normative belief towards the referent and **m** stands for the motivation to comply with the referent.

$\boldsymbol{PBC \propto \sum_{i=1}^{n} c_i p_i}$. Where, **c** stands for strength of each control belief and **p** stands for the perceived power of control factors.

The actual Behavior Outcome (**BO**) is given as,

$$\boldsymbol{BO = w_{BI} BI + w_{PBC} PBC}$$

Where, ***w*** stands for the empirically derived weight or co-efficient for Behavioural Intention (BI) and Perceived Behaviour Control (PBC).

This paper incorporates two more factors that affect Intentions; Price (P) and Health Benefits (HB). Zeithmal (1988) referred price as the sacrifice value that the consumer is willing to give up to carry out any transaction. It is an important indicator of consumers' choice behavior. Product Health Benefits is one of the key factors that determine consumer perceptions (Niva, 2007). Figure 1 show the conceptual framework adopted from Ajzen, 1991.

Attitude and Shifting Intention

According to Wang et al. (2018) attitude is the sole factor determining the overall positive or negative evaluation of the behavior of an individual towards a specific thing. Attitude has been defined as a mental and neural state of readiness (Allport, 1935). An individual possessing a favourable attitude about anything is very

likely to engage in such a behavior. Hazen et al. (2017) emphasized on building a positive attitude among consumers to increase the sale of environment friendly products. The study made by Yan et al. (2019) for understanding people intentions towards electric vehicles revealed that attitude positively influences intention. In a study made by Liu et al. (2018) attitudes were found to directly influence the anti PM2.5 behavioural intentions. In a study relating to public willingness to reduce air pollution and green house gas emissions from private transport it was found that environment concern has significant relationship with attitude (Zahedi et al. 2019). The research by Vats et al. (2021) found that attitude positively influences switching intentions of consumers from BS IV to BSVI vehicles. The above discussion makes it clear that attitude is an important factor in determining Intention. Thus, under the above discussion it can be hypothesized:

Hypothesis 1 (H1): Shifting Intention (SI) of respondents towards eco-friendly/clean fuel or vehicles with improved emission norms is positively affected by respondents Attitude (A).

Subjective Norm and Shifting Intention

Subjective Norms refers to the opinion of others and the social pressure applied to a person by friends, family members, peers, teachers, etc. Subjective Norm is the perceived social pressure while conducting a behavior (Ajzen, 1991). It is the normative beliefs that are behind the subjective norms. Subjective norms are important determinant of perceived intention for environment friendly behavior. SN positively impacts behavioral intentions in various pro-environmental contexts (Han et al., 2019). In a research conducted in China by Liu et al., (2018) similar results were found where SN is found to directly influence the anti-PM2.5 behavioural intentions. The study by Shalender Kumar & Naman Sharma (2021) showed that SN has a positive relation with adoption intention of electric vehicles in India. Thus, the above discussion leads to the development of the following hypothesis:

Hypothesis 2 (H2): Subjective norms have a positive impact on the Shifting Intention for eco-friendly/clean fuel or vehicles with improved emission norms.

Perceived Behaviour Control and Shifting Intention.

Perceived Behavioural Control is related to an individual's psychological state and is defined as the difficulty or perceived ease to perform a particular behavior. PBC is known to impact intention and behavior significantly (Ajzen, 1991). Yan et al. (2019) also observed that Perceived behavioural control is associated with ones economic capacity. The study by Vats et al. (2021) showed that PBC has a positive relationship with intention for switching to BSVI vehicles. Thus, the following Hypothesis can be made from the above discussion:

Hypothesis 3 (H3): Perceived Behavioural Intention has a positive relationship with shifting intention for eco-friendly/clean fuel or vehicles with improved emission norms.

Price and Shifting Intention

The existing literature regarding the relationship between Price and Intention show mixed evidence. Bhutto et al. (2020) showed that consumers are willing to pay a higher price for a eco-friendly product. Ling (2013) on the other hand showed that though consumers show a preference to green products but are reluctant to pay higher price. Thus, it becomes imperative to study the relationship of Price with intention. The relationship of Price with Shifting intention can hypothesized as:

Hypothesis 4 (H4): Price will create a positive impact on the shifting intention of the respondents towards eco-friendly/clean fuel or vehicles with improved emission norms.

Health Benefit and Shifting Intention

Shah et al. (2021) attributed importance to Health consciousness in affecting intentions. The use of cleaner fuel and vehicles complying updated emission norm will reduce pollution and thereby promote health benefits. It is important to study whether public perception regarding the effectiveness of cleaner fuels and purchase of vehicles complying emission norms in reducing pollution in promoting health benefits by reducing pulmonary diseases and lowering the chances of fatality caused by ischemic heart diseases affects intention or not. Thus, the following hypothesis needs to be tested:

Hypothesis 5 (H5): Health Benefits will create a positive impact on shifting intention of the respondents towards eco-friendly/clean fuel or vehicles with improved emission norms.

Shifting Intention and Behavioural Outcome

Intention can accurately predict behavior (Ajzen, 1991). The research by Sheppard et al. (1988) found high degree of correlation between intention and behavior. However, in a study by Ventakesh et al. (2003) very less strong relationship was observed between intention and actual behavior. Thus, it becomes necessary to test the following hypothesis:

Hypothesis 6 (H6): Shifting Intention is positively related to Behavioural Outcome for using eco-friendly/clean fuel or purchasing vehicles with improved emission norms.

Perceived Behaviour Control and Behavioural Outcome

Perceived behavioural control was first introduced by Ajzen in the year 1988 into the Theory of Planned Behaviour as a determinant of both intention and behavior. The perceived behavioural control has been incorporated by many psychosocial researchers as determinant of actually engaging in behavior. The fewer the obstacles and more the resources an individual perceive, the greater is the intention to perform behaviours (Ajzen, 1986).

The above discussion leads to the development of the following hypothesis:

Hypothesis 7 (H7): Perceived Behavioural Intention has a positive relationship with Behavioural Outcome for eco-friendly/clean fuel or vehicles with improved emission norms.

Area of the Study

The study is undertaken in the Bolpur municipality, Birbhum, West Bengal. The Bolpur town is well known for its association with famous personalities like Rabindranath Tagore and nobel laureate Amartya Sen. The Bolpur Municipality lies between 87°40'24.864"E to 87°43'23.129"E and 23°38'7.587"N to 23°40'58.094"N with river Ajay flowing in its southern part and river Kopai flowing in its northern part. The Bolpur Municipality is divided into twenty wards covering a total area of 13.13 square kilometers (Census, 2011).

The municipality has a population of 80,210 persons of which 40,468 are males and 39,742 are females (Census, 2011). The literacy of Bolpur town is 86.77 percent which is more than the state average of 76.26 per cent (Census, 2011). The population of the town has been increasing since 1951 due to the socio-economic and urban infrastructural development in the last few decades.

Research Methodology

The data for the study is collected from twenty wards of the Bolpur municipality area by means of a field survey. Non-probabilistic sampling method is used to choose the respondents for the survey. A total of 210 households were surveyed in which the respondents were both males and females. The survey was conducted by means of questionnaire which consisted of two parts. The first part consisted of questions relating to the demographic profile of the respondents i.e. age, gender, educational qualification, income, profession etc. The first part also included questions on the type of vehicle owned by the household i.e. two wheeler, four wheeler etc, information regarding the PUC certificate of the vehicle owned by the household, Bharat Stage (BS) norm of the owned vehicle, household energy sources for cooking and heating, details of respiratory ailments etc.

The second part included questions pertaining to the constructs of the Theory of Planned Behaviour. Questions relating to Attitude, Subjective Norms, Perceived Behavioural Control, Health Benefits, Price, Shifting Intention and Behavioural Outcome are included in the second part of the questionnaire. The standard scales of measurement were adopted from existing literature. The responses were recorded using a 5-point Likert scale where 1 denoted strongly disagrees and 5 denoted strongly agree. As shown in Figure 1 the model consists of seven constructs i.e. Attitude (A), Subjective Norm (SN), Perceived Behavioural Control (PBC), Health Benefis (HB), Price (P), Shifting Intentions (SI) and Behavioural Outcome (BO). Here, SI and BO are the dependent variables and the rest are independent variables.

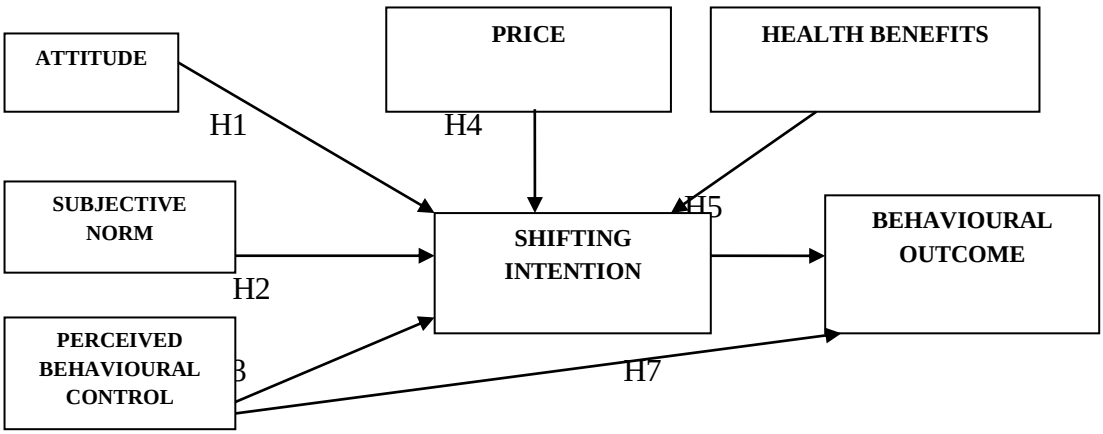

Figure 1

Conceptual Framework of the study

Source: *Based on Ajzen (1991)*

Descriptive Statistics and Empirical Results

The survey was undertaken in 20 wards of Bolpur Municipality and 220 respondents were approached. The subject matter of the questionnaire was explained to the respondents and 210 respondents agreed to fill the questionnaires. Out of 210 respondent 68.10 percentage of respondents were males and 31.90 percentage of respondents were females. The respondents were from varied professional backgrounds like medical representative, salesman, teacher, insurance professional, laboratory assistant, clerk, manager etc. The frequency of the respondents was highest in the age group 30-35 years. The survey purposively tried to cover literate respondents. Most of the respondents were literate with 38.57 percentage undergraduates, 39.05 percentage post graduates and only 3.33 percentage having years of education ≤10 years. Approximately 80 percentage of respondent owned two-wheeler, 1.42 percentage of respondent owned E-rickshaw and 3.33 percentage of respondent owned four-wheeler. However, 15.24 percentage of respondent didn't own any fuel or electricity run vehicle.

Descriptive statistics of the Demographic variables and details of fuel use and type of vehicle owned is shown in Table 3

SL No.	Variables		Frequency	Percentage
1.	Gender	Male (0)	143	68.10
		Female (1)	67	31.90
2.	Age (in years)	≤30	1	0.48
		30-35	76	36.19
		35-40	66	31.43
		40-45	9	4.29
		45-50	41	19.52
		≥50	17	8.10
3.	Years of Education	≤10	7	3.33
		10+2	40	19.05
		15	81	38.57
		≥17	82	39.05
4.	Income	≤5000	34	16.19
		5000-15000	41	19.52
		15000-25000	24	11.43
		25000-35000	25	11.90
		35000-45000	40	19.05
		≥45000	46	21.90
5.	Type of Vehicle Owned	Two wheeler	168	80
		Three wheeler (E-rickshaw)	3	1.42
		Four wheeler	7	3.33
		No fuel or electricity run vehicle	32	15.24

6.	BS Norm of the vehicle owned	BSIII	19	9.05
		BSIV	90	42.86
		BSVI	59	28.10
7.	Household Energy Sources for cooking and heating	LPG	210	100
		LPG and Kerosene Stove	9	4.29
		LPG and Induction	4	2
		LPG and Coal	1	0.48
8.	Respiratory Ailments in the Household	Yes (1)	39	18.57
		No (2)	171	81.43

Source: *Author's own Calculation.*

Empirical Results

Structural Equation Modeling consists of two models:

I. The Measurement Model
II. The Structural Model

Measurement Model:

The measurement model assesses the reliability and validity of the constructs under study. The quality of the constructs is based on the measurement model. Factor loadings represent the extent to which each item in the correlation matrix correlates with the given principal component. According to Hair et al. (2010) the factor loadings having value 0.50 or above are acceptable. The item BO3 has value less than 0.50 and is dropped from the study. The other factor loadings have values above 0.50 and are acceptable (Table 4). The removal of the

item BO3 does not affect Composite Reliability (CR) and Average Variance Extracted (AVE) significantly as the other values are considerably above the threshold level.

Table 4

Factor Loadings

	AT	BO	HB	P	PBC	SI	SN
AT1	0.932						
AT2	0.915						
AT3	0.849						
BO1		0.873					
BO2		0.893					
BO3 (Dropped)							
HB1			0.929				
HB2			0.894				
HB3			0.751				
P1				0.913			
P2				0.924			
P3				0.928			
PBC1					0.806		
PBC2					0.898		
PBC3					0.834		
SI1						0.898	
SI2						0.869	
SI3						0.926	
SN1							0.868
SN2							0.94
SN3							0.928

Source: *Author's own Calculation using Smart PLS3 software.*

Multicollinearity

Variance Inflation Factor (VIF) is used to measure multicollinearity in the indicators involved (Fornell and Bookstein, 1982). Multicollinearity is not a serious issue if VIF value is below 5 (Hair et al, 2016). Table 4 represents the VIF values which are below the threshold level of 5.

Table 5

VIF values

Outer Constructs	VIF
AT1	3.566
AT2	3.284
AT3	1.892
BO1	1.457
BO2	1.457
HB1	2.982
HB2	2.686
HB3	1.452
P1	3.039
P2	2.985
P3	3.313

PBC1	1.730
PBC2	2.128
PBC3	1.627
SI1	2.402
SI2	2.257
SI3	3.073
SN1	2.245
SN2	3.633
SN3	3.354

Source: *Author's own Calculation using Smart PLS3 software.*

Reliability analysis

Reliability is measured using Cronbach's alpha and Composite Reliability. The recommended value is greater or equal to 0.70 (Sarstedt et al. 2017). Table 3 shows the values of Cronbach Alpha and Composite Relability for the indicators. The Cronbach Alpha ranged from 0.718 to 0.912 and the Composite Reliability ranged from 0.876 to 0.944 and is well above the threshold level. Reliability represents the extent to which a measuring instrument is stable, consistent and repeatable (Mark, 1996).

Table 6

Construct Reliability Analysis Results

	Cronbach's Alpha	Composite Reliability
AT	0.881	0.927
BO	0.718	0.876
HB	0.823	0.895
P	0.912	0.944
PBC	0.803	0.884
SI	0.880	0.926
SN	0.899	0.937

Source: *Author's own Calculation using Smart PLS3 software*

Construct Validity

Validity is measured in two ways:

I. Convergent Validity
II. Discriminant Validity

Convergent validity

The main idea behind convergent validity is that two or more measures of the same thing should have high covariance if they are valid measures of the concept (Bagozzi et al., 1991). If the Average Variance Extracted is greater than or equal to 0.50 then the items converge to measure the underlying construct and convergent validity is established (Fornell and Locker, 1981). Table 4 shows the values of AVE ranging from 0.717 to

0.850. The values of AVE are well above the threshold level of 0.50 and hence, convergent validity is established.

Table 7

Construct Convergent Validity Analysis Results

	Average Variance Extracted (AVE)
AT	0.809
BO	0.780
HB	0.742
P	0.850
PBC	0.717
SI	0.806
SN	0.832

Source: *Authors own Calculation using Smart PLS3 software*

Discriminant Validity

Discriminant Validity is the degree to which measures of different concepts are distinct. The main idea is that if two or more constructs are unique, then valid measures of each should not correlate too highly (Bagozzi et al., 1991). Discriminant validity is established when the square root of the AVE for any construct is greater than its correlation with other constructs (Fornell & Larcker, 1981). The Table 5 shows the square root of the AVE (in Bold) for a construct is greater than its correlation with other contructs. Hence, discriminant validity is well established by Fornell-Larcker criteria. Cross loadings is another indicator for discriminant validity. The cross loading values also guarantees discriminant validity (Table 6) as none of the indicator has higher correlation with another latent variable as with its own respective latent variable.

Table 8

Discriminant Validity-FL criterion

	AT	BO	HB	P	PBC	SI	SN
AT	**0.899**						
BO	0.686	**0.883**					
HB	0.648	0.596	**0.861**				
P	0.661	0.707	0.563	**0.922**			
PBC	0.734	0.673	0.578	0.665	**0.847**		
SI	0.790	0.730	0.691	0.743	0.746	**0.898**	
SN	0.732	0.596	0.618	0.567	0.633	0.666	**0.912**

Source: *Author's own Calculation using Smart PLS3 software*

Table 9

Discriminant Validity-Cross Loadings

	AT	BO	HB	P	PBC	SI	SN
AT1	0.932	0.630	0.638	0.579	0.669	0.753	0.689
AT2	0.915	0.612	0.636	0.556	0.639	0.702	0.733
AT3	0.849	0.611	0.467	0.652	0.674	0.674	0.549
BO1	0.584	0.873	0.437	0.618	0.575	0.612	0.414
BO2	0.627	0.893	0.608	0.631	0.613	0.676	0.629
HB1	0.653	0.559	0.929	0.488	0.606	0.681	0.627
HB2	0.562	0.557	0.894	0.554	0.491	0.599	0.546
HB3	0.436	0.409	0.751	0.408	0.369	0.488	0.398
P1	0.574	0.657	0.451	0.913	0.638	0.633	0.463
P2	0.624	0.667	0.593	0.924	0.587	0.729	0.568
P3	0.626	0.632	0.502	0.928	0.619	0.686	0.530
PBC1	0.568	0.463	0.434	0.413	0.806	0.540	0.505
PBC2	0.658	0.605	0.600	0.575	0.898	0.720	0.599
PBC3	0.633	0.626	0.420	0.679	0.834	0.618	0.499
SI1	0.746	0.695	0.618	0.757	0.733	0.898	0.624
SI2	0.611	0.600	0.626	0.553	0.560	0.869	0.595
SI3	0.761	0.666	0.620	0.676	0.702	0.926	0.574
SN1	0.658	0.486	0.493	0.447	0.528	0.522	0.868
SN2	0.675	0.581	0.608	0.565	0.586	0.661	0.940
SN3	0.676	0.557	0.581	0.530	0.615	0.626	0.928

Source: *Author's own Calculation using Smart PLS3 software*

Structural Model

The value of R^2 for the dependent variables determines the goodness of the model. The R^2 value must be equal to or over 0.10 (Falk & Miller, 1992). The R^2 values for the dependent variables Shifting Intention (SI) and Behavioural outcome (BO) are well above 0.10 and are significant. Therefore, SI well explains BO and guarantees that the model has a good explanatory power.

Table 10

Explanatory and Predictive capacity of the model (R^2 & Q^2)

	R^2	Q^2
Behavioural Intention	0.571	0.436
Shifting Intention	0.757	0.597

Source: *Authors own Calculation using Smart PLS3 software*

A Q^2 value above 0 indicates that the model has predictive relevance. Here, the Q^2 values of the dependent variables are 0.436 and 0.597 respectively which are well above 0. Thus, the model has both explanatory and predictive relevance.

The path co-efficient, p values, T statistics are shown in Table 11. The acceptance and rejection of the study hypotheses are also given in Table 11. The present study's 5000 bootstrap samples also generate 95% confidence interval.

Table 11

Summary table showing the results

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values	Hypotheses	Accepted/ Rejected
AT -> SI	0.307	0.307	0.059	5.246	**0.000**	H1	Accepted
HB -> SI	0.201	0.200	0.055	3.675	**0.000**	H2	Accepted
P -> SI	0.275	0.271	0.055	5.024	**0.000**	H3	Accepted
PBC -> BO	0.290	0.292	0.063	4.618	**0.000**	H4	Accepted
PBC -> SI	0.200	0.203	0.066	3.026	**0.003**	H5	Accepted
SI -> BO	0.514	0.512	0.064	8.062	**0.000**	H6	Accepted
SN -> SI	0.034	0.037	0.051	0.660	**0.509**	H7	Rejected

Source: *Author's own Calculation using Smart PLS3 software*

Implications

The empirical findings of the paper suggest that Attitude has the largest effect on the people's SI. The attitude of consumers may be improved through popularizing the use of more environment friendly fuel, appliances and vehicles, resulting in a positive image of eco-friendly fuel and vehicles. The positive impact of PBC on SI emphasizes the significance of generating favourable conditions in terms of availability which may facilitate and ease the consumers' choice of purchasing eco-friendly products. SI is found to be influenced least by SN and possesses an insignificant impact on SI. The findings also show that P is positively and significantly affecting the consumer's SI towards BS6 compliant vehicles. This indicates that Indian consumers perceive the higher value created by BS6 compliant vehicles and they are ready to pay more for these products. Further, HB is also found to possess a significant and positive impact on consumer's SI. SI has a positive and significant impact on the actual behaviour or the BO. As a result, government must effectively communicate the health impact of these vehicles and clean fuels to consumers since awareness of their usage will have a major impact on the consumer's attitude and willingness to purchase them. Hence, the present study has policy implications and supporting the realization of SDG 7.

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