Implementation of Sustainable Practices and Green Products in Selected Cities of Gujarat

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Abstract: Sustainable green economy is the need of time and green/ eco-friendly products can play a decisive role towards achievement of the goal. Business firms see green development as an opportunity to improve their marketing specialty rather than as a set of actions that must be completed. Green marketing adopts innovative techniques of product modification, dynamic product process, maintaining sustainability and diversified advertising. Due to eco-sustainable marketing practices, customer's consciousness towards the use of eco-sustainable goods in India has increased. Sustainable consumption behaviour is consumers' behaviour that improves social and environmental performance as well as meets their needs, it also studies what products consumers do or do not buy, how they use them and what do they do with them afterwards. Pro-environmental behaviour is observed when an individual is contributing to environmental sustainability by being aware in energy using products.

To understand how consumers, adopt eco-products, an extensive literature review of green consumerism was undertaken. The objective of this research paper is to assess whether the consumer is recognizing and effectively purchasing green products in retail. This paper aims to study the perception of consumers in relation to sustainable development practices. Primary data was collected through convenience sampling from the selected cities of Gujarat. The focus of the study is to provide insights to understand various parameters of consumer's attitude towards purchase of eco-friendly products. The findings of the study revealed a significant correlation between the sustainable development practices and adoption of green products. Further, this study surfaced some major perceived barriers resisting the adoption of green products. Also, some important parameters affecting the purchase of green products are worth noting and do demand the immediate attention of green marketers.

Keywords: Environmental protection, Sustainability, Sustainable consumption, Green products, Eco-Labels, Consumer perception, Perceived barriers

I.   Introduction:

Environmental Pollution

Environmental pollution is a significant issue in developing countries, particularly in India. However, to comprehend the word 'Environmental Pollution', it is required to shed some light on the term 'Pollution'. Pollution can refer to both uncontrolled human activity, such as light and noise pollution, and specific pollutants, such as plastics or radioactive materials. There are three major types of environmental pollution: air pollution, water pollution, and land contamination. Despite global attention, pollution's influence is still felt because of the serious long-term consequences. Environmental pollution threatens biodiversity, public health, and the general health of ecosystems. To reduce and reduce pollution's effects, we must work together through regulations, sustainable practices, technology advances, and public awareness campaigns.

1)   To prevent ecological pollution, the following actions can be taken:
2)   Using public transit.
3)   When not in use, turn off lights.
4)   Maximise reuse.
5)   Avoid plastic packaging.
6)   Smoking and wildfires are being minimised.

7)   Use fans rather than air conditioners.
8)   For chimney stacks, employ channels.

Green Products:

The term 'green' refers to a colour that is typically linked with nature, yet it is not related to colour itself. Earth-friendly products are biodegradable and will not harm the environment when released into the air, water, or soil during use or disposal. Green products are those that are designed, made, and used in a way that reduces their environmental and human health effect across their whole life cycle. These items are frequently designed with an emphasis on sustainability, resource conservation, and pollution reduction. Green products include environmentally friendly cleaning supplies, organic food and apparel, energy-saving appliances, hybrid or electric automobiles, and sustainable building materials. By purchasing green products, consumers may help to protect the environment and foster a more sustainable economy.
Thus, green products are:
1)   Energy-efficient, durable, and often require minimal maintenance.
2)   Our goods are free of Ozone-depleting chemicals, hazardous substances, and produce no toxic bi-products.
3)   Often built from recycled materials or renewable and sustainable sources.
4)   Obtained from local manufacturers or sources.
5)   Reusable or biodegradable, either partially or completely.

Sustainable Consumption

Sustainable consumption is the study of resource and energy usage. The term sustainability suggests that those studying sustainable development attempt to apply the concept of "continuance" - the ability to meet the demands of both current and future generations. Sustainable consumption is the use of items and services that have a low environmental impact, allowing future generations to meet their requirements. It refers to consumer activity that enhances social and environmental performance while simultaneously meeting their needs. It also investigates what items people buy or do not buy, how they use them, and what they do with them afterwards.

Sustainable consumption is an umbrella term that encompasses a number of key issues, including meeting needs, improving quality of life, increasing the use of renewable energy sources, reducing waste, adopting a life cycle perspective, and considering equity. Integrating these component elements is the primary question of how to deliver the same or better services to meet the basic needs of life and the aspirations of future generations while continuously lowering environmental damage and human health concerns.

II.   Review of Literature:

Previous study has found that young consumers are a significant engine in the development of an environmentally conscious people (do Paço, Alves, Shiel, & Filho, 2013) as they tend to be well informed about social and environmental issues (Furlow & Knott, 2009; Straughan & Roberts, 1999). Several studies reveal that younger folks are more aware and concerned about environmental quality and (Diamantopoulos, Schlegelmilch, Sinkovics, & Bohlen, 2003) and they are willing to seek green items (Jain & Kaur, 2006). Adolescents represent a tremendous market opportunity for environmentally conscious products (Lee, 2008). However, contrary evidence suggests that younger customers show lower levels of support for environmental restrictions. (Samdahl & Robertson, 1989) and that such legislation has little influence on their environmental values. (Leonidou, Coudounaris, Kvasova, & Christodoulides, 2015). Furthermore, such youthful customers pay less attention to eco-labelling than older folks (D'Souza, Taghian, Lamb, & Peretiatko, 2007). They also appear unwilling to engage in purchasing ecologically friendly products (Grønhøj & Thøgersen, 2012). One potential reason for this phenomenon is the universal financial limitation encountered by young customers, particularly those who are students or unemployed (Jain & Kaur, 2006). Researchers have used several terms to describe environmental behaviour, such as pro-environmental, environmentally friendly, environmentally sustainable, ecologically relevant, and green behaviour. According to Kollmuss and Agyeman (2002, p. 240),

pro-environmental behaviour is 'activity that intentionally strives to minimise the detrimental influence of one's actions on the natural and built world.' This concept addresses two aspects of ecologically important activity proposed by Stern (2000): environmental impact and environmental intent. The former indicates behavioural influence on resource availability and ecosystem structure, whereas the latter denotes behavioural purpose to affect the environment. Pro-environmental activity typically involves two domains: public and private (Stern, Dietz, Abel, Guagnano, & Kalof, 1999). The public sphere includes committed activity (e.g., working in environmental organisations), good citizenship (e.g., lobbying on environmental concerns), and support for environmental policy (e.g., publicly approving environmental legislation). According to Kollmuss and Agyeman (2002, p. 240), pro-environmental behaviour is 'activity that intentionally strives to minimise the detrimental influence of one's actions on the natural and built world.

Handrina (2016) made a study to identify perception of public towards green purchase in Indonesia. The research studies perception of groups of professionals, young people and housewives as these groups are assumed to contribute largely towards green buying. In-depth, interview was done to collect data in order to meet research objectives. It was found that green behaviour differs amongst people. Young people (students) were found to be more inclined to behave green. Concern for health and environment acts as a catalyst for this inclination towards green products, however higher price of such products becomes a pain point. Similarly, Rahbar & Wahid (2011, Malaysia), Shen (2012, China), Aryal, Chaudhary, Pandit & Sharma (2009, Nepal), Bukhari (2011, India) have contributed in the similar type of research outcome further revealing that consumers are inclined towards purchasing products that they are emotionally attached to and are willing to pay a higher price.

III.   Research Objectives:
1)   To study the perception of consumers in relation to sustainable development practices
2)   To analyse perception towards factors that are likely to act as barriers in purchase of green products.
3)   To under the level of priority of parameters that affect purchase of green products.

IV.   Research Methodology:

The current research is descriptive in nature. The researcher employed the convenience sampling technique to collect primary data from people through a survey. To acquire primary data, a systematic, non-disguised questionnaire was used, which was then conducted via a Google Form and questionnaire distribution. The link to this Google Form questionnaire was distributed to around 270 people known to the researcher, 240 of whom responded accurately. Questionnaires that were incomplete were excluded from the data collection.
The majority of the responders to the survey were from Ahmedabad. People from cities like Gandhinagar, on the other hand, responded in significant numbers. The questionnaire was divided into four sections: demographic information, sustainable development practices, parameters affecting purchase of green products and perceived barriers.

Consumer awareness and attitude were measured using appropriate five-point Likert scales ranging from (1) Strongly Disagree to (5) Strongly Agree. Before delivering the final questionnaire to the targeted respondents, a pilot survey of 30 people was conducted locally. The final questionnaire was administered following minor revisions to the original draft. The internal consistency of scales was verified with Cronbach's Alpha and all scales showed satisfactory scores ranging between 0.65 to 0.79. The collected primary data was analysed through IBM SPSS Statistics - 21 Descriptive statistics, average mean, and standard deviation were calculated.

V. Data Analysis and Findings:

Table 1: Demographic Characteristics of Respondents

Respondent's Profile	Particulars	Respondents	Percentage
Gender	Male	78	32.5
	Female	162	67.5
Age Group	20-30 years	144	60
	30-40 years	72	30
	40-50 years	11	4.6
	50 or more years	13	5.4
Respondent Status	Student	43	17.9
	Employed	101	42.1
	Self-Employed	64	26.7
	Home-maker	26	10.8
	Retired	2	0.8
Education	Below High School	23	9.6
	Graduate	191	79.5
	Post Graduate	17	7.08
	Doctorate	9	3.7
Household Size	Less than 3 members	95	39.6
	3 to 5 members	113	47.1
	More than 5 members	32	13.3
Income	Rs. 50,000/- to Rs. 1,00,000/-	133	55.4
	Rs. 1,00,000 to Rs.1,50,000	74	30.8
	More than Rs. 1,50,000	33	13.75
Respondent City/Town	Gandhinagar	84	35
	Ahmedabad	98	40.8
	Vadodara	58	24.2

Table 2: Frequency Distribution of Sustainable Development Practices Construct

Sustainable Development Practices/Consumption Behaviour	Level of Agreement (1 = Strongly Disagree, 2 = Disagree, 3 = Neither Disagree nor Agree, 4 = Agree, and 5 = Strongly Agree)				
	1	2	3	4	5
Supporting Construction and renovation based on green design principles	0	1	16	160	23
Encouraging Energy conservation practices in domestic and commercial uses as well.	0	1	7	147	85
Discouraging waste generation practices	0	2	5	140	93

Encouraging Recycling of solid waste i.e. including paper, plastic, metal, e-waste, etc.	0	1	20	120	99
Supporting Sustainable food programme	0	0	20	152	68
Encouraging Water conservation practices in domestic and commercial establishments	0	0	8	142	90
Supporting Sustainable land management practices.	0	0	8	124	108
Encouraging Sustainable transportation programme like non-motorized vehicles car pools, bus pass programme etc.	0	1	27	96	116
Encourage Green product purchasing from reliable sources .	0	0	18	114	108
Minimize toxic and radioactive waste	0	0	9	126	105
Encourage Environmental audit for sustainable development	0	11	18	90	121

Table 3: Reliability test of Sustainable Development Construct

Constructs	Statements	Cronbach α
Sustainable Development Practices	Supporting Construction and renovation based on green design principles	0.882
	Encouraging Energy conservation practices in domestic and commercial uses as well.	
	Discouraging waste generation practices	
	Encouraging Recycling of solid waste i.e. including paper, plastic, metal, e-waste, etc.	
	Supporting Sustainable food programme	
	Encouraging Water conservation practices in domestic and commercial establishments	
	Supporting Sustainable land management practices.	
	Encouraging Sustainable transportation programme like non-motorized vehicles car pools, bus pass programme etc.	
	Encourage Green product purchasing from reliable sources .	
	Minimize toxic and radioactive waste	
	Encourage Environmental audit for sustainable development	

Table 4: One sample t-test between Consumer's perception and Sustainable development

Sustainable development	Mean	Std. Deviation	t	Sig.	Remarks
Supporting Construction and renovation based on green design principles	4.188	0.5585	11.145	.000	Significant
Encouraging Energy conservation practices in domestic and commercial uses as well.	4.317	0.5486	12.896	.000	Significant
Discouraging waste generation practices	4.350	0.5661	11.036	.000	Significant
Encouraging Recycling of solid waste i.e. including paper, plastic, metal, e-waste, etc.	4.321	0.6431	10.377	.000	Significant
Supporting Sustainable food programme	4.200	0.5727	11.605	.000	Significant
Encouraging Water conservation practices in domestic and commercial establishments	4.342	0.5411	12.298	.000	Significant
Supporting Sustainable land management practices.	4.417	0.5577	12.689	.000	Significant
Encouraging Sustainable transportation programme like non-motorized vehicles car pools, bus pass programme etc.	4.363	0.6951	9.234	.000	Significant
Encourage Green product purchasing from reliable sources .	4.375	0.6213	19.094	.000	Significant
Minimize toxic and radioactive waste	4.400	0.5624	11.198	.000	Significant
Encourage Environmental audit for sustainable development	4.338	0.8070	3.263	.000	Significant

As evident from Table 4, the perception of consumers had a significant impact on sustainable development practices. The mean of statements measuring sustainable development has mean values lower than 5. This indicates that most of the respondents agree that the sustainability plays a crucial role in saving the environment on longer run. The significant value (p-value) for all statements is 0.00, which is less than 0.05, which indicates the significance of the statement.

Table 5: Frequency Distribution of Perceived Barriers Construct

Perceived Barriers	Level of Agreement (1 = Strongly Disagree, 2 = Disagree, 3 = Neither Disagree nor Agree, 4 = Agree, and 5 = Strongly Agree)				
	1	2	3	4	5
I cannot afford to pay more to buy Energy Efficient / Green Household Appliances.	35	53	24	106	22
While shopping, I can't easily distinguish between energy efficient and conventional electrical appliances	32	89	34	80	5

I need a lot of extra time to purchase Energy Efficient Appliances	32	109	10	54	35
I am not confident about the credibility of energy rating labels	27	98	17	50	48
Lack of Information/Awareness about green products is responsible for its low demand.	5	27	14	66	128
Lack of Availability / Unease of Access of green products is responsible for its low demand.	15	18	12	67	128
Cost savings from green products are lower than expected.	31	30	55	55	69
I fear of being cheated in the name of green products.	31	45	22	95	47
Unwillingness to change is responsible for the low demand of green products.	1	16	15	81	127
Lack of proper promotion of green products is responsible for its low demand.	0	14	16	68	142

Table 6: Reliability Test of Perceived Barriers Construct

Constructs	Statements	Cronbach α
Perceived Barriers	I cannot afford to pay more to buy Energy Efficient / Green Household Appliances.	0.765
	While shopping, I can't easily distinguish between energy efficient and conventional electrical appliances	
	I need a lot of extra time to purchase Energy Efficient Appliances	
	I am not confident about the credibility of energy rating labels	
	Lack of Information/Awareness about green products is responsible for its low demand.	
	Lack of Availability / Unease of Access of green products is responsible for its low demand.	
	Cost savings from green products are lower than expected.	
	I fear of being cheated in the name of green products.	
	Unwillingness to change is responsible for the low demand of green products.	
	Lack of proper promotion of green products is responsible for its low demand.	

Table 7: Frequency Distribution of Parameters affecting Purchase of Green Products

Parameters	Level of Priority (1 = Not a priority, 2 = Low priority, 3 = Medium priority, 4 = High priority, and 5 = Essential)				
	1	2	3	4	5
Label and brand name	0	6	30	24	120
Look and feel	1	16	55	114	54
Recommendation from relatives and friends	1	19	37	66	117
Persuasion from salesman	12	47	54	75	52
Personal research from website and newspaper before purchase	11	4	34	77	114
Cost incentive attached like easy EMI, festival offer, free gifts	0	1	18	115	106
Energy saving	0	1	11	101	127
Convenient to use	0	1	16	128	95
Health reasons	0	1	15	74	150
Latest and smart technology	0	1	2	38	199
Price	0	1	1	25	213
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.					.599
Bartlett's Test of Sphericity	Approx. Chi-Square				606.835
	df				55
	Sig.				.000

Above given Table 7, shows that the KMO measure of sampling adequacy is 0.599. The significance P-Value of Bartlett's Test of Sphericity is 0.000 which is less than 0.05 that signifies the data is suitable for the application of factor analysis.

Table 8: KMO Range Communalities (Principal component analysis method)

	Initial	Extraction
Label and brand name	1.000	.767
Look and feel	1.000	.872
Recommendation from relatives and friends	1.000	.735
Persuasion from salesman	1.000	.763
Personal research from website and newspaper before purchase	1.000	.813
Cost incentive attached like easy EMI, festival offer, free gifts	1.000	.809
Energy saving	1.000	.553
Convenient to use	1.000	.644
Health reasons	1.000	.858
Latest and smart technology	1.000	.638
Price	1.000	.630

Usually, the communalities range less than 0.50 is not taken into consideration as these factors are not contributing anything to the factor analysis. But, in this case all the range values are more than 0.50, hence, all the values will be considered in the calculation of factor analysis.

Total Variance Explained						
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.738	24.887	24.887	2.738	24.887	24.887
2	1.740	15.818	40.704	1.740	15.818	40.704
3	1.424	12.943	53.647	1.424	12.943	53.647
4	1.111	10.097	63.744	1.111	10.097	63.744
5	1.070	9.723	73.467	1.070	9.723	73.467
6	.687	6.249	79.716			
7	.669	6.078	85.795			
8	.514	4.671	90.466			
9	.447	4.064	94.530			
10	.347	3.152	97.682			
11	.255	2.318	100.000			
Extraction Method: Principal Component Analysis.						

Component Matrix[a]					
	Component				
	1	2	3	4	5
Label and brand name*	.384				
Look and feel*	.330				
Recommendation from relatives and friends		.724			
Persuasion from salesman	.554				
Personal research from website and newspaper before purchase	.726				
Cost incentive attached like easy EMI, festival offer, free gifts	.524				
Energy saving	.505				
Convenient to use	.597				
Health reasons					.595
Latest and smart technology	.659				
Price			.519		
Extraction Method: Principal Component Analysis.					
a. 5 components extracted.					

The above table shows Principal Component Analysis. Varimax with Kaiser Normalization Rotated method is used in factors rotation.

The analysis identified five components. Items having factor loading more than 0.40 is considered.

Factor 1 considers 6 attributes and explained 24.88% of variance in the data with Eigen value of 2.738. The attributes associated with this factor includes "Persuasion from salesmen", "Personal research from website and newspaper before purchase", "Cost incentive attached like easy EMI, festival offer, free gifts", "Energy savings" "Convenient to use" and "Latest and smart technology".

Factor 2 considers 1 attribute associated with this factor includes "Recommendation from relatives and friends" and Factor 3 considers 1 attribute associated with this factor includes "Heath reasons".

Table 9: Correlation Matrix (Factors influencing Purchase of Green Products)

	Label and brand name	Look and feel	Recommendation from relatives and friends	Persuasion from salesman	Personal research from website and newspaper before purchase	Cost incentive attached like easy EMI, festival offer, free gifts	Energy saving	Convenient to use	Health reasons	Latest and smart technology	Price
Label and brand name	1	.177**	-.240**	-.113	.381**	.308**	.000	.155*	.158*	.284**	.067
		.006	.000	.079	.000	.000	.995	.016	.014	.000	.304
Look and feel		1	.216**	.088	.154*	-.169**	.137*	.171**	-.108	.212**	.148*
			.001	.175	.017	.009	.034	.008	.094	.001	.022
Recommendation from relatives and friends			1	.453**	.027	.000	.339**	.086	-.091	.291**	.167**
				.000	.674	.998	.000	.183	.158	.000	.010
Persuasion from salesman				1	.462**	.236**	.157*	.257**	-.027	.155*	.005
					.000	.000	.015	.000	.673	.016	.942
Personal research from website and newspaper before purchase					1	.513**	.163*	.456**	.022	.259**	-.001
						.000	.011	.000	.738	.000	.984
Cost incentive attached like easy EMI, festival offer, free gifts						1	.121	.229**	-.007	.151*	.134*
							.062	.000	.916	.020	.038
Energy saving							1	.128*	.009	.365**	.296**
								.047	.889	.000	.000
Convenient to use								1	.251**	.254**	.047
									.000	.000	.467

	Health reasons	Latest and smart technology	Price
Health reasons	1	.209**	.081
		.001	.211
Latest and smart technology		1	.335**
			.000
Price			1
		.000	
		240	240

Correlation matrix shown in Table 9 shows correlation between the various factors that affect the purchase of green products. All factors show a corresponding p value 0 or less than 0.05. hence, we conclude that the corresponding factors possess significant relationship and correlation between them. Therefore, this adds to the validity of the presented statements.

V.   Conclusions:

Based on the above findings, following are some major conclusions drawn:

1)   From among the total respondents surveyed, most respondents agree that sustainability plays a crucial role in saving the environment in the longer run.

2)   There is a positive and significant correlation between the sustainable development practices and positive perception of respondents towards the purchase of green products.

3)   From amongst the possible perceived barriers affecting the purchase of green products, the major ones are:

-    Lack of proper promotion of green products is responsible for its low demand.
-    Lack of Information/Awareness about green products is responsible for its low demand.
-    Lack of Availability / Unease of Access of green products is responsible for its low demand.
-    Unwillingness to change is responsible for the low demand of green products.

4)   Amongst the factors that affect the purchase of green products, the major ones are: Price, Latest and smart technology, Health reasons, Energy savings, label and brand name, and recommendations from relatives and friends.

VI.   Limitations:

One of the potential drawbacks of any social science research is that the respondents picked for the study do not adequately represent the whole population of Gujarat's selected districts. The survey responses are prone to many types of bias. The chosen sample is a convenience sample, and while there are benefits to doing so, it may produce measurement difficulties. Most social science research is still limited by time and financial constraints.

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