

**“An Empirical Study on Pro-Environmental Behavior Towards Selected Green Household Appliances for Sustainable Consumption: Special Reference to Gujarat, India”**

**SYNOPSIS**

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## **1. INTRODUCTION:**

### **1.1 Overview:**

For the past 50–60 years, a number of society stakeholders have been paying close attention to how quickly our ecosystem is deteriorating. In order to stop the environment from deteriorating into a critical state, individuals, organisations, and institutions from all over the world have started to recognise the issue and have come together. A brand-new marketing theory called "Green Marketing" was developed in 1960, focusing on the demand for environmentally friendly items among consumers.

The push for companies to promote more sustainable and green practises from customers, shareholders, employees, partners, and governments (through regulations) has given rise to the green and sustainability trend. Customers' requirements should be satisfied by a sustainable business without causing environmental damage. Customers, investors, and the environment can all benefit from sustainable business development (Singh, 2013). Green, environmental, and eco-marketing are examples of emerging marketing strategies that aim to question conventional thinking and practise in marketing and offer a vastly different viewpoint rather than simply refocus, alter, or enhance it. Under this study, the individual participation in an activity that promotes sustainable (green) practises by minimising or eliminating adverse environmental effects is considered to be pro-environmental behaviour. These initiatives consist of lowering waste and pollution, improving water and energy efficiency, and modifying travel habits.

One of India's industries with the fastest growing economies is consumer durables. Consumer durables, which were once considered luxury products, have now become a vital tool of everyday usage for the Indian middle class (Ojha 2013). White goods, often known as consumer appliances such as air conditioners, refrigerators, and washing machines, are the most important contributors among durables (Rao 2011). Whether or not consumers accept such eco-friendly and sustainable products will determine production of these kind of white products. If consumers can purchase those goods for a reasonable price, they will be intrigued.

The government is also putting its step forward in 'going green'. The government has put a priority on developing green skills. They help to maintain and improve the environment's quality for a sustainable future, which also entails conserving the ecology, biodiversity, and

reducing waste. The Sustainable Development Goals (SDGs) and Millennium Development Goals (MDGs) will be attained with the assistance of these projects (MDGs).

The idea of sustainability has received a lot of attention recently, and people are gradually realising how important it is to minimise their impact on the environment. But empirical research demonstrates that environmentally conscious consumers rarely translate their "green" intents and worries into actual purchasing behaviour. These problems began to emerge as a result of humankind's lax attitude toward the environment and began to appear in various ways, raising alarm and a tremendous increase in worry all across the world. To address the negative impacts brought on by a careless and casual approach to the environment, governments, environmentalists, social activists, and scholars began promoting the necessity for pro-environmental behaviour and remedial action. The ecosystem and energy reserves have suffered as a result of increasing energy usage, increased ecological footprint, and rising carbon emissions. It has raised the puzzling question of whether or not we are leaving behind a world that can sustain and support life for future generations, even as we consider leaving behind prosperity for the next generation. Numerous causes have contributed to our vulnerable position. Lack of understanding, the easy access to non-renewable resources, and a weak regulatory framework were all contributing factors in people's disregard for the environment.

Taking account of environmental aspects to shape marketing strategy consequently results in the application of Green Marketing. Green marketing is synonymous with a number of words, including ecological marketing, environmental marketing, and responsible marketing. While these terms may be used interchangeably, with the term are however epitomized by similar connotation. The strategy for environmental protection, eco-marketing, and green marketing is a part of the cluster that focuses on bridging the ecological independency of the marketing environment with the traditional method. The ultimate objective of Green Marketing practices is available indefinite, but are mainly concerned to raise the green practices and to benefit the environment or the human population. The practice of Green Marketing seeks not only to improve the quality of environment but also the quality of life that do not cause any form of negative environmental impact.

The trendiest jargon in the corporate world today include "recyclable," "biodegradable," "environmentally friendly," "sustainable," and "bio-based." Businesses have started to alter their conduct in an effort to address society's ecological concerns as society grows more environmentally conscious. The correct kind of economic activity that can safeguard or improve the environment is now being targeted by businesses. Improved management

practices, better product design and marketing, waste minimization, environmentally friendly farming methods that make better use of land, and energy efficiency measures are a few of these. Promoting strategies for fostering this type of environmentally beneficial economic activity and preventing ecologically harmful activities is the problem of sustainable development. Because of their everyday actions that hurt the environment and involve immoral practices, consumers are also accountable for environmental degradation. By using more non-biodegradable products and discarding them in huge quantities, using non-renewable energy carelessly and taxing natural resources, utilising poor trash disposal techniques, not recycling, etc., consumers contribute to environmental pollution. As a result, the conservation of the environment depends greatly on the role that consumers play.

Fast-moving consumer goods, electronics, and the solar energy industries are a few of the expanding markets that have made use of green marketing techniques. However, it's crucial to have a better understanding of how consumers behave when making eco-friendly product purchases. The study's major goal is to highlight the elements of green marketing that influence consumers' desire to buy environmentally friendly goods and to examine how they actually behave while making purchases of green household appliances.

## **1.2 Environmental Degradation:**

Environmental degradation is the deterioration of the environment through depletion of resources such as air, water and soil; the destruction of ecosystems; habitat destruction; the extinction of wildlife; and pollution. It is defined as any change or disturbance to the environment perceived to be deleterious or undesirable.

Environmental degradation has become a “common concern” for humankind over the past few decades. The distinctive nature of the present environmental problems is that they are caused more by anthropogenic than natural phenomena. Mindless consumerism and economic growth have started to demonstrate pernicious effects on Mother Nature. In spite of this, the pace and desire for economic development have never ceased. It is economics that has dictated environmental policy. Emphasis has been placed on the role of science and technology as a catalyst for integrating ecology with economics. In this process, sustainable development became a buzzword. Environmental degradation prevents individuals from attaining their two most basic needs: physiological safety and security. Due to depletion of natural resources such as air, soil, water, etc. people are less likely to have clean food, clean water, and/or good quality air. In addition, the wide spread of disease and disruption of natural ecosystems does not provide a safe environment for people to live due to high risk

of disease breakout or natural disasters; hence safety and security needs are also unfulfilled. These two basic needs are deficiency needs; if a deficiency occurs in any of them individuals would directly try to eliminate it. Therefore, individuals will be reluctant to undergo any effort towards political, economic, social, or cultural reform unless their basic needs are fulfilled and sustained.

### **1.3 Green Marketing:**

Environmental marketing and the term "Green Marketing" are regarded to be components of innovative marketing. Green marketing innovations will result in long-term performance without changing our deeply held beliefs about what constitutes effective marketing. The environmental approach, eco-marketing, and green marketing are all part of the cluster that deals with the disparity between traditional marketing methods and the environmentally sound character of the marketing environment. Green marketing has gradually emerged as an environmental issue coupled with marketing management. Green marketing cannot exist without sustainability. It advocates for goods and services that are beneficial not only to the environment but also to society. In an economic sense, green marketing refers to all efforts that contribute to the development, marketing, and promotion of products and services that have a lower environmental effect than market alternatives.

Green marketing is the promotion of ecologically friendly goods and services. Green marketing might include creating an eco-friendly product, using eco-friendly packaging, establishing sustainable company practises, or focusing marketing efforts on messages that express a product's green benefits. Because of the increased demand, this type of marketing may be more expensive but also more effective. Customers that want to buy environmentally friendly goods even if they are more expensive are defined as "LOHAS." LOHAS stands for Lifestyles of Health and Sustainability. LOHAS refers to a rapidly expanding market for goods and services that appeal to customers whose sense of environmental and social responsibility influences their purchasing decisions.

### **1.4 History and Growth of Green Marketing:**

The late 1980s and early 1990s saw the rise of the term "green marketing." The first workshop on "Ecological Marketing" was presented by the American Marketing Association (AMA) in 1975. The workshop's proceedings were published as "Ecological Marketing," one of the earliest books on green marketing. Green marketing received a lot of attention in the 1970s, but it wasn't until the late 1980s that it really took off. Everything began in Europe

in the early 1980s, when it was discovered that certain manufactured goods were harmful to the environment. There have been three stages of green marketing since then.

1. The first phase was termed "Ecological" green marketing. During this period all marketing activities were concerned to solve environment problems and provide remedies for such problems.
2. The second phase was "Environmental" green marketing and the focus shifted to clean technology that involved designing of innovative new products, which takes care of pollution and waste issues.
3. The third phase was "Sustainable" green marketing. It came into prominence in the late 1990s and early 2000.

Green marketing's early years began in the late 1980s, when the term "green marketing" was first mentioned. In the beginning, green marketing was referred to as "Ecological." During that time period, all marketing efforts were focused on addressing environmental challenges. Marketers began working in various sorts of green marketing in order to suit the needs and wishes of consumers. Customers were expected to buy green things, which would strengthen the company's reputation. These would aid in increasing market share. Regardless, nothing went as planned. Greenwashing has been blamed for this outcome. In reality, businesses were doing little while appearing to be ecologically friendly. Businesses were just boosting their existing products with environmental claims in order to increase sales.

When marketers became aware of the backlash, they initiated the second phase of green marketing. The second phase was dubbed "green marketing for the environment." Clean technology—the development of new items without damaging the environment—came into sharper emphasis at the time.

People began to become increasingly aware of the need to conserve and safeguard the natural environment during the mid-1990s. People were becoming more aware of environmental issues. This signalled the beginning of the third phase. The name of the second green marketing approach was "Sustainable." Businesses were obliged to adapt their selling strategies as consumers began purchasing things and services with a lower environmental impact.

Due to the deteriorating state of the environment and the effects of climate change, green marketing has emerged as one of the most often employed strategies today. These circumstances also raise the government's, civil society's, and consumers' alert levels and

force them to take action in support of the environment. Global warming, resource depletion, and population expansion are all factors endangering humankind's future, but simultaneously advancing and illuminating the idea of green marketing. Companies demonstrate their care for the environment and contribution to environmental preservation through green marketing initiatives. Green marketing encompasses more than just advertising; it also includes things like the creation of eco-friendly products, the use of sustainable business processes, the use of eco-friendly packaging, and the development of marketing campaigns that highlight the products' environmental benefits. Green marketing is a costly marketing strategy as a result of all these changes.

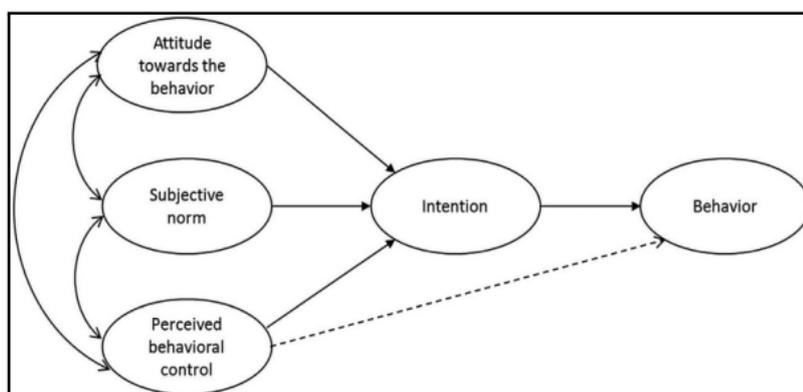
Thus, green marketing involves developing and promoting products and services that satisfy consumers' want and need for Quality, Performance, Affordable Pricing and Convenience without having a detrimental input on the environment.

### 1.5 Pro-Environmental Behaviour:

The phrase "pro-environmental behaviour" (PEB), often known as "green," "sustainable," or "environmentally friendly behaviour," refers to actions people take to reduce their environmental impact. Pro-environmental conduct refers to actions taken by people to protect the environment. PEBs can be adaptive responses to the effects of climate change, such as buying sustainable products (e.g., local food, green cleaning products), conserving water or energy, or changing one's mode of transportation (e.g., from driving to walking or cycling) to purchasing an electric vehicle or building an off-grid home. PEBs also include responsibly enjoying the outdoors or recycling household waste and recycling.

#### 1.5.1 Theories of Pro-Environmental Behaviour:

##### 1. Theory of Planned Behaviour: (TPB)

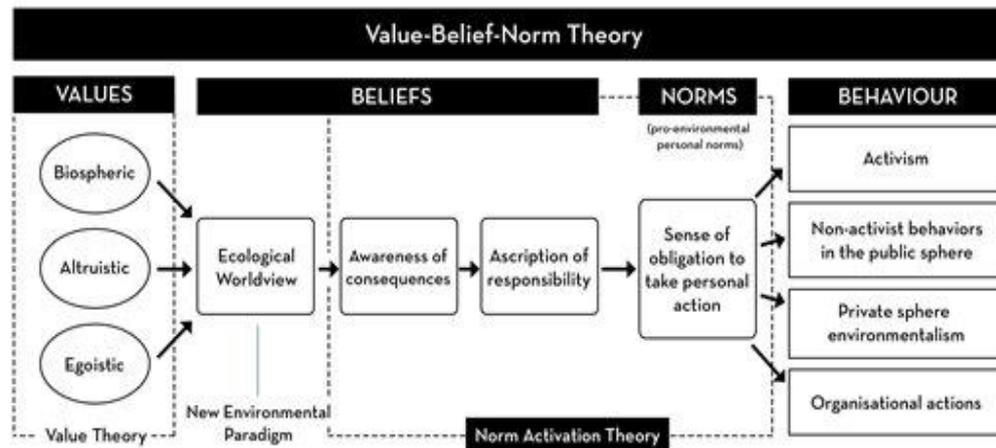


Source: Ajzen (1991) (Adapted from Knauder & Koschmieder, 2019)

*Fig 1. Theory of Planned behaviour*

Ajzen's theory of planned behaviour (TPB), which states that there are three antecedent factors, including attitudes toward behaviour, subjective norms, and perceived behaviour control, is one of the related theories.

## 2. Value-Belief-Norms Theory: (VBN)



*Fig 2. Value Belief-Norm Theory*

*Source: (NAM: Schwartz, 1977)*

The extension of this theory known as the value-belief-norms theory, the Norm Activation Model (NAM: Schwartz, 1977), claims that people act in a pro-environmental manner because their personal norms reflect sentiments of norm responsibility to do so. Several variables, such as social value orientation and pro-environmental actions; orientation value and consumer behaviour; and the value-belief-norms theory are utilised to predict pro-environmental behaviour.

### 1.6 Sustainable Consumption:

In order to ensure that both current and future generations' needs may be met, sustainable consumption means using goods and services in a way that has the least harmful impact on the environment. Consuming goods and services that are efficient and renewable (such as electric vehicles, bicycles, and renewable energy) is an example of strong sustainable consumerism.

Sustainable consumption and production are often compared; consumption refers to the use and disposal (or recycling) of resources by entities other than merely individuals and homes, such as businesses, governments, and households. Sustainable production, as well as sustainable lifestyles, are strongly tied to sustainable consumption.

Both sustainable development and sustainable consumption are predicated on the following ideas:

- Reduction of waste and pollution, and efficient utilization of resources.
- Using renewable resources to the greatest extent possible.
- Product lifecycles that are longer.
- Equity between generations and within them.

### **1.7 Emergence of Energy Labelling in India:**

Our reliance on machines has grown steadily since the Industrial Revolution. Electricity, which is still primarily produced by fossil fuels, powers 21st-century machinery. As human activity (particularly human consumption) grows, fossil fuels become increasingly limited. The rapid depletion of non-renewable energy sources, as well as their implications for greenhouse gas emissions, has compelled humanity to seek alternate energy sources and strategies to save available energy.

To address the current energy problem and rising overall demand, energy efficiency is regarded as the 'first fuel' because it is the cleanest and, in most circumstances, the cheapest solution to meet our energy needs. 'Energy efficiency' refers to using less energy to create the same amount of output. The 'negawatt' energy generated by efficient practises (the amount of energy saved by conservation methods) can be used for other purposes.

Manufacturers and policymakers use energy standard and labelling programmes to assist consumers understand the energy efficiency of an appliance and shop accordingly. These programmes serve the country by, on the one hand, lowering carbon emissions and, on the other, increasing consumer awareness.

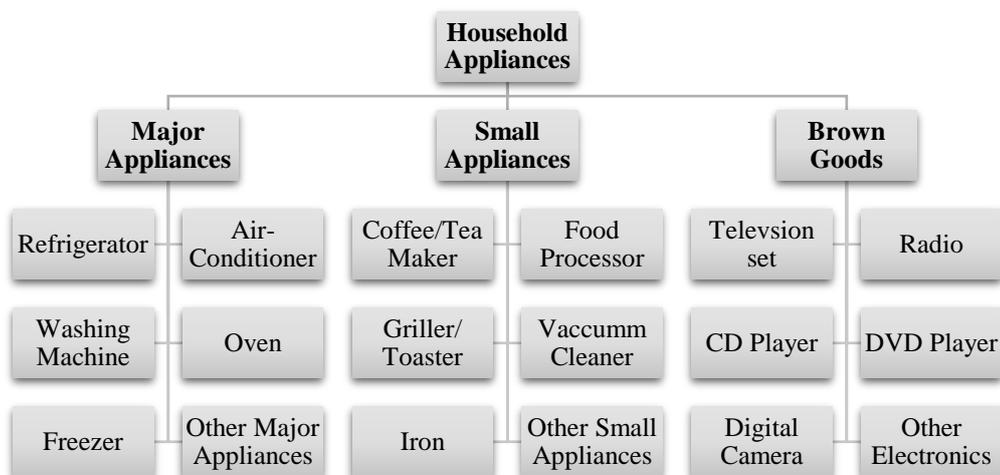
### **1.8 Major Household Appliances:**

A significant appliance is a sizable piece of equipment used in the home for regular housekeeping chores like cooking, laundry, or food preservation. Because an appliance consumes fuel or electricity, it differs from a plumbing fixture. Due to their size and lack of portability, major appliances are different from small appliances. They are frequently provided to tenants as part of otherwise unfurnished rental properties since they are frequently thought as a fixtures and parts of real estate. Major appliances might be permanently connected to particular plumbing and exhaust vents, connections to gas

suppliers, or unique electrical and electrical connections. This restricts the locations they can be used in a house. Enamel-coated sheet steel, which was first used in the middle of the 20th century for many large appliances. Major appliances in a home use a large amount of energy, so in many nations, programmes are being developed to make them more energy-efficient. Increasing energy efficiency is frequently cited as one of the key strategies for reducing climate change, along with other improvements like upgrading structures to improve building performance. In order to increase energy efficiency, appliances may need to be built differently or their control systems may need to be upgraded.

The term household appliances refer to machines or devices that are in our homes and which we use to do jobs such as washing, cooling, heating, or cooking. Household appliances can be classified into:

- i. Consumer electronics (brown goods), such as Television, computers and radios.
- ii. White goods (major appliances) such as washing machines and refrigerators.
- iii. Small appliances such as toasters, coffee makers, and blenders.



*Fig. 3 Types of Household Appliances*

### 1.9 Manufacturers of Selected Green Household Appliances:

The shift towards sustainable living has had a big impact on the household appliance business, with many manufacturers dedicating themselves to developing environmentally friendly products. Many green appliances are designed to improve indoor air quality and reduce pollutants. Following is a list of brands that are doing their part for the safety of environment.

**Table 1: Brands producing Green Household Appliances**

<b>Brand</b>	<b>Household Appliances</b>
<b>Panasonic</b>	Panasonic produces inverter and non-inverter based air conditioner. This air conditioner promises to save up to 20 percent of your electricity bills. The air conditioner, which has received a 5-star BEE rating, is definitely a wise investment to make for a green home.
<b>LG India</b>	LG recently introduced LED E60 and E90 series monitors in the Indian market. The monitors are packed with the eco-friendly features such as 40 per cent less energy consumption than the traditional LCD monitors.  Globally, LG launched a range of eco-friendly products 'Eco-Chic' such as the platinum coated two-door refrigerator and washing machine with steam technology.
<b>Haier</b>	The company's eco-friendly offerings include refrigerators, semi and fully automatic washing machines, split and windows air conditioners, a wide range of LED & LCD TVs and the Spa range of water heaters
<b>Voltas</b>	Samsung has also launched its advanced range of Split ACs, which claim to save up to 60 per cent energy.
<b>Godrej Appliances</b>	Godrej Appliances launched India's first 100% green refrigerator in 2002, and to date Godrej is the only company to have a 100% green refrigerator.



**Fig. 4: Global Home Appliances Market – Market Size**

*Source: Mordor Intelligence*

## 1.10 Size of Indian Household Appliances Market:

India's home appliances industry is dispersed, with both domestic and international competitors. Manufacturers use cost-cutting and innovation techniques in the marketplace. Manufacturers are developing IT-enabled items to make customers' lives more pleasant and comfortable. R&D spending are increasing to meet the market's growing need for technologically aware consumers. Manufacturers are attempting to provide the best technology solutions to them. Some notable players are Bajaj Electricals, LG Electronics, Samsung, Panasonic India, and Whirlpool of India. The market is anticipated to grow at a compound annual growth rate (CAGR) of around 8-10% from 2021 to 2026. This growth is driven by rising disposable incomes, increasing urbanization, and a growing middle class.

The main demand driver are Factors such as improved electricity access in rural areas, government initiatives promoting energy-efficient appliances, and a shift towards premium products are propelling market expansion.

The revenue generated in the Household Appliances market in India is estimated to be US\$59.19bn in 2024. In 2025, the Household Appliances market is anticipated to exhibit a volume growth of 3.3%. India's growing middle class is driving demand for high-end household appliances, resulting in increased competition among manufacturers.



**Fig. 5: Indian Home Appliances Market – Market Size**

*Source: Mordor Intelligence*

## 2. A BRIEF LITERATURE REVIEW

The review of literature, assists in evaluating existing literature, finds disparities among different concepts, and discloses research gaps and is an important part of any research endeavour. It also assists us in understanding the present state of research and the relevance of the research issue, as well as assists the researcher in identifying areas that require more inquiry and in adopting an appropriate approach to analyse the research problem under study. The researcher examined a number of research papers, scholarly publications, research reports, empirical surveys, seminar/conference/workshop proceedings, and other materials relating to the research topic from 2010 to mid-2024. More than 250 articles were thoroughly scrutinized and reviewed. Following a review of the research papers published in peer-reviewed journals as well as other published pieces, a concise review of the literature was developed based on the several factors found, namely, Awareness towards Green Household Appliances (GHA), Attitude towards GHA, Consumers' Readiness towards GHA, Subjective Social Norms, Moral Norms, Environmental self-Identity, Warm Glow, Perceived Barriers and Green Purchase Behaviour. The review focused on the factors that encourage people to use GHA in India, their frequency of use, the advantages and difficulties that they that have arisen, and their intention to continue purchase energy efficiency appliances. The researcher summarised the current literature available from many scholars in the area of Green Marketing in relation Energy Efficient Appliances and behaviour of consumers towards Green Products.

1. **Lianga, C., Dingb, J., & Leec, E. S. (2024)** in their research paper, '*Exploring the Influence of Green Product Attributes on Consumer Perceived Value and Purchase Intention: Taking Green Household Appliances as an Example*' investigated how green product attributes impact consumers' perceived value and purchase intention. It also explored the moderating role of consumer innovativeness and mediating role of perceived value. The results indicated that green products' core (functional and value-for-money) and peripheral (emotional and social) green attributes both positively influence consumer perceived value, which, in turn, positively affects their purchase intention.
2. **Qiao, Q., & Lin, B. (2024)** in their research paper, '*Management of Household Energy Saving and Its Green Alternatives: Information of Chinese Energy Consumption Patterns*' explored factors that influenced the shift in households' energy-saving preferences from habitual energy-saving behaviour to consumption-oriented energy-saving behaviour, as well as to analysed the potential for using other green alternatives to traditional energy in energy consumption. Empirical results revealed that household income is positively correlated with energy consumption. The study also indicated that once income exceeds

the turning point, households' higher Energy Saving Awareness leads to reduced energy consumption, indicating potential for green alternatives in higher-income households.

3. **Borah, P. S., Dogbe, C. S. K., & Marwa, N. (2024)** in their article, '*Generation Z's green purchase behaviour: Do green consumer knowledge, consumer social responsibility, green advertising, and green consumer trust matter for sustainable development?*' addressed is the assessment of the effect of green consumer knowledge on green purchase behaviour among Gen-Z consumers towards footwear while assessing the roles of consumer social responsibility, green advertising, and green consumer trust. Findings revealed that although green consumer knowledge had a direct effect on green purchase behaviour, this effect was partially mediated by consumer social responsibility. The effect of consumer social responsibility on green purchase behaviour was positively moderated by green advertising, and moderating effect of green advertising was further strengthened by green consumer trust.
4. **Oanh, T. T. T. (2024)** in their study on, '*Factors Affect Green Product Purchase Decisions: The Mediating Role of Green Brand Image*' explored the factors influencing Vietnamese consumers' decisions regarding purchasing green products. The findings demonstrated that the consumers were eager to support protecting the environment, aware of their environmental duties, and ready to look for information about sustainable goods. Supporting environmental protection, drive for environmental responsibility, green product experience, environmentally friendly companies and social appeal were considered as factors that influence the decision making process.
5. **Srisathan, W. A. at al. (2024)** in their research article, '*The impact of citizen science on environmental attitudes, environmental knowledge, environmental awareness to pro-environmental citizenship behaviour*' aimed to investigate the impact of citizen on pro-environmental citizenship behaviour when environmental attitude, environmental knowledge, and environmental awareness intermediaries in an emerging market like Thailand. The main findings show that there was a positive impact citizen environmental attitude, citizen environmental awareness, and citizen environmental knowledge towards pro-environmental citizenship behaviour. The study also reveals that these mediated relationships play a pivotal role in translating environmental consciousness into actionable behaviours that support sustainable use and consumption.
6. **Rahman, M. H., Akter, M., Uddin, M. K., & Biswas, R. (2023)** in their study on, '*The Role of Environmental Responsibility and Environmental Knowledge on Green Purchase Intention of Household Appliances in Bangladesh: Mediating Role of Environmental Concern*' explored the significance of responsibility and knowledge on consumer

behaviour, particularly when purchasing. The study also investigated how environmental concern plays a role as a mediator. It was observed that environmental responsibility does not have a positive influence on environmental concerns. Furthermore, the presence of knowledge encourages consumers' engagement in green purchasing behaviour by influencing their degree of environmental consciousness.

7. **Lin, C. C., & Dong, C. M. (2023)** in their research paper, *'Exploring Consumers' Purchase Intention on Energy-Efficient Home Appliances: Integrating the Theory of Planned Behaviour, Perceived Value Theory, and Environmental Awareness'* used the theories of planned behaviour, perceived value, and environmental awareness, a comprehensive model was built. According to the findings, consumers' intentions to buy energy-efficient household appliances were positively influenced by their attitude towards purchasing the goods. Functional value, pricing value, environmental value, and environmental awareness all had a significant and favourable impact on this mind-set. However, neither emotional nor social value had a substantial impact on consumers' opinions about acquiring this equipment.
8. **Chan, S. K., Quoquab, F., & Basiruddin, R. (2023)** in their research paper, *'The Influence of Environmental Factors on Ecological Beliefs and Ecological Behaviour of Energy-Efficient Appliance Purchase'* aimed to study the impact of environmental factors on energy-efficient appliance purchasing and to assess the role of ecological attitudes as a moderator. Environmental factors have a favourable influence on both ecological beliefs and ecological activity, according to the findings; ecological beliefs are favourably associated to ecological behaviour. Furthermore, ecological ideas serve as a bridge between environmental conditions and ecological behaviours.
9. **Zhang, Y., & Song, B. (2023)** in their work on, *'Does energy-efficiency label affect appliance price? Empirical analysis of the new national standard air conditioners in China'* based on the hedonic price model (HPM), investigated users' preferences and WTP for the attributes of online stores, comments, and products relevant to new national standard (NS) ACs. The results demonstrate that the Heckman model estimates the premium for the new NS energy-efficiency designation at 6.24%, which is 23.71% lower than the HPM directly estimates. New NS AC pricing are also affected by online shop attributes and comment elements.
10. **Ferreira, L., Oliveira, T., & Neves, C. (2023)** in their article, *'Consumer's intention to use and recommend smart home technologies: The role of environmental awareness'* investigated the effects of environmental awareness on individual intentions and behaviour towards smart home devices, a theoretical model based on the extended unified theory of

acceptance and use of technology (UTAUT2) was presented. Environmental awareness was found to have a significant influence on all of the target variables studied and connected with the adoption of smart houses.

11. **Zhu, B., & Thøgersen, J. (2023)** in their study on, '*Consumers' Intentions to Buy Energy-Efficient Household Appliances in China' used induction cookers as a case study in which researchers analysed Chinese customers' aspirations to purchase extremely energy-efficient electrical household appliances. According to the SEM investigation, consumers' inclinations to purchase an energy-efficient induction cooker are mostly determined by their attitudes towards doing so, with perceived control also playing a role. Furthermore, multi-group analysis demonstrated that paying attention to energy labels moderates model correlations. For Chinese consumers who do not pay attention to energy labels in general, the intention to purchase an energy-efficient induction cooker is only weakly related to the TPB's proposed antecedents, and only the attitude towards doing so is significant.*
12. **Pernice, G. F. A., Orso, V., & Gamberini, L. (2023)** in their research article, '*Consumer Attitudes and Green Scepticism towards Energy-Efficient Household Appliances: Findings from A Preliminary Study'* intended to appreciate working-age persons' attitudes towards high-energy efficient household appliances and their apparent green scepticism regarding company-provided sustainability-related information. The study also looked at customers' green scepticism towards information provided by businesses, such as energy consumption. According to preliminary data, even highly educated customers who are aware of environmental issues and consider themselves to be informed about energy efficiency are sceptical of the sustainability-related information offered by corporations and professionals in the field. The absence of precise information communicated to consumers may aggravate their cynicism, negatively influencing their selections to purchase household appliances that consume energy.
13. **Adepoju, A., Ekundayo, K., & Oladiipo, A. (2023)** in their work, '*Household energy conservation behaviour: A socio-economic perspective'* revealed that socioeconomic factors such as home size, income, number of appliances, and weather have a significant impact on people's energy conservation behaviour, with income having the biggest structural weight. The study also revealed that income influences inhabitants' electricity-saving practises, as higher-income households use more electricity and conserve it less.
14. **Mustafic, E., Mustafic, A., & Imsirovic, (2023)** in their study on, '*A Factor Analysis Assessment of the Influence of White Appliance Brand Characteristics on the Purchase Decision of Consumers in Bosnia and Herzegovina'* intended to determine the impact of specific attributes of white appliance manufacturers on customer purchasing decisions.

According to the findings, the following aspects were most significant to customers in Bosnia and Herzegovina when selecting a white appliance brand: quality, service and product guarantee; advertising; payment and sales services; and product added value.

15. **Henaku, E. A. (2023)** in their research paper, '*Assessing the Influence of Energy Efficiency Guide Label on Consumers' Purchasing Decisions for Household Refrigerating Appliances*' evaluated in terms of how it influenced consumers' purchasing decisions for refrigerating appliances (refrigerator and/or freezer) by using The Ghana Energy efficiency guide label. Consumers use many information sources to make refrigerating appliance purchase decisions, according to the research. The researcher discovered that consumers' acquaintance and sales help are the most often used sources of information before purchasing an appliance and throughout the purchase process, respectively. The research also demonstrated that the energy efficiency guidance label influenced consumers' decision to buy a refrigerator. The study finds that the energy efficiency guidance label has a good impact on customers' purchase selections for refrigerating equipment, contributing to the country's efforts towards energy security, achieving SDG7 and SDG13, and lowering the environmental impact of greenhouse gas emissions.
16. **Chanda, R. C., Isa, S. M., & Ahmed, T. (2023)** in their paper, '*Factors influencing customers' green purchasing intention: evidence from developing country*' used an extended theory of planned behaviour, researchers investigated the impact of environmental knowledge and environmental sensitivity on Bangladeshi consumers' green purchase intentions. This study's findings showed that subjective norms, attitudes towards green items, and perceived behavioural control all have a positive and substantial association with green purchasing intention. Furthermore, environmental knowledge is related to environmental sensitivity in a good and meaningful way. The findings also revealed that environmental sensitivity influences the association between environmental knowledge and attitudes towards green products.
17. **Adepoju, A., Ekundayo, K., & Oladiipo, A. (2023)** in their study on, '*Household energy conservation behaviour: A socio-economic perspective*' revealed that socioeconomic factors such as home size, income, number of appliances, and weather have a significant impact on people's energy conservation behaviour, with income having the biggest structural weight. The study revealed that income is important in residents' energy-saving habits, as higher-income households consume more electricity and conserve it less.
18. **Nie, H., Kemp, R., & Fan, Y. (2023)** in their article, '*Investigating the adoption of energy-saving measures in residential sector: The contribution to carbon neutrality of China and Europe*' explored the adoption of technical and behavioural energy-saving techniques in

Northern China and Western Europe as a key approach to achieving carbon neutrality in the residential sector. The findings revealed that the residential sectors in China and Europe are both aiming towards carbon-neutral goals, albeit in different ways. The direct energy-saving subsidy policy in Northern China encouraged residents to implement technical energy-saving solutions. According to econometric research, differences in respondents' socio-demographic backgrounds, building features, environmental concerns, or views played a role in the observed differences, although not a significant one.

19. **Kumar, A., & Basu, R. (2023)** in their paper, *'Do eco-labels trigger green product purchase intention among emerging market consumers?'* investigated the impact of eco-labels on green product purchase intention among consumers of electrical/electronic items in a developing market scenario. To analyse the effects of eco-labels, this study used an extended theory of planned conduct. Eco-labels have a considerable impact on perceived behavioural control, attitude, subjective standards, and consumers' willingness to pay higher costs for ecologically friendly green items, according to the findings.
20. **Issock Issock, P. B., & Muposhi, A. (2023)** in their research article, *'Understanding energy-efficiency choices through consumption values: the central role of consumer's attention and trust in environmental claims'* investigated how consumption values influence consumers' purchase intentions of energy-efficient home equipment in South Africa, a developing market. The study also looked into the mediating impact of customers paying attention to energy-efficient labelling on home appliances when making a purchasing decision, as well as the moderating effect of consumer trust in environmental claims. The findings demonstrated that economic, emotional, and social values can only affect consumers' intentions to purchase energy-efficient appliances if consumers pay attention to the appliance's energy-efficiency label. Furthermore, the findings suggest that consumer faith in energy-efficiency labels amplifies the effect of functional and emotional values on their attention to energy-efficiency labels.
21. **Xin, Y., & Long, D. (2023)** in their work on, *'Linking eco-label knowledge and sustainable consumption of renewable energy: A roadmap towards green revolution'* attempted to fill the gap and contributes by incorporating three additional factors (eco-label knowledge, environmental attitudes, and customer belief) into the Theory of Planned Behaviour, allowing for a more detailed analysis of sustainable consumption in Chinese culture. The study's findings revealed that consideration of environmental labels is positively and significantly influenced by purchase intent. These findings contribute to the body of information on sustainable purchasing behaviour and open up new possibilities for

researchers and policymakers to change societal norms, raise consumer awareness, and restructure regulatory frameworks through coordinated and integrated initiatives.

22. **Kv, S., & Selvam, P. M. (2023)** in their study on, '*An Empirical Study on Consumer Awareness of Green Marketing in India*' carried out research in order to ascertain the level of consumer knowledge of green marketing. Customers were informed about the use of environmentally friendly packaging, manufacturing procedures, and materials. According to the survey, people who spend more money on ecologically friendly products are more aware about green marketing. The emphasis of green marketing is on advertising products and services that are either ecologically benign or have no negative environmental effects.
23. **Ferreira, L., Oliveira, T., & Neves, C. (2023)** in their work, '*Consumer's intention to use and recommend smart home technologies: The role of environmental awareness*' investigated the effects of environmental awareness on individual intentions and behaviour towards smart home devices, a theoretical model based on the extended unified theory of acceptance and use of technology (UTAUT2). The findings confirmed that environmental awareness increases the importance of facilitating conditions in explaining use behaviour, reinforcing the idea that product developers and marketing managers must emphasise the role of energy-saving features in their smart home products and services to promote consumer use.
24. **Asif, M. H., Zhongfu, T., Irfan, M., & Işık, C. (2023)** in their research paper, '*Do Environmental Knowledge and Green Trust Matter for Purchase Intention of Eco-Friendly Home Appliances? An Application of Extended Theory of Planned Behavior*' intended to find the determinants of customers' inclinations to buy eco-friendly appliances for their residences. In the context of an emerging economy, this study analysed the relationship between environmental knowledge (EK), consumer attitude (CAT), green trust (GT), and buying intention (PI). According to empirical results, EK has a favourable and considerable influence on CAT and green trust. CAT has a similar negative and negligible effect on PI. Green trust, on the other hand, is considerably and positively associated to PIs.
25. **Ekawati, N., Wardana, I., Yasa, N., Kusumadewi, N., & Tirtayani, I. (2023)**, in their research paper, '*A strategy to improve green purchase behaviour and customer relationship management during the covid-19 new normal conditions*', proposed to analyse society's awareness of the natural environment, particularly the awareness of living a healthy existence, which leads to an awareness of using a natural-based product (environmentally friendly product). This study focused on the factors that influence green purchasing behaviour, including social influence, green attitude, green value, and green trust. The findings revealed that social influence had no significant effect on green

purchasing behaviours. Green attitudes, values, and trust all had a favourable and significant impact on green purchasing behaviours. Green trust was influenced favourably and significantly by social influence, green attitude, and green value. Green trust acted as a mediator between social impact, green attitude, and green value and green buying behaviour.

26. **Iqbal, A., Kazmi, S. Q., Anwar, A., Ramish, M. S., & Salam, A. (2023)**, in their research paper entitled, *'Impact of Green Marketing On Green Purchase Intention and Green Consumption Behaviour: The Moderating Role of Green Concern'* aimed to discover the emerging phenomenon of eco-friendly green environment in the marketing area. It addressed the question of how purchase intentions for eco-friendly products would evolve through the use of green marketing strategies, as well as how consumer consumption behaviour would have shifted to green consumption. It assesses the moderating impact of green concern on the mediating impact of green purchasing intention on the dependent variable green consumption behaviour. According to the study, green product quality and green value have a substantial impact on green purchase intention and green consumption behaviour. According to research, green product quality, green value, and environmental concern are all predictors of green consumption behaviour. However, perceived consumer effectiveness (PCE) among Pakistanis was shown to be insignificant.
27. **Kennedy, F. B., & Adhikari, A. M. S. S. (2023)** in their research article, *'Antecedents Affecting Consumers' Green Purchase Intention Towards Green Product'* investigated the factors that influence customers' green purchasing intentions towards green products, with a focus on the Nikaweratiya Divisional Secretary region in Kurunegala District. This study employs four antecedent characteristics as independent variables: green buying attitudes, green perceived values, green perceived trust, and ecological knowledge, with green purchase intention as the dependent variable. The findings show that green buying attitudes, perceived values, perceived trust, and ecological knowledge have a moderately favourable association with green purchase intention. There was also a strong favourable impact on green buying intention towards green products. According to the findings of the study, antecedents have a strong beneficial impact on Green Purchase Intention towards Green Products, with special reference to Nikaweratiya Divisional Secretary. According to the findings, green perceived trust has the greatest influence on green purchasing intention.
28. **Saini, M., & Jain, P. (2023)** in their work on, *'A Study of the Effects of Environmental Awareness on Purchase Intention of Green Products in Urban Rajasthan'* aimed to examine at the environmental consciousness of urban people in the Indian state of Rajasthan, with a specific emphasis on their attitudes towards environmentally friendly

goods and practises. According to the study, due of the COVID-19 outbreak in Rajasthan, consumer attitudes and intentions towards green restaurants are becoming more relevant. The buyer is aware of environmental issues and their negative consequences. Furthermore, they were aware of ecological items but had no idea how they could benefit the ecology.

29. **Zhou, F., Si, D., & Tiwari, S. (2023)** in their article, *'Understanding the Green Procurement Behavior of Household Appliance Manufacturing Industry: An Empirical Study of the Enablers'* explored potential aspects influencing green purchasing behaviour and aids in the disclosure of influential processes from a methodical standpoint. Exogenous driving forces, as opposed to endogenous variables, are more likely to push household appliance manufacturers to pursue green buying strategies. Furthermore, business strategy, government legislation, and customer knowledge have a stronger influence on green purchasing behaviour than corporate culture, manufacturing system, and suppliers.
30. **Hossain, I., Fekete-Farkas, M., & Nekomahmud, M. (2022)** in their research paper, *'Purchase Behaviour of Energy-Efficient Appliances Contribute to Sustainable Energy Consumption in Developing Country: Moral Norms Extension of the Theory of Planned Behaviour'* intended to forecast customer purchase intentions for energy-efficient household appliances using an enhanced model of the Theory of Planned Behaviour (TPB). In this study, two extra components, moral norms and environmental concern, were introduced into the TPB model. The findings reveal that customer purchase intentions of energy-efficient appliances (EEAs) are highly influenced by attitude, subjective standards, and perceived behavioural control. According to the classic theory of planned behaviour (TPB), the extension of moral norms is a strong predictor of consumer purchasing intention. However, environmental concerns had no substantial impact on Bangladesh. The findings imply that customers' attitudes towards energy-efficient household products (EEHA) positively connect with consumers' purchase intentions of energy-efficient appliances, because EEAs are typically purchased by consumers who are environmentally conscious. The study revealed a significant relationship between perceived norms and purchase intention of energy-efficient equipment.
31. **Sureshkumar, M., & Roy, C. M. (2022)** in their study entitled, *'A Study On Consumer Perception and Buying Behaviour Towards Selected Home Appliances (With Special Reference in Rural Areas, Chengalpattu District'* studied the commodities like air conditioner, a washing machine, a refrigerator, a mixer grinder, and a television in rural Chengalpattu residents. The research aims to study the client purchasing habits in Chengalpattu rural areas based on their location. The study revealed that customer habits have a significant impact on the decision to purchase a certain product or service.

According to the report, businesses should put more attention on product promotion, develop marketing strategies, and deliver high-quality products and services. The study reveals that, there is a considerable difference between the one case of personal criteria such as educational degree and sources of selected home appliances by the respondents.

32. **Qalati et al. (2022)** in their research, '*An extension of the theory of planned behaviour to understand factors influencing Pakistani households' energy-saving intentions and behaviour: a mediated-moderated model*' intended to explore the elements impacting households' intentions and actual behaviours in terms of energy conservation. This research builds on the theory of planned behaviour (TPB) by including descriptive standards and moral responsibility. The research findings show that TPB factors (attitude, subjective norms, and perceived behaviour control) and extended factors (descriptive norms and moral responsibility) have a positive and significant effect on households' intention to save energy, as well as a significant effect of perceived behaviour control, moral responsibility, and intention on households' energy-saving behaviour. This study also shows that households' goal to preserve energy and moral responsibility have an important mediating and moderating effect. The findings of the study demonstrate that the intention to save energy has both direct and indirect effects on energy-saving behaviour. Several factors (attitude, subjective norms, perceived behaviour control, descriptive norms, and moral duty) have a positive and significant influence on families' intention to save energy, according to the findings of this study. Furthermore, perceived behaviour control, moral responsibility, and the goal of households to save energy all have a major impact on households' energy saving activity. Aside from the direct effect, households' goal to save energy largely mediates the association between attitude and subjective norms and energy-saving activity, and completely mediates the relationship between perceived behaviour control and household energy-saving behaviour.
33. **Vani, M. M. P. (2022)** in their paper, '*A Study on Consumer Perception Towards Green Marketing with Reference to Bengaluru*' aimed to analyse consumers' perceptions and preferences towards green marketing practises and products in Bangalore. According to the statistical data, there is a substantial relationship between marketing techniques, product variables, consumer green values, and customer perception. According to the study, consumer awareness of green marketing has a considerable impact on consumer purchasing behaviour. There is a link between gender, education level, and level of Green marketing awareness. There is no correlation between age group, monthly income, and Green marketing awareness. According to the findings of the study, the majority of Bangalore customers are aware of Green Marketing concepts and products.

34. **Tran, K., Nguyen, T., Tran, Y., Nguyen, A., Luu, K., & Nguyen, Y. (2022)** in their article, *'Eco-friendly fashion among generation Z: Mixed-methods study on price value image, customer fulfilment, and pro-environmental behaviour'* used a mixed-methods approach, including thematic analysis and the SEM-PLS technique, to investigate how Vietnamese Gen Z's perceptions of product-service quality, environmental knowledge, and pro-environmental behaviour influence their purchase intention and loyalty towards eco-friendly fashion products. The qualitative findings revealed that young customers' knowledge of and attitudes towards eco-friendly fashion practises were insufficient to persuade them to purchase eco-friendly fashion products. The findings suggest that for fashion production, perceived behavioural control has a greater impact on purchase intention than customer fulfilment and environmental concerns. The SEM-PLS results, on the other hand, show that Gen Z's knowledge and awareness are minimal when compared to perceived product quality and control practises. When attracting Vietnamese Gen Z, the study indicated that enterprises should prioritise increasing service and product quality over spending green marketing.
35. **Teoh, C. W., Khor, K. C., & Wider, W. (2022)** in their study, *'Factors Influencing Consumers' Purchase Intention Towards Green Home Appliances'* explored the effect of after-sales service (ASS), brand equity (BE), environmental awareness (EA), and product price (PP) on green home appliance customer purchasing intention (CPI). The findings revealed that BE, EA, and PP have a substantial effect on the CPI of a green home appliance brand. However, ASS have no effect on CPI on green home appliance brand. This research assists home appliance manufacturers in better designing marketing promotions that take into account consumers' preferences for BE, EA, and price. BE has a positive impact not only on green home appliances, but also on other industries like as automobiles, electronic gadgets, fashion, food and beverage, and so on. This study's findings also demonstrated a significant effect of EA on CPI on green homes. The data verified the strong favourable effect of PP on CPI for green home appliances. According to the conclusions of this study, ASS have no significant impact on CPI on green home appliance brand.
36. **Prigita, M., & Alversia, Y. (2022)** in their research paper, *'Toward consumer sustainable consumption: examining factors influencing green product purchase'* intended to investigate factors that may impact green product buying intentions among Indonesia's generation Y and generation Z. Generations Y and Z are known for their environmental concerns, and they are potential current and future consumers. The theory of planned behaviour framework was enhanced with additional factors, including environmental concern, environmental knowledge, readiness to pay premium, moral attitude, and health

consciousness, for this study. According to the findings, all variables, with the exception of environmental concern, had a positive influence on purchase intention.

### **3. RESEARCH METHODOLOGY**

The researcher made an effort to outline in brief various methodological and procedural steps and conceptual aspects concerning the research methodology of the research study, which primarily includes rationale of the study, research design, objectives, hypotheses, the model used, secondary data sources, sampling designs, data analysis and interpretation of the research study.

#### **3.1 Key Terms of Research Study:**

##### **3.1.1 Green Products:**

Green products are typically durable, nontoxic, made of recycled materials, or minimally packaged. Of course, there are no completely green products, for they all use up energy and resources and create by-products and emissions during their manufacture, transport to warehouses and stores, usage, and eventual disposal. So green is relative, describing products with less impact on the environment than their alternatives.

Following are some definitions given by different authors:

- 1) *Liu and Wu (2009)*, “Products whose function or ideals deal with the process of material retrieval, production, sales, utilization and waste treatment is available for recycling, reduced pollution and energy saving.”
- 2) *Albino, Balice and Dangelico (2009)* “product designed to minimize its environmental impacts during its whole life-cycle. In particular, non-renewable resource use is minimized, toxic materials are avoided, and renewable resource use takes place in accordance with their rate of replenishment.”
- 3) *Wagner (2009)*, Environmental innovations: measures of relevant actors (firms, private households), which: (i) develop new ideas, behaviour, products and processes, apply or introduce them, and; (ii) contribute to a reduction of environmental burdens.

##### **3.1.2 Green Consumption:**

Gilg, Barr, and Ford (2005) developed the term "green consumption" to refer to buying goods that have a lower environmental impact. The act of consumption has multiple dimensions, including social, economic, and physical factors. Individuals'

behaviour is influenced by their personality, environment, psychology, legal framework, political atmosphere, and social institutions of their community (Sarigollu, 2009). "Green consumption" refers to minimising negative environmental impact through product purchases, usage, and disposal. (Carlson and Kangun, 1993). Green consumerism is an important part of sustainable living since it entails selecting ecologically friendly products that help to conserve resources. Consumers can help safeguard the environment by choosing green products, which generally incorporate recycled materials, save energy and water, and reduce waste and pollution.

### **3.1.3 Green Marketing:**

Green Marketing refers to the process of selling products and/or services based on their environmental benefits. It may be packaged or produced in an environmentally friendly way. Concept of green marketing concerns with the protection of ecological environment. Modern marketing has created a lot of problems. Growth in marketing activities resulted into rapid economic growth, mass production with the use of advanced technology, comfortable and luxurious life style, competition, use of unhealthy marketing tactics and techniques to attract customers, creation of multinational companies, etc.

According to the American Marketing Association, green marketing is the marketing of products that are used to be environmentally safe. Going by alternative names such as sustainable marketing, environmental marketing, green advertising, eco marketing, organic marketing, all of which point to similar concepts though perhaps in a more specific fashion, green marketing is essentially a way to brand your marketing message in order to capture more of the market by appealing to people's desire to choose products and services that are better for the environment.

### **3.1.4 Green Household Appliances:**

The idea of green household appliances refers to any energy-efficient home equipment that is designed to improve the energy efficiency of an electric device and lower utility expenses. There are numerous green household appliances, including air conditioning, water heaters, lighting, washing machines, refrigerators, ovens, televisions, and many others. The more efficient the appliance, the less energy it consumes.

The main advantage of green household appliances is the capacity to considerably cut energy usage. They accomplish this by utilising sophisticated technology such as enhanced insulation, better control systems, and optimised components. For example, an energy-efficient refrigerator can keep a lower temperature while using less electricity, saving energy and lowering your utility expenses.

### **3.1.5 Green Purchase Behaviour:**

Green purchasing behaviour can be translated to the act of consuming products that are conservable, beneficial for the environment, and responding to environmental concern (Lee, 2009). Webster (1975) found that the socially conscious customer feels strongly that he/she can do something about pollution and tries to consider the social impact of his/her buying behaviour.

A green consumer can be identified to be one who avoids any product which may harm damage to any living organism, cause deterioration of the environment during process of manufacturing or during process of usage, consume a large amount of non-renewable energy, involves unethical testing on animals or human subjects (Elkington, 1994). He also states that "According to Wiener and Sukhdial (1990), one of the main reasons that stop individuals from engaging in ecologically favourable actions is their perceived level of self-involvement toward the protection of the environment".

### **3.1.6 Pro-Environmental Behaviour:**

The phrase "pro-environmental behaviour" (PEB), often known as "green," "sustainable," or "environmentally friendly behaviour," refers to actions people take to reduce their environmental impact. Pro-environmental conduct refers to actions taken by people to protect the environment. PEBs can be adaptive responses to the effects of climate change, such as buying sustainable products (e.g., local food, green cleaning products), conserving water or energy, or changing one's mode of transportation (e.g., from driving to walking or cycling) to purchasing an electric vehicle or building an off-grid home. PEBs also include responsibly enjoying the outdoors or recycling household waste and recycling.

### **3.1.7 Sustainable Development:**

To ensuring that the requirements of current and future generations are met, sustainable consumption entails consuming goods and services in the most environmentally friendly way possible. Strong sustainable consumerism is demonstrated by the consumption of efficient and renewable goods and services (such as electric automobiles, bicycles, and renewable energy).

Sustainable consumption and production are frequently used interchangeably; consumption refers to the use and disposal (or recycling) of resources by entities other than individuals and houses, such as businesses, governments, and households. Sustainable production and lifestyles are inextricably linked to sustainable consumption.

### **3.2 Rationale of the Study:**

Green marketing and green products are getting popularity as we are progressing. As more green products reach store shelves and information regarding eco-friendly lifestyles becomes increasingly prevalent, making sustainable choices is getting easier. People are becoming health conscious which leads to popularity of green items. But a systematic approach has not been made in India for buying behaviour. So, this research tries to identify and study the factors that affect green buying behaviour in household appliances.

As stated above, green products are gaining popularity due to green marketing, which in turn creates a lot of awareness in consumers. Household appliances are directly related to Energy Efficiency consumption. Still there are many barriers such as environmental consciousness, environment sensitivity, price of green products, availability of green products etc. In this study, the researcher has considered buying behaviour of four Green household appliances which are Refrigerator, Air Conditioner, Television and Washing Machines. In this context consumers' perception about each demographic variable will be studied and analysed.

### **3.3 Research Gap:**

Many scholars have contributed to the empirical works of green marketing and its importance. But, after conducting a complete review of the literature, the researcher observed that only limited empirical studies exist that focused on analysing customer purchasing behaviour towards energy-efficient home appliances. No specific study has been conducted in particular area of selected green household appliances included in this study. This is a critical topic that has yet to be investigated. The present study incorporates the relationship between two main variables – Pro Environmental behaviour with the extended Theory of Planned Behaviour and Sustainable Consumption. The conceptual framework was created using dependent and independent variables and further hypotheses were framed. Furthermore, this research

will contribute not only to its practical applications to manufacturers as well as certain green companies but will also add to the current scholarly literature on the subject, particularly in the Indian context.

### **3.4 Research Objectives:**

One of the important aspect of our awareness towards environment, accounts the buying behaviour in relation to eco-friendly products. Given what has been said, it is felt important to research study and analyse the various issues / factors contributing to energy saving and leading towards sustainable consumption. Research objectives have evolved from research problem statements, research gaps and by in depth study of domain and review literature.

In this reference, the principle objective of this study is to analyse how consumer buying behaviour would be affected by pro-environmental behaviour with regards to selected green household appliances. Along with the main objective the subsidiary objective of the research is as follows:

1. To investigate the relationship between pro-environment behaviour and energy saving.
2. To study the behaviour pattern of selected green household appliances among the Indian households.
3. To study consumers' overall level of awareness, attitude and influence/readiness towards green purchase behaviour.
4. To determine the level of recognition of eco-labels used in selected green household appliances.
5. To determine the factors and their impact on consumers' green purchase behaviour.
6. To determine the impact of consumers' level of green product/brand awareness and green product/brand image on the perceived quality and purchase intention towards selected green household appliances.
7. To determine the relationship between green marketing tools and green purchase behaviour.
8. To determine the relationship between consumer demographics and sustainable consumption behaviour.

### **3.5 Research Hypothesis:**

To achieve the above mentioned objectives, a set of 11 hypotheses have been formulated, which were tested and conclusions were drawn on the basis of the test results. The hypotheses are mentioned below:

**H<sub>01</sub>:** There is no significant relationship between pro-environment behaviour and energy saving.

**H<sub>02</sub>:** There is no significant relationship between environmental awareness and consumers' green purchase behaviour.

**H<sub>03</sub>:** There is no significant relationship between eco-labels and consumers' green purchase behaviour.

**H<sub>04</sub>:** Consumers do not believe that star rating means more energy saving for them.

**H<sub>04(a)</sub>:** Consumers do not consider "star rating" as a significant criterion during purchase of Air Conditioner.

**H<sub>04(b)</sub>:** Consumers do not consider "star rating" as a significant criterion during purchase of Refrigerator.

**H<sub>04(c)</sub>:** Consumers do not consider "star rating" as a significant criterion during purchase of Television.

**H<sub>04(d)</sub>:** Consumers do not consider "star rating" as a significant criterion during purchase of washing machines.

**H<sub>05</sub>:** There is no significant relationship between Green products /brand awareness and their perceived quality.

**H<sub>06</sub>:** There is no significant relationship between Green products /brand awareness and their purchase intention.

**H<sub>07</sub>:** There is no significant relationship between Green products /brand image and their perceived quality.

**H<sub>08</sub>:** There is no significant relationship between Green products /brand image and their purchase intention.

**H<sub>09</sub>:** There is no significant relationship between Green marketing tools and consumers' green purchase behaviour.

- H<sub>09(a)</sub>:** There is no significant relationship between Green Perceived Product and consumers' green purchase behaviour.
- H<sub>09(b)</sub>:** There is no significant relationship between Green Perceived Price and consumers' green purchase behaviour.
- H<sub>09(c)</sub>:** There is no significant relationship between Green Perceived Place and consumers' green purchase behaviour.
- H<sub>09(d)</sub>:** There is no significant relationship between Green Perceived Promotion and consumers' green purchase behaviour.
- H<sub>010</sub>:** There is no significant relationship between selected influencing factors and green purchase behaviour.
- H<sub>010(a)</sub>:** There is no significant relationship between consumers' knowledge and green purchase behaviour.
- H<sub>010(b)</sub>:** There is no significant relationship between consumers' attitudes and green purchase behaviour.
- H<sub>010(c)</sub>:** There is no significant relationship between consumers' Readiness and green purchase behaviour.
- H<sub>010(d)</sub>:** There is no significant relationship between consumers' subjective social norms and green purchase behaviour.
- H<sub>010(e)</sub>:** There is no significant relationship between consumers' moral norms and green purchase behaviour.
- H<sub>010(f)</sub>:** There is no significant relationship between consumers' environmental self-identity and green purchase behaviour.
- H<sub>010(g)</sub>:** There is no significant relationship between Warm Glow and green purchase behaviour.
- H<sub>010(h)</sub>:** There is no significant relationship between consumers' perceived barriers and green purchase behaviour.
- H<sub>011</sub>:** There is no significant relationship between consumer demographics and sustainable consumption.
- H<sub>011(a)</sub>:** There is no significant relationship between age of consumers and sustainable consumption.
- H<sub>011(b)</sub>:** There is no significant relationship between Gender consumers and sustainable consumption.
- H<sub>011(c)</sub>:** There is no significant relationship between Income of consumers and sustainable consumption.

**H<sub>011(a)</sub>:** There is no significant relationship between Education of consumers and sustainable consumption.

### **3.6 Research Design:**

Research design refers to the overall strategy utilized to carry out research. A well-planned research design helps ensure that your methods match your research aims, that you collect high-quality data, and that you use the right kind of analysis to answer your questions, utilizing credible sources. This allows one to draw valid and trustworthy conclusions. The research design is defined by different authors differently. (Creswell, 2014) defines research design as a procedures used in collecting and analysing the measures of the variable as specified in research problems.

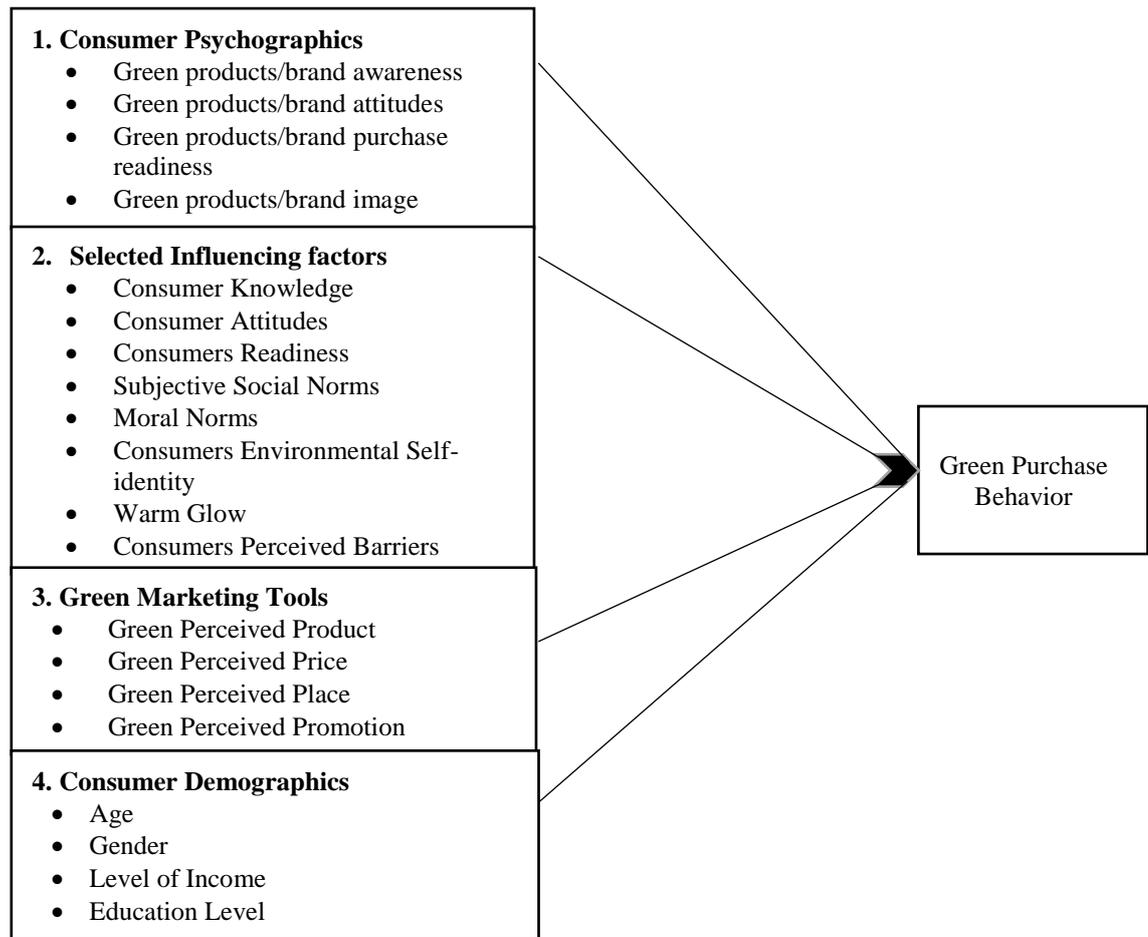
Since the study focuses on identifying and analysing factors influencing consumer behaviour towards the purchase of green household appliances, a descriptive research design is deemed to be the most appropriate. *Descriptive design* defines and describes the researches who, what, when, where, why and how, which are some of the questions raised in this study. It involves a sound and scientific analysis of data with the help of measure of central tendency, measures of variation, hypothesis testing, correlation and the regression analysis. Thus, it is also an *analytical design* of research.

### **3.7 Scope and Coverage of Research Study:**

The study attempts to better understand customer behaviour in regard to green household appliances. Consumers from Ahmedabad, Gandhinagar, and Vadodara were chosen. Furthermore, an attempt was made to determine their level of awareness and attitude towards energy savings. The following elements influenced green purchasing behaviour: awareness, attitude, consumer readiness, subjective norms, moral norms, environmental self-identity, and perceived barriers. In addition, the study investigates the effect of green marketing tools on green purchasing behaviour.

(P.T.O)

### 3.8 Conceptual Framework of Research Study:



*Fig. 5 – Conceptual Framework*

*Source: Kaufmann (2012)*

To achieve the research objectives, a brief view of the available literature was undertaken by the research and a conceptual model was developed as given in Fig 5. The model has incorporated independent and dependent variables. Consumer Psychographics, Selected Influencing Factors, Green Marketing tools and Consumer Demographics are included in Independent variables. Along with that under dependent variables, Green Purchase behaviour is used. The main aim of conceptual framework is to identify the impact of Independent variables on Green Purchase Behaviour.

#### 3.8.1 Consumer Psychographics:

Consumer psychographics consist of green product brand awareness which is the ability of a buyer to recognize whether the product is environmentally friendly or not. The next aspect under this is green product brand attitude. It relates to consumers' attitude toward their overall evaluation of a brand's green performance. Further, Green Product Brand Purchase

is when consumers believe in making decisions that are environmentally friendly and use products that are sustainable and cause very less or no pollution. Lastly, Green Product Brand Image is when customers are actively aware of a brand's eco-friendly products and actions, which are usually stronger than their competitors' environmental measures.

### **3.8.2 Green Product Brand Awareness:**

Green brand awareness is defined as 'the ability for a buyer to recognise and recall that a brand is environmentally friendly'. Customers who are concerned about the environment find that green products, pricing awareness, and brand image awareness influence their purchasing decisions positively. It is the responsibility of marketers to provide information on green products, eco-labelling, and the use of green messaging content in order to familiarise people with green brands. If there is a higher degree of brand equity, customers will buy a brand with a higher level of brand awareness, and a strong association of brand awareness has a beneficial influence on consumer purchasing behaviour for green products (Keller K. L., 1993).

### **3.8.3 Green Product Brand Attitude:**

According to Lee (2008), customers' attitudes towards green brands stem from their appraisal and reasonable judgement. According to Rios et al. (2006), companies that communicate environmentally friendly attributes to consumers can help them choose between different brands. Consumers' attitudes towards green brands are heavily influenced by their understanding of environmental protection.

### **3.9.4 Green Product Brand Purchase:**

The purchase of items and services that have a lower impact on human health and the environment than competing products or services that fulfil the same goal. Examples of green purchases include: Purchasing energy-saving light bulbs, selling organic food in the cafeteria, printing with non-toxic ink toner, and providing exclusively post-consumer recycled paper goods in the facilities are all examples of green procurement decisions that may be made by any company.

### **3.8.5 Green Product Brand Image:**

Brand image influences consumer perceptions and associations with the brand. It may be described as "a collection of perceptions about a certain brand in the minds of consumers which related to the brand's commitment in protecting the environment" (Chen, (2008)). Brand image is shaped by marketing communication strategy. When a company promises to

offer eco-friendly items, consumers perceive higher quality and a greener brand image. A strong brand image is associated with superior quality and worth, resulting in a favourable brand image.

### **3.8.6 Consumer's Knowledge:**

It is a form of consumption that is compatible with environmental protection for both current and future generations. A consumer who is concerned about environmental protection when making a purchasing decision. Is a person who supports environmental causes and prefers green products.

Environmental understanding is required while developing green products (Li et al., 2019). Based on this, managers must have knowledge of the environment, which includes systemic knowledge, knowledge of action, and knowledge of benefits (effectiveness) (Geiger et al. 2018).

### **3.8.7 Consumer Attitudes:**

Consumer attitude is a collection of emotions, behavioural intentions, and beliefs that a consumer has about a behaviour or product. It can be altered by changing one or more of its three components: behavioural, affective, and cognitive. Heyl et al. (2013) define green attitudes as the tendency to respond consistently favourably or unfavourably to environmental issues. The more positive a consumer's attitude towards green products, the more willing they are to pay for them.

### **3.8.8 Consumers Readiness:**

Consumer readiness refers to if consumers believe and promote green appliances. How easily consumers persuade themselves to buy energy efficient appliance or product. The main promotor of consumers' readiness to purchase such products are consumers' attitude and knowledge/awareness.

### **3.8.9 Subjective Social Norms:**

According to Fishbein & Ajzen (1975), the subjective norm refers to the opinions and motivations of significant others in a consumer's life, such as family or friends. Subjective norms, including comments from friends, family, government, environmentalists, and changing lifestyles, might affect customer behaviour towards eco-friendly items. Subjective norms refer to a concept that most people accept or disapprove of a behaviour (LaMorte, 2019). This refers to a person's ideas about whether their peers and significant others believe they should engage in a particular behaviour.

### **3.8.10 Moral Norms:**

The current study used the concept of environmental knowledge from Kaiser et al. (1999) which states that the term "environmental knowledge" refers to individuals' factual knowledge of the environment.

### **3.8.11 Consumers Environmental Self-identity:**

Green self-identity is an expansion on the concept of self-identity that involves the use of green or sustainable items. Self-identity is defined as "the salient aspect of an actor's self that is related to a specific behaviour." As people relate to their behaviour in a different environment, the concept of self-identity becomes increasingly important in interpreting it. Green identity has been identified as a significant predictor of consumers' intentions to purchase environmentally friendly products.

### **3.8.12 Warm Glow:**

According to the theories, "warm glow" refers to the satisfaction people get from "doing their part." According to James Andreoni's initial warm-glow concept (1989, 1990), people feel the pleasure and satisfaction after "doing their part" to aid others. Warm-glow theory is an economic paradigm that discusses the emotional satisfaction that an individual may feel when engaging in pure altruistic behaviour, such as donating to others. Previous research indicates that consumers may have a personal feeling of fulfilment when they commit to not only ethical behaviours, but also environmental consciousness.

### **3.8.13 Consumers Perceived Barriers:**

Green products are not widely accepted by consumers, indicating limitations to their use. Perceived barriers can prevent environmentally conscious buyers from demonstrating their commitment. Some of the barriers include premium price for its payment, distinguish between energy efficient appliance and conventional appliances, trusting the credibility of energy rated appliances, lack of awareness and availability of green products and lack of proper promotion.

### **3.8.14 Green Marketing Tools:**

This study considers the three green marketing tools, such as eco-labels, eco-brands, and environmental advertisements, to be an enrichment to a consumer's understanding of environmentally friendly items. These tools will facilitate perception and raise knowledge of green product traits and features, hence influencing consumers to purchase environmentally friendly items. In this study, perceived pricing, perceived place, perceived product, and perceived promotion are all included in marketing tools.

### **3.8.15 Green Perceived Product:**

The term "Green Product" refers to products or services that are not harmful to the outdoor environment. Nevertheless, for more than a decade, the U.S. Federal Trade Commission (FTC) has issued warnings about products or services marketed as environmentally friendly or environmentally safe. A green product is defined as a product that was manufactured using toxic-free ingredients and environmentally-friendly measures, and which has been recognised as such by an acknowledged organisation.

The product is the centre of the green marketing mix and the most important component of the overall green marketing strategy. In business, the terms "green product" and "environmental product" refer to products that strive to conserve or improve the natural environment by conserving energy and/or resources and decreasing or eliminating the usage of noxious agents, pollution, and waste.

### **3.8.16 Green Perceived Price:**

The price is the amount paid for a product. It is a key component of the marketing mix. The majority of buyers will only pay a premium if they believe the product offers more value (Eric, 2007). This value could include improved performance, functionality, design, visual appeal, or taste. Green pricing balances people, earth, and profit in a way that protects employee and community health while ensuring efficient output.

A higher price than the standard alternative might be a deciding factor for certain clients, confirming the accuracy of the product's green features. Others do not consider the price at all and chose the environmentally friendly option.

### **3.8.17 Green Perceived Place:**

Green Place refers to the location where a product can be purchased. It can refer to both real and virtual stores. Product distribution should follow satisfactory channels and be visibly and accurately positioned in an environmentally safe location with no contamination. Green place is about managing logistics to reduce transportation emissions, thereby reducing the carbon footprint (Shil, 2012). It is related to the use of distribution gates that deal with green products that are suitable for customers, in terms of facilitating their delivery, and to secure cycling procedures that take place within environmental conditions and requirements. Green distribution is an extremely sensitive job. Customers must be assured of the product's 'ecological nature'. The green environment is constantly controlled, and hence a high level of compliance is required when distributing green products.

### **3.8.18 Green Perceived Promotion:**

This relates to presenting genuine information about the products in a manner that does not harm the materialistic and moral consumers' interests (Hashem and Al-Rifai, 2011). Green

promotion entails configuring promotional tools such as advertising, marketing materials, signage, white papers, websites, public relations, sales promotions, direct marketing, on-site promotions, videos, and presentations with people, the earth, and profits in mind (Shil, 2012). Green promotion is the process of disseminating information to consumers about companies' environmental goals and initiatives. According to Fan and Zeng (2011), the green marketing mix comprises activities such as paid advertising, public relations, sales promotions, direct marketing, and on-site promotions.

### **3.8.19 Consumers' Demographic:**

In order to understand customer demographics, the researcher examined four variables: age, gender, education, and income. According to different surveys, Generation Z and Millennials are more willing to pay higher prices than Generation X (1965-1980). Gender, on the other hand, plays an important impact because males base their decisions on facts and statistics. However, women tend to be hedonists and prefer to make emotional decisions such as hunting. Finally, income determines the purchasing power of each household. As a result, the better people's personal financial status, the more they expressed a desire to purchase goods that are environmentally friendly.

### **3.8.20 Green Purchase Behavior:**

Green purchasing behaviour can be translated to the act of consuming products that are conservable, beneficial for the environment, and responding to environmental concern (Lee, 2009). Webster (1975) found that the socially conscious customer feels strongly that he/she can do something about pollution and tries to consider the social impact of his/her buying behaviour.

A green consumer can be identified to be one who avoids any product which may harm damage to any living organism, cause deterioration of the environment during process of manufacturing or during process of usage, consume a large amount of non-renewable energy, involves unethical testing on animals or human subjects (Elkington, 1994). He also states that "According to Wiener and Sukhdial (1990), one of the main reasons that stop individuals from engaging in ecologically favourable actions is their perceived level of self-involvement toward the protection of the environment".

## **3.9 Source of Information:**

### **3.9.1 Primary data:**

Primary data required to achieve the research objectives listed earlier was collected through Non-Disguised Close-ended Questionnaire. A structured

questionnaire containing an of scale chosen from available literature was developed to assess the awareness amongst consumers about green household appliances, their desire to use and major factors contributing on such purchases. Appropriate five-point Likert scales ranging from 1 (strongly agree) to 5 (strongly disagree) was used for obtaining responses on various parameters of the study. The questionnaire was pre-tested through a pilot study. Based on the outcomes of the pilot study, necessary changes were made before administering the final questionnaire. Appropriate Likert scales were used depending upon the parameters/variables under study.

### **3.9.2 Secondary data:**

The secondary data was collected from authentic and reliable sources like published research papers, published articles, research reports, newspapers, and various authentic websites. The other data which were used for the purpose of the study were taken from books, e-books, internet literatures, magazines, journals and electronic media through both online and offline mode.

### **3.10 Designing of Structured Non-Disguised Questionnaire:**

The questionnaire was developed with the survey's primary purpose, goals, and gaps found in the literature review considering the objectives of the research. The organized questionnaire comprises questions on the behaviour of consumers in relation to green and energy efficient appliances. Consumers were asked to rate their perception and awareness in relation to sustainable development and pro-environmental behaviour on a Likert scale. Age, gender, educational degree, employment, and yearly income were among the demographic background variables.

Pilot testing was done on the structure non-disguised questionnaire before finalizing the instrument. Following is the list of selected references used for drafting the questionnaire. Appropriate scales were used from these selected references for achieving the research objectives. Based upon the findings of the pilot study, certain scales were modified to suit the conceptual framework and the reliability and validity of the constructs used, were found to be highly reliable and valid.

- Perception towards Eco-Friendly products: Morel, M., & Kwakye, F. (2012)
- Reasons for purchasing Eco-Friendly Products: Morel, M., & Kwakye, F. (2012)
- Pro-Environment Behaviour and Energy Saving

- |                                                |                                          |               |
|------------------------------------------------|------------------------------------------|---------------|
| Attitude towards Environmental Protection      | Bhutto, et al & J Gardner, P. Ashworth   | 2020;<br>2007 |
| • Factors determining Green Purchase Behaviour |                                          |               |
| Knowledge/Awareness of GHA                     | Nguyen, T. N., Lobo, A., & Nguyen, B. K. | 2018          |
| Attitude towards GHA                           |                                          |               |
| Green Purchase Behaviour                       |                                          |               |
| Subjective Social Norms                        |                                          |               |
| Moral Norms                                    |                                          |               |
| Environmental Self-Identity                    |                                          |               |
| Warm Glow                                      |                                          |               |
| Perceived Barriers                             |                                          |               |
| Consumers' readiness for GHA                   | Srivastava, M., Malik, K., & Kumar, R.   | 2016          |
- Sustainable Development Practices/ Consumption Behaviour: Srivastava, M., Malik, K., & Kumar, R. (2016)
  - Awareness level of and Recognition of Green Eco-Label System
  - Behaviour pattern of selected GHA: Banerjee, T., & Banerjee, A. (2015)
  - Significant parameters while selecting star rated appliance: Banerjee, T., & Banerjee, A. (2015)
  - Significant parameters while selected star rated Television: Banerjee, T., & Banerjee, A. (2015)
  - Significant parameters while selected star rated Refrigerator: Banerjee, T., & Banerjee, A. (2015)
  - Significant parameters while selected star rated Air-Conditioner: Banerjee, T., & Banerjee, A. (2015)
  - Significant parameters while selected star rated Washing Machine: Banerjee, T., & Banerjee, A. (2015)
  - Level of happiness with the purchase of star rated appliance: Banerjee, T., & Banerjee, A. (2015)
  - Green Brand Awareness: Doszhanov, A., & Ahmad, Z. A. (2015)
  - Green Brand Image: Doszhanov, A., & Ahmad, Z. A. (2015)
  - Purchase Intention: Doszhanov, A., & Ahmad, Z. A. (2015)
  - Green marketing Tool:

Green Perceived Product	Shulov Shrestha	2016
Green Perceived Price	P. Ansu-Mensah	2021
Green Perceived Place	P. Ansu-Mensah	2021
Green Perceived Promotion		

- Actual Green Purchase Behaviour: Banerjee, T., & Banerjee, A. (2015)

### 3.11 Reliability and Validity of the Research Instrument:

The reliability test is performed to determine whether the scale used in the survey can offer consistent and reliable results or if the same scale has been assessed repeatedly. The reliability test determines the level of variance in a given scale and reports the results derived by putting one variable against another. Cronbach alpha values range from 0 to 1. The closer the Cronbach alpha is to one, the better the reliability. The higher the value, the greater the covariance and correlation between the examined variables.

*Table 3: Reliability check of Structured Non-Disguised Questionnaire*

Construct	Cronbach Alpha
Perception Towards Eco-Friendly Products	0.715
Reasons for Purchase of Eco-friendly Products	0.711
Perceived Knowledge/ Awareness about Environment	0.839
Attitude towards Environmental Protection	0.719
Consumers' Energy-Saving Behaviour	0.743
Awareness about GHA	0.739
Attitude towards GHA	0.732
Readiness for GHA	0.707
Subjective Social Norms	0.752
Moral Norms	0.752
Environmental Self-Identity	0.778
Warm Glow	0.741
Perceived Barriers	0.721
Green Purchase Behaviour	0.703
Sustainable Development Practices	0.897
Green Brand Awareness	0.871
Perceived Green Brand Image	0.771

Perceived Quality	0.749
Purchase Intention	0.779
Green Perceived Product	0.702
Green Perceived Price	0.778
Green Perceived Place	0.744
Green Perceived Promotion	0.749

In the present study, the CA values were between 0.702 to 0.897, i.e. within the acceptable threshold. The highest construct (0.897) is found to be Sustainable Development Practices/ Consumption Behaviour and the construct with lowest value (0.707) is Readiness for Green Household Appliances. However, both the constructs are under the acceptable limit.

**Table 4: Reliability check of Structured Non-Disguised Questionnaire**

<b>Constructs</b>	<b>Mean Score</b>
Perception towards Eco-Friendly Products	3.722
Reasons for Purchasing Eco-Friendly Products	3.914
Awareness About Environment	3.370
Attitude towards Environmental Protection	4.199
Energy-Saving Behaviour	4.154
Knowledge about GHA	4.266
Attitude Towards GHA	4.359
Consumers Readiness for GHA	3.568
Subjective Social Norms	3.456
Moral Norms	3.459
Environmental Self-Identity	4.079
Warm Glow	4.372
Perceived Barriers	3.476
Green Purchase Behaviour	3.779
Sustainable Development Practices/ Consumption Behaviour	4.384
Level of Significance While Purchasing A Star Rated Television	4.170
Level of Significance While Purchasing A Star Rated Refrigerator	4.245

Level of Significance While Purchasing A Star Rated Air-Conditioner	4.279
Level of Significance While Purchasing A Star Rated Washing Machine	4.227
Level of Happiness with the Purchase of Star Rated Products	3.916
Green Brand Awareness	4.176
Perceived Green Brand Image	4.079
Perceived Quality	4.218
Purchase Intention	4.206
Green Perceived Product	4.710
Green Perceived Price	3.826
Green Perceived Place	3.956
Green Perceived Promotion	4.135
Actual Green Purchase Behaviour	4.300

The researcher computed the mean scores for all the scales used in the Structured Non-Disguised Questionnaire and all items within each scale (see table 04). The results showed less variance in the specified scale categories and more or less a similar average on scales of Agreement/Disagreement, Level of Awareness, Level of Frequency, Level of Happiness and Level of Priority. Additionally, the majority of responses ranged between 3 to 5 on a 5 point Likert scale. Thus, the validity of the scale is automatically established.

### **3.12 Sampling Decisions:**

#### **3.12.1 A Representative Sample:**

The samples of this research study were consumers who may possess selected household appliances such as Air Conditioner, Television, Washing Machine and Refrigerator. Target population belonged to Ahmedabad, Gandhinagar and Vadodara.

#### **3.12.2 Sampling Design:**

In this research, the sample design on the basis of suitability and availability of the requisite sampling frame will be used. Hence, *convenience sampling method* is preferred by the researcher to select the respondents of the selected cities.

#### **3.12.3 Sampling Method:**

Convenience sampling method has been used by the researcher.

#### **3.12.4 Sampling Frame:**

Sampling frame consist of the list, published list of sampling unit or group of consumers identified target population. The total population of the selected three districts of Gujarat would consist the sampling frame. The selected cities are Ahmedabad, Gandhinagar and Vadodara.

#### **3.12.5 Sample Size Determination:**

A sample of 1050 respondents from selected cities of Gujarat was drawn. This size was determined by using the formula of proposed by Naresh K. Malhotra (2007) 'Marketing Research – An Applied Orientation' 6<sup>th</sup> Edition, Pearson, Page number 364. Before finalizing this, a pilot test was conducted with the sample size of 200.

Detailed calculation of sample size is shown in Annexure II.

#### **3.12.6 Sampling Media:**

In this study, the sampling media deals with consumer who may possess household appliances in their daily use by administering in person as well as via google form, non-disguised questionnaire.

### **4. Data Analysis and Interpretation of the Research Study:**

To test the formulated hypotheses, the researcher has used suitable statistical tools and use of appropriate statistical software was done for data analysis and interpretation. The data was analysed by SPSS version 21. The researcher had applied tests like Frequency count, Descriptive Statistics (Mean and Standard Deviation), One-way ANOVA, Factor Analysis, Correlation and Regression. To check the reliability of the constructs offered, Cronbach Alpha was calculated. The selected three cities for data collection were Gandhinagar, Ahmedabad and Vadodara.

The data analysis has offered results on frequency of ownership and usage of household appliances, awareness of Energy Efficient appliances, Level of agreement for Sustainable Consumption and 4 P's of green marketing were analysed in relation to household appliances.

### **5. Finding and Implications of the study:**

- The present study reveals that there is a positive and significant relationship between Pro-Environmental Behaviour and PEB and energy savings. Regression analysis is also applied

to know the association between Pro-environmental behaviour and Energy Savings. Value of R2 is 0.057 which indicated a positive relationship.

- To study the behaviour pattern of selected GHA, frequency count was carried out. Parameters like Price, Label and Brand name, and cost incentives attached like easy EMI, festival offer, free gifts play a major role. On the contrary, factors like Persuasion from salesman, Convenient to use and look and feel do not play a significant role. To understand in detail about frequency of purchase, 996 (94.85%) agreed that they have purchase a household appliance in last three years for which, 90% of the respondents paid an extra price too. Further, consumers were asked about their understanding of star rated product. 406 respondents believed that star products mean – More energy savings, Statement of identity and are good for environment. Where else, only 22 respondents agreed that star rated product means statement of identity and are good for environment.
- To understand overall level of awareness, attitude and readiness towards GHA, it was seen that maximum respondents 764(72.76%) agreed that they are familiar with GHA. 66% of the respondents also agreed that they are knowledgeable about the environmental impact of GHA. Only 2 respondents disagreed on that fact that they are knowledgeable about the benefits of using GHA. Hence, it was concluded that there is a high level of awareness of GHA.

Attitude, on the other hand, maximum respondents (62.5%) strongly agreed that they would recommend others to purchase and use GHA and large number of respondents agreed that GHA are important to reduce air pollution (59%) and GHA are important to save natural resources that would be used for producing energy, e.g. coal, water (61.5%).

Lastly, for consumer's readiness to purchase GHA, 59% of the respondents strongly agreed that Price is the major issue which resist buyers to buy GHA. But, 34% of the respondents completely disagreed that they have nothing to do with green initiatives. Government should take initiatives and that they are the least thinker about environmentalism. The government and businesses should promote and look after these issues.

- Out of the total respondents, 1002 (95.4%) easily recognized the 100% green eco-label, majority of respondents (87.3%) were aware about star energy saving and Reuse-Reduce-Recycle. But awareness was not seen in green seal as 788 (75%) of the consumers could not recognize it. Indian Organic and USDA Organic logos were also not identified by respondents in a large number of 85% and 80.2% respectively.

- For the purchase of green household appliances, factors such as knowledge/awareness, attitude, Consumers' readiness, Social Norms, Moral Norms, Environmental Self-Identity, Warm glow and perceived barrier were correlated with GPB. The researcher has used Karl Pearson's Correlation to explore the relation between independent and dependent variables. The computed value of Karl Pearson's is  $\rho = 0.565$  which is less than 0.005, which indicates that there is a significant relationship between all above mentioned factors and GPB. All the factors are positively related with GHA except for price.
  - Positive correlation value is  $\rho = 0.092$  and is significant at 0.000 level. Hence, we conclude that there is a significant relationship between Consumers' knowledge and GPB.
  - Positive correlation value is  $\rho = 0.146$  and is significant at 0.000 level. Hence, we conclude that there is a significant relationship between Consumers' Attitude and GPB.
  - Positive correlation value is  $\rho = 0.130$  and is significant at 0.000 level. Hence, we conclude that there is a significant relationship between Consumers' Readiness and GPB.
  - Positive correlation value is  $\rho = 0.140$  and is significant at 0.000 level. Hence, we conclude that there is a significant relationship between Social Norms and GPB.
  - Positive correlation value is 0.168 and is significant at 0.000 level. Hence, we conclude that there is a significant relationship between Moral Norms and GPB.
  - Positive correlation value is  $\rho = 0.278$  and is significant at 0.000 level. Hence, we conclude that there is a significant relationship between Consumers' Self-Identity and GPB.
  - Positive correlation value is  $\rho = 0.178$  and is significant at 0.000 level. Hence, we conclude that there is a significant relationship between Warm Glow and GPB.
  - Negative Correlation is seen between Perceived Barriers and GHA, where  $\rho = -0.010$ . A negative correlation indicates two variables tend to move in opposite direction. As the value is lower than -0.3, it indicates that the correlation is very weak. But, this is a conventional way of interpreting correlation coefficient values which are disputable.
- It is also observed from the study that Green Brand Awareness and Perceived Quality, the researcher has used Karl Pearson's Correlation to explore the relation between independent and dependent variables. Positive correlation value is  $\rho = 0.499$  and is significant at 0.000 level. Hence, we conclude that there is a significant relationship between Green Brand Awareness and Perceived Quality.

- Green Brand Awareness and Purchase Intention are also positively related, where the value of  $\rho = 0.367$  and is significant at 0.000 level. Hence, we conclude that there is a significant relationship between Green Brand Awareness and Purchase Intention.
- Further, there is a positive correlation between Green Brand Image and Perceived Quality, where the value of  $\rho = 0.686$  and is significant at 0.000 level. Hence, we conclude that there is a significant relationship between Green Brand Image and Perceived Quality
- Green Brand Image and Purchase intention are also positively related, where the value of  $\rho = 0.758$  and is significant at 0.000 level. Hence, we conclude that there is a significant relationship between Green Brand Image and Purchase intention.
- To assess the relationship between Green Marketing Tools and GPB, the researcher has used Karl Pearson's Correlation to explore the relation between independent and dependent variables.
  - It was found that there is a positive correlation between Green Perceived Product and GPB at  $\rho = 0.149$  and is significant at 0.000 level. Hence, we conclude that there is a significant relationship between Green Perceived Product and GPB
  - On the contrary, Green Perceived Price and GPB have an insignificant relationship between them. This means that there exists a negative correlation, where the value of  $\rho = -0.150$  between these two variables. It indicates that they are moving in the opposite direction and represent a weak relationship between Green Perceived Price and GPB.
- To determine the relationship between consumers' demographics and Sustainable Development, Karl Pearson's Correlation to explore the relation between independent and dependent variables.
  - It was found that there is a positive correlation between Age and Sustainable Development, where the value of  $\rho = 0.045$  and is significant at 0.000 level. Hence, we conclude that there is a significant relationship between Age and Sustainable Development.
  - It has been noted that there is a positive correlation between Income and Sustainable Development, where the value of  $\rho = 0.459$  and is significant at 0.000 level. Hence, we conclude that there is a significant relationship between Income and Sustainable Development.
  - It was also observed that there is a positive relationship between Education and Sustainable Development, where the value of  $\rho = 0.096$  and is significant at 0.000

level. Hence, we conclude that there is a significant relationship between Education and Sustainable Development.

- But, there was a negative/ insignificant relationship between Gender and Sustainable Consumption. This indicates that Gender and Sustainability are moving in the opposite direction and have a weak relationship, where the value of  $\rho = -0.006$  with each other.

## **6. Recommendations and Suggestions of the Research Study:**

Based on the findings of the research study, the researcher proposes the following recommendations:

- Marketers should try to maximize the awareness of GHA in the current scenario to protect the environment and to increase the sales. Advertisements, free trials and awareness campaigns should be encouraged.
- Based on the findings, low awareness of reading eco-label products and limited understanding on how to read energy star labelling was seen. Manufacturers, marketers, and policymakers should focus on creating more awareness by offering seminars and workshops to help individuals understand different interpretations of energy star rating labels.
- Policymakers can incorporate energy-star rating interpretations of common household appliances into Environmental Studies syllabuses at various grade levels, dependent on learners' understanding.
- The study also highlights that consumers consider parameters like cost incentives attached like easy EMI, festival offer, free gifts very crucial while purchasing. Marketers should try and apply such offers whenever possible.
- Encourage collaboration between governments and commercial firms to promote the development and sale of environmentally friendly appliances.
- Governments can offer financial incentives, such as subsidies or tax rebates, for both manufacturers and consumers of green appliances.

## **7. Limitations of the Research Study:**

- The received data might result in incorrect and inaccurate data information, analysis, and research study outcomes.
- The study is restricted to only four commonly used home appliances viz. Television, Air-Conditioner, Refrigerator and Washing Machine.

- The research design and sample size used in the research may limit the findings of the study along with the Statistical software and tools used by the researcher
- This study focuses on eco-friendly product use among customers in Gujarat cities. This study's findings may not apply to consumers who use eco-friendly products in other areas.
- Emerging retail products can be taken as test market and consumers' purchase pattern can be observed from these test markets.

## **8. Directions of Future Study:**

Taking into consideration the limitation of the present study, following areas are suggested for future research on this topic:

- Researcher has used the model proposed by Kaufmann as a based. Future study can be done by taking some other model.
- A different geographical can be explored to validate the present model. Future studies can focus on assessing whether the relationship between the determinants identified in this study and purchase intention are moderated by socio-demographic characteristics of households.
- Addition of constructs, apart from those considered in the present study, can also serve as an effective area for future research.
- The sample size selected for this study is selected cities of Gujrat, for further research, size can be enlarged by varying the size of respondents.

## **9. CHAPTER SCHEME OF PH.D. THESIS:**

### **Chapter 1: Introduction**

This chapter includes a brief overview of the study's history and some important terms. In addition to this, the chapter revolves around green household appliances and the star labelling project in India, with an emphasis on selected household appliances under review. The chapter also discusses the current status of brands producing energy Efficient appliances.

### **Chapter 2: Literature Review**

This chapter provides a summary of important research studies for the subject issue. The chapter has been split into two sections: research papers referred and thesis referred. The study includes features related to consumer buying behaviour for green household appliances. Research

studies at National and International level were reviewed and accordingly the research gap was identified.

### **Chapter 3: Research Methodology**

This chapter lays an outline on approach for collecting and analysing empirical evidence to explore and fill the research gaps. The study designs discuss, taking into account the study's significance, research questions, and objectives established through literature review. The chapter will describe research gap, research scope, research design, research objectives and hypotheses along with conceptual model frame for the study.

### **Chapter 4: Data Analysis and Interpretation**

This chapter presents the demographic profile of respondents and the outcomes of hypothesis testing. The data analysis results were presented visually as percentages, averages, and frequency distribution, as figures and tables. The researcher conducted the primary data analysis using the SPSS-21 statistical software.

### **Chapter 5: Findings and Conclusions**

The chapter on Findings and Conclusions emphasised the study's strategic and managerial significance. The researcher presented the study's findings and impact based on data analysis, including frequency counts, descriptive analysis, Correlation test, Regression, One-way ANOVA, Factor Analysis and Cronbach Alpha.

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## Appendix

### A 1 - Annexure I

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#### An Empirical Study on Pro-Environmental Behaviour towards selected Green Household Appliances for Sustainable Consumption: Special Reference to Gujarat, India

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Dear Respondent,

I, Heer H. Shah, am pursuing Ph.D. on “An Empirical Study on Pro-Environmental Behaviour towards selected Green Household Appliances for Sustainable Consumption: Special Reference to Gujarat, India” under the guidance of Dr. Vilas Chauhan, Assistant Professor, Department of Commerce and Business Management, Faculty of Commerce, The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat.

This questionnaire is intended to explore the pro-environmental behaviour and energy savings; study the behaviour pattern of the selected green household appliances; explore various factors which impact consumers’ green purchase behaviour; study consumers’ overall level of awareness, attitude and readiness towards green purchase behaviour; determine the level of recognition of eco-labels used in selected green household appliances; determine the impact of green brand awareness and green brand image on the perceived quality and purchase intention towards selected green household appliances; and to determine the relationship between green marketing tools and green purchase behaviour.

Participation is voluntary and your completion would be very highly appreciated. There are no right or wrong answers and the accuracy of results of this research is entirely dependent on how honest you can be. All information provided will be treated with the strictest confidence.

Regards!

Ms. Heer H. Shah

#### PART A: DEMOGRAPHIC INFORMATION

Name of the Respondent : \_\_\_\_\_  
Contact No. : \_\_\_\_\_  
E-Mail ID : \_\_\_\_\_

1	<b>Gender:</b>	(a) Male <input type="checkbox"/>	(b) Female <input type="checkbox"/>
2	<b>Age:</b>	(a) 20 to 30 yrs <input type="checkbox"/>	(b) 30 yrs to 40 yrs <input type="checkbox"/>
		(c) 40 to 50 yrs <input type="checkbox"/>	(d) Above 50 yrs <input type="checkbox"/>
3	<b>Education:</b>	(a) Below High school <input type="checkbox"/>	(b) Graduation <input type="checkbox"/>
		(c) Post-Graduation <input type="checkbox"/>	(d) Doctorate <input type="checkbox"/>
4	<b>Respondent Status:</b>	(a) Student <input type="checkbox"/>	(b) Employed <input type="checkbox"/>
		(c) Self-Employed <input type="checkbox"/>	(d) Homemaker <input type="checkbox"/>
		(e) Unemployed <input type="checkbox"/>	(f) Retired <input type="checkbox"/>
5	<b>Marital Status:</b>	(a) Single <input type="checkbox"/>	(b) Married <input type="checkbox"/>
		(c) Divorced <input type="checkbox"/>	
6	<b>Household Size:</b>	(a) Less than 3 Members <input type="checkbox"/>	(b) 3 to 5 Members <input type="checkbox"/>
		(c) More than 5 Members <input type="checkbox"/>	
7	<b>Family Type:</b>	(a) Joint <input type="checkbox"/>	(b) Nuclear <input type="checkbox"/>
8	<b>Monthly Income:</b>	(a) Less than Rs. 50,000 <input type="checkbox"/>	(b) Rs. 50,001 to Rs. 1,00,000 <input type="checkbox"/>
		(c) Rs. 1,00,001 to Rs. 1,50,000 <input type="checkbox"/>	(d) Above Rs. 1,50,000 <input type="checkbox"/>
9	<b>Residential Location:</b>	(a) Rural <input type="checkbox"/>	(b) Urban <input type="checkbox"/>
10	<b>Respondent City/Town:</b>	(a) Gandhinagar <input type="checkbox"/>	(b) Ahmedabad <input type="checkbox"/>
		(c) Vadodara <input type="checkbox"/>	

**PART B  
APPLIANCE OWNERSHIP AND USAGE**

<b>Please mention your ownership for below given appliances and its usage (in terms of No. of Hours) / Day</b>						
12	Entertainment Appliances	Ownership		If Yes, Usage in terms of No. of Hours / Day		
		Yes	No	Less than 2 Hrs.	2 – 4 Hrs.	More than 4 Hrs.
EA1	LCD/Plasma TV					
EA2	Computer (desktop/laptop)					
EA3	Home Theatre					
EA4	Over Head Projector					
13	Utility Appliances	Yes	No	Less than 2 Hrs.	2 – 4 Hrs.	More than 4 Hrs.
UA1	Dishwasher					
UA2	Air Conditioner					
UA3	Washing machine					
UA4	Tumble dryer					
UA5	Steam iron					
UA6	Electric shower					
UA7	Electric hot water system					
14	Kitchen Appliances	Yes	No	Less than 2 Hrs.	2 – 4 Hrs.	More than 4 Hrs.
KA1	Microwave					
KA2	Electric oven					
KA3	Mixer/Grinder					
KA4	Juicer					
KA5	Kettle					
KA6	Refrigerator					
KA7	Deep freezer					

**PART C  
ECO-FRIENDLY PRODUCTS AND CONSUMERISM**

15	<b>TYPES OF ECO-FRIENDLY PRODUCTS PURCHASED</b>					
<b>For the below mentioned product categories, please indicate your frequency of purchase of Eco-friendly products during the last three months:</b>						
<b>(1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, and 5 = Always)</b>						
	Product Categories	Purchase Frequency				
		1	2	3	4	5
EP1	Aerosol Propellants					
EP2	Architectural Paints and Powder Coatings					
EP3	Batteries					
EP4	Cosmetics					
EP5	Electronic / White Goods					
EP6	Fire Extinguisher					
EP7	Food additives and preservatives					
EP8	Food items					
EP9	Leather Products					
EP10	Lubricating oil					
EP11	Packaging Materials					
EP12	Paper					
EP13	Pesticides & Drugs					
EP14	Plastic Products					
EP15	Soaps and detergents					
EP16	Textiles					
EP17	Vegetable Oils					
EP18	Wood Substances / Substitutes					

16	<b>PERCEPTION TOWARDS ECO-FRIENDLY PRODUCTS</b>
<b>Please indicate your level of Agreement / Disagreement for the following factors that can be used to describe Eco-friendly products:</b>	

<b>(1 = Strongly Disagree, 2 = Disagree, 3 = Neither Disagree nor Agree, 4 = Agree, and 5 = Strongly Agree)</b>						
	Eco-friendly Products.....	Level of Agreement				
		1	2	3	4	5
PE1	Are good for the environment					
PE2	Are healthy					
PE3	Are reliable and trustworthy					
PE4	Have a good quality/performance					
PE5	Have a better quality/performance than conventional products					
PE6	Have a good taste and/or good smell					
PE7	Have reasonable price					
PE8	Are well promoted					
PE9	Are accessible/available in the community / supermarket					

<b>17 REASONS FOR PURCHASING ECO-FRIENDLY PRODUCTS</b>						
<b>Please indicate your level of Agreement / Disagreement for the below mentioned Reasons for Purchase of Eco-friendly Products: 1 = Strongly Disagree, 2 = Disagree, 3 = Neither Disagree nor Agree, 4 = Agree, and 5 = Strongly Agree)</b>						
	Reasons for Purchasing Eco-friendly Products	Level of Agreement				
		1	2	3	4	5
RP1	They give a good image of me					
RP2	I want to preserve the earth					
RP3	I just like eco-friendly products					
RP4	I feel trendy/fashionable when I purchase eco-friendly products					
RP5	If I do NOT purchase, people could judge me					
RP6	I purchase eco-friendly products on unplanned decision in a supermarket					
RP7	I was satisfied with most of eco-friendly products I bought					

#### PART D (Obj. 1)

#### PRO-ENVIRONMENTAL BEHAVIOUR AND ENERGY SAVINGS

##### Perceived Knowledge/ Awareness about Environment

<b>18 Please reflect upon the following statements indicating Your 'Environmental Predisposition' for the following statements. (1 = Strongly Disagree, 2 = Disagree, 3 = Neither Disagree nor Agree, 4 = Agree, and 5 = Strongly Agree)</b>						
	Perceived Knowledge/ Awareness about Environment	Level of Agreement				
		1	2	3	4	5
PK1	I know about the Carbon Dioxide (CO2) emissions from household energy consumption					
PK2	I know about Zero Carbon Homes					
PK3	I know about the Government's initiatives to reduce CO2 Emissions					
PK4	I am aware about the ill-effects of Climate Change					
PK5	I am aware about the ill effects of Global Warming					
PK6	I am aware about the ill effects of Ozone Depletion					
PK7	I am aware about Ocean Acidification					
PK8	I am aware about the Loss of Biodiversity					
PK9	I am aware about the ill effects of all kinds of Pollution					
PK10	I am aware about electricity saving in the home					

##### Attitude towards Environmental Protection

<b>19 Please reflect upon the following statements indicating Your 'Attitude towards Environmental Protection'. (1 = Strongly Disagree, 2 = Disagree, 3 = Neither Disagree nor Agree, 4 = Agree, and 5 = Strongly Agree)</b>						
	Attitude towards Environmental Protection	Level of Agreement				
		1	2	3	4	5
AE1	Environmental protection is important to me while making purchases of appliances					
AE2	Energy Efficient Appliances are important to reduce air pollution					
AE3	Energy Efficient Appliances are important to save natural resources that would be used for producing energy, e.g. coal, water					
AE4	If I can choose between energy efficient and conventional appliances, I prefer energy efficient					
AE5	Reducing my household's energy consumption would help protect the environment					
AE6	It would save me money to reduce my household's energy consumption					

	AE7	Reducing my household's energy consumption would be inconvenient					
	AE8	During the recent past, I have taken steps to reduce my household's energy use					
<b>Consumer's Energy-Saving Behaviour</b>							
<b>20</b>	<b>Please reflect upon the following statements indicating Your 'Energy-Saving Behaviour' for the following statements. (1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, and 5 = Always)</b>						
		<b>Consumer's Energy-Saving Behaviour</b>	<b>Frequency</b>				
			<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
	CE1	I turn off lights and appliances when not in use					
	CE2	I use energy efficient light bulbs throughout the house					
	CE3	I consciously try to change my daily habits for energy savings					
	CE4	I use energy saving household appliances					
	CE5	I consciously put an effort to reduce the amount of usage of household appliances. (Cooking, heating and cooling etc.)					
	CE6	I believe in replacing older appliances which might be less energy efficient.					
	CE7	I use smart power strip devices to manage the usage of my household appliances in a smart way					
	CE8	I put an effort to minimize the frequency of usage of household appliances in order to reduce energy use					
	CE9	I look for cutting out air leaks to reduce draughts					

**PART E (Obj. 3 & 5)**

**FACTORS DETERMINING GREEN PURCHASE BEHAVIOUR**

**Knowledge/ Awareness about 'Energy Efficient / Green Household Appliances'**

<b>20</b>	<b>Please reflect upon the following statements indicating Your Knowledge/Awareness about 'Energy Efficient / Green Household Appliances'. (1 = Strongly Disagree, 2 = Disagree, 3 = Neither Disagree nor Agree, 4 = Agree, and 5 = Strongly Agree)</b>						
		<b>Knowledge/ Awareness about 'Energy Efficient / Green Household Appliances'</b>	<b>Level of Agreement</b>				
			<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
	KA1	I am familiar with Energy Efficient / Green Household Appliances.					
	KA2	I am knowledgeable about the environmental impact of Energy Efficient / Green Household Appliances.					
	KA3	I am knowledgeable about energy rating labels					
	KA4	I am knowledgeable about Energy Efficient / Green Household Appliances.					
	KA5	I am knowledgeable about the benefits of using Energy Efficient / Green Household Appliances.					

**Attitude towards 'Energy Efficient / Green Household Appliances'**

<b>21</b>	<b>Please reflect upon the following statements indicating Your Attitude towards 'Energy Efficient / Green Household Appliances'. (1 = Strongly Disagree, 2 = Disagree, 3 = Neither Disagree nor Agree, 4 = Agree, and 5 = Strongly Agree)</b>						
		<b>Attitude towards 'Energy Efficient / Green Household Appliances'</b>	<b>Level of Agreement</b>				
			<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
	AE1	Energy Efficient / Green Household Appliances are important to reduce air pollution					
	AE2	Energy Efficient / Green Household Appliances are important to save natural resources that would be used for producing energy, e.g. coal, water					
	AE3	I believe that Energy Efficient / Green Household Appliances are always overpriced					
	AE4	I believe that Energy Efficient / Green Household Appliances could be a beneficial in long-run					
	AE5	I believe that Energy Efficient / Green Household Appliances are major ecological want and it's not just a marketing tool.					
	AE6	If I was to choose between energy efficient and conventional appliances, I prefer energy efficient					
	AE7	I believe that Attractive govt. promotions on green products would help promoting them					
	AE8	I would recommend others to purchase and use Energy Efficient / Green Household Appliances.					

**Consumer Readiness for 'Energy Efficient / Green Household Appliances'**

<b>22</b>	<b>Please reflect upon the following statements indicating Your Readiness for 'Energy Efficient / Green Household Appliances'. (1 = Strongly Disagree, 2 = Disagree, 3 = Neither Disagree nor Agree, 4 = Agree, and 5 = Strongly Agree)</b>						
		<b>Consumer Readiness for 'Energy Efficient / Green Household Appliances'</b>	<b>Level of Agreement</b>				
			<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
	CR1	I am a strong believer and promoter of Energy Efficient / Green Household Appliances.					
	CR2	I do believe in using Green Products but am not a strong promoter of Energy Efficient Appliances.					
	CR3	I am a moderate believer of Green Products but not thought much on the issue.					

CR4	I have nothing to do with green initiatives. Government should take initiatives.					
CR5	I am the least thinker about environmentalism. The government and businesses should promote and look after these issues.					
CR6	If my disposable income is increased, then I would certainly go for Energy Efficient / Green Household Appliances.					
CR7	According to me, Price is the major issue which resist buyers to buy Energy Efficient / Green Household Appliances.					

#### Subjective Social Norms

- 23 Please reflect upon the following statements indicating Your Perception about the Influence of People Whom You Deemed Important when purchasing 'Energy Efficient / Green Household Appliances'. (1 = Strongly Disagree, 2 = Disagree, 3 = Neither Disagree nor Agree, 4 = Agree, and 5 = Strongly Agree)**

	Subjective Social Norms	Level of Agreement				
		1	2	3	4	5
SS1	Most of the people who are important to me think that I should buy Energy Efficient / Green Household Appliances.					
SS2	Most of the people who are important to me expect me to buy Energy Efficient / Green Household Appliances.					
SS3	Most of the people who are important to me would support me buying Energy Efficient / Green Household Appliances next time					
SS4	People whose opinion I respect would buy Energy Efficient / Green Household Appliances instead of conventional ones					

#### Moral Norms

- 24 Please reflect upon the following statements indicating Your Feelings of Responsibility and Moral Obligation relating to the purchase of 'Energy Efficient / Green Household Appliances'. (1 = Strongly Disagree, 2 = Disagree, 3 = Neither Disagree nor Agree, 4 = Agree, and 5 = Strongly Agree)**

	Moral Norms	Level of Agreement				
		1	2	3	4	5
MN1	I feel personally obliged to buy Energy Efficient / Green Household Appliances for the sake of the environment					
MN2	I feel guilty if I buy electrical appliances that damage the environment					
MN3	Buying electrical appliances that damage the environment would be morally wrong for me					
MN4	Buying electrical appliances that affect the environment would go against my principles.					
MN5	People like me have a responsibility to contribute to environmental preservation by avoiding electrical appliances that damage the environment					
MN6	Everyone should make a contribution to promoting green electrical appliance production by buying only Energy Efficient / Green Household Appliances.					

#### Environmental Self-Identity

- 25 Please reflect upon the following statements indicating Your Perception about Self as a 'Green Consumer' and how You use the Purchase of 'Energy Efficient / Green Household Appliances' to describe Yourself. (1 = Strongly Disagree, 2 = Disagree, 3 = Neither Disagree nor Agree, 4 = Agree, and 5 = Strongly Agree)**

	Environmental Self-Identity	Level of Agreement				
		1	2	3	4	5
ES1	I think of myself as someone who is concerned about environmental issues					
ES2	I see myself as being an environmentally friendly consumer					
ES3	I would want my family and friends to think of me as someone who is concerned about the environment					
ES4	I would be embarrassed not to be seen as having an environmentally friendly lifestyle					
ES5	Buying Energy Efficient / Green Household Appliances makes me feel that I am an environmentally friendly consumer					

#### Warm Glow

- 26 Please reflect upon the following statements indicating Your 'Positive feelings gained from purchasing 'Energy Efficient / Green Household Appliances'. (1 = Strongly Disagree, 2 = Disagree, 3 = Neither Disagree nor Agree, 4 = Agree, and 5 = Strongly Agree)**

	Warm Glow	Level of Agreement				
		1	2	3	4	5
WG1	I like to contribute to the protection of the environment by purchasing Energy Efficient / Green Household Appliances.					
WG2	I admire individuals who voluntarily purchase Energy Efficient / Green Household Appliances.					

WG3	I have the feeling of contribution to the well-being of humanity when buying Energy Efficient / Green Household Appliances.					
WG4	Buying Energy Efficient / Green Household Appliances makes me feel good because they help to protect the environment.					
WG5	Buying Energy Efficient / Green Household Appliances makes me feel good because they help me reduce my household energy consumption.					
WG6	Buying Energy Efficient / Green Household Appliances makes me feel good because they help me reduce my electricity bill.					
WG7	I am happy with myself whenever I buy green products like Energy Efficient Appliances					

#### Perceived Barriers

- 27 Please reflect upon the following statements indicating Your Perception towards Factors likely to Act as Barriers in Purchase of 'Energy Efficient / Green Household Appliances'. (1 = Strongly Disagree, 2 = Disagree, 3 = Neither Disagree nor Agree, 4 = Agree, and 5 = Strongly Agree)**

	Perceived Barriers	Level of Agreement				
		1	2	3	4	5
PB1	I cannot afford to pay more to buy Energy Efficient / Green Household Appliances.					
PB2	While shopping, I can't easily distinguish between energy efficient and conventional electrical appliances					
PB3	I need a lot of extra time to purchase Energy Efficient Appliances					
PB4	I am not confident about the credibility of energy rating labels					
PB5	Lack of Information/Awareness about green products is responsible for its low demand.					
PB6	Lack of Availability / Unease of Access of green products is responsible for its low demand.					
PB7	Cost savings from green products are lower than expected.					
PB8	I fear of being cheated in the name of green products.					
PB9	Unwillingness to change is responsible for the low demand of green products.					
PB10	Lack of proper promotion of green products is responsible for its low demand.					

#### Green Purchase Behaviour

- 28 Please reflect upon the following statements indicating Your 'Green Purchase Behaviour'. (1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, and 5 = Always)**

	Green Purchase Behaviour	Frequency				
		1	2	3	4	5
GP1	I buy Energy Efficient Appliances					
GP2	I am ready to shift from conventional appliances to Energy Efficient Appliances					
GP3	I switch to improved versions/brands of electrical appliances that are more energy efficient than my existing Household Energy Efficient Appliances					

#### PART F (Obj. 8)

#### SUSTAINABLE DEVELOPMENT PRACTICES / CONSUMPTION BEHAVIOUR

- 29 Please reflect upon your Level of Agreement for the following statements reflecting various issues related to 'Sustainable Development Practices/Consumption Behaviour'. (1 = Strongly Disagree, 2 = Disagree, 3 = Neither Disagree nor Agree, 4 = Agree, and 5 = Strongly Agree)**

	Dimensions determining to 'Sustainable Development Practices/Consumption Behaviour'.	Level of Agreement				
		1	2	3	4	5
SD1	Supporting Construction and renovation based on green design principles					
SD2	Encouraging Energy conservation practices in domestic and commercial uses as well.					
SD3	Discouraging waste generation practices					
SD4	Encouraging Recycling of solid waste i.e. including paper, plastic, metal, e-waste, etc.					
SD5	Supporting Sustainable food programme					
SD6	Encouraging Water conservation practices in domestic and commercial establishments					
SD7	Supporting Sustainable land management practices.					
SD8	Encouraging Sustainable transportation programme like non-motorized vehicles car pools, bus pass programme etc.					
SD9	Encourage Green product purchasing from reliable sources .					
SD10	Minimize toxic and radioactive waste					
SD11	Encourage Environmental audit for sustainable development					

**PART G (Obj. 4)**  
**AWARENESS LEVEL & RECOGNITION OF GREEN ECO-LABEL SYSTEMS**

30	AWARENESS LEVEL OF GREEN ECO-LABEL SYSTEMS					
	Please indicate your level of awareness regarding eco-labels for the specified product categories as per the scale given below: (1 = Not at all Aware, 2 = Slightly Aware, 3 = Somewhat Aware, 4 = Moderately Aware, and 5 = Extremely Aware)					
	Product Categories	Level of Awareness				
		1	2	3	4	5
AL1	Aerosol Propellants					
AL2	Architectural Paints and Powder Coatings					
AL3	Batteries					
AL4	Cosmetics					
AL5	Electronic / White Goods					
AL6	Fire Extinguisher					
AL7	Food additives and preservatives					
AL8	Food items					
AL9	Leather Products					
AL10	Lubricating oil					
AL11	Packaging Materials					
AL12	Paper					
AL13	Pesticides & Drugs					
AL14	Plastic Products					
AL15	Soaps and detergents					
AL16	Textiles					
AL17	Vegetable Oils					
AL18	Wood Substances / Substitutes					

31	RECOGNITION OF GREEN ECO-LABELS		
	Please indicate your Recognition (1 = Yes and 2 = No) for below given Green Eco-labels.		
	Green Eco-labels	Yes (1)	No (2)
RG1			
RG2			
RG3			
RG4			
RG5			
RG6			

RG7			
RG8			
RG9			

**PART H (Obj. 2)**  
**BEHAVIOR PATTERN OF SELECTED GREEN HOUSEHOLD APPLIANCES**

<b>32</b>	<b>Have you purchased a Star Rated / Green household appliance in last three years?</b>
	(a) Yes
	(b) No
<b>33</b>	<b>If Yes, have you paid an additional amount for the Star rating label on the appliance?</b>
	(a) Yes
	(b) No
<b>34</b>	<b>Do you prefer buying Star Rated products?</b>
	(a) Yes
	(b) No
<b>35</b>	<b>What does Star rated product mean to you?</b>
	(a) More energy saving
	(b) Statement for identity
	(c) Good for the environment

<b>36</b>	<b>From among the below given parameters, Tick (✓) those parameters which you will consider as significant while purchasing a Star Rated Appliance against a Non-Star Rated Appliance. (Multiple Choice)</b>	
	<b>Parameters</b>	<b>Tick (✓)</b>
	P1 Label and brand name	
	P2 Look and feel	
	P3 Recommendation from relatives and friends	
	P4 Persuasion from salesman	
	P5 Personal research from website and newspaper before purchase	
	P6 Cost incentive attached like easy EMI, festival offer, free gifts	
	P7 Energy saving	
	P8 Star Rating	
	P9 Convenient to use	
	P10 Health reasons	
	P11 Latest and smart technology	
	P12 Price	

<b>37</b>	<b>Please rate the following parameters indicating their Level of Significance while purchasing a Star Rated TELEVISION. (1 = Not at all Significant, 2 = Slightly Significant, 3 = Moderately significant, 4 = Very Significant, and 5 = Extremely Significant)</b>	
	<b>Parameters</b>	<b>Level of Significance</b>
		<b>1 2 3 4 5</b>
	P1 Label and brand name	
	P2 Look and feel	
	P3 Recommendation from relatives and friends	

	P4	Persuasion from salesman					
	P5	Personal research from website and newspaper before purchase					
	P6	Cost incentive attached like easy EMI, festival offer, free gifts					
	P7	Energy saving					
	P8	Star Rating					
	P9	Convenient to use					
	P10	Health reasons					
	P11	Latest and smart technology					
	P12	Price					
	P13	Space					
<b>38</b>	<b>Please rate the following parameters indicating their Level of Significance while purchasing a Star Rated REFRIGERATOR. (1 = Not at all Significant, 2 = Slightly Significant, 3 = Moderately significant, 4 = Very Significant, and 5 = Extremely Significant)</b>						
		<b>Parameters</b>	<b>Level of Significance</b>				
			<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
	P1	Label and brand name					
	P2	Look and feel					
	P3	Recommendation from relatives and friends					
	P4	Persuasion from salesman					
	P5	Personal research from website and newspaper before purchase					
	P6	Cost incentive attached like easy EMI, festival offer, free gifts					
	P7	Energy saving					
	P8	Star Rating					
	P9	Convenient to use					
	P10	More Capacity					
	P11	Health reasons					
	P12	Latest and smart technology					
	P13	Price					
	P14	Space					
<b>39</b>	<b>Please rate the following parameters indicating their Level of Significance while purchasing a Star Rated AIRCONDITIONER. (1 = Not at all Significant, 2 = Slightly Significant, 3 = Moderately significant, 4 = Very Significant, and 5 = Extremely Significant)</b>						
		<b>PARAMETERS</b>	<b>Level of Significance</b>				
			<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
	P1	Label and brand name					
	P2	Look and feel					
	P3	Recommendation from relatives and friends					
	P4	Persuasion from salesman					
	P5	Personal research from website and newspaper before purchase					
	P6	Cost incentive attached like easy EMI, festival offer, free gifts					
	P7	Energy saving					
	P8	Star Rating					
	P9	Convenient to use					
	P10	Health reasons					
	P11	Latest and smart technology					
	P12	Price					
	P13	Space					
<b>40</b>	<b>Please rate the following parameters indicating their Level of Significance while purchasing a Star Rated WASHING MACHINE. (1 = Not at all Significant, 2 = Slightly Significant, 3 = Moderately significant, 4 = Very Significant, and 5 = Extremely Significant)</b>						
		<b>PARAMETERS</b>	<b>Level of Significance</b>				
			<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
	P1	Label and brand name					
	P2	Look and feel					
	P3	Recommendation from relatives and friends					

	P4	Persuasion from salesman									
	P5	Personal research from website and newspaper before purchase									
	P6	Cost incentive attached like easy EMI, festival offer, free gifts									
	P7	Energy saving									
	P8	Star Rating									
	P9	Convenient to use									
	P10	Health reasons									
	P11	Latest and smart technology									
	P12	Price									
	P13	Space									
<b>41</b>	<b>Please indicate your Level of Happiness with the purchase of below mentioned Star Rated Appliances: (1 = Not at all Happy, 2 = Slightly Happy, 3 = Moderately Happy, 4 = Very Happy, and 5 = Extremely Happy)</b>										
	<b>STAR RATED APPLIANCES</b>						<b>Level of Happiness</b>				
						<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	
	SR1	Television									
	SR2	Refrigerator									
	SR3	Air conditioner									
	SR4	Washing machine									
<b>42</b>	<b>Are you able to measure the energy saved from the Star Rated Appliances?</b>										
		(a) Yes									
		(b) No									
		(b) Never Measured									
<b>43</b>	<b>If Yes, how did you measure the energy saved from the Star Rated Appliance?</b>										
		(a) Electricity Bill									
		(b) Electric Meter									
<b>44</b>	<b>Based on your past experiences of using Star Rated Appliances, will you continue to buy Star Rated Appliances in near future?</b>										
		(a) Yes									
		(b) No									
		(b) Can't Say									
<b>PART I (Obj. 6)</b>											
<b>GREEN BRAND AWARENESS, PERCEIVED GREEN BRAND IMAGE, PERCEIVED QUALITY AND PURCHASE INTENTION</b>											
	<b>With reference to the Selected Product Categories i.e.: TV, REFRIGERATOR, AIR CONDITIONER and WASHING MACHINE, Please indicate your level of awareness regarding Green Brands on the scale given below: (1 = Not at all Aware, 2 = Slightly Aware, 3 = Somewhat Aware, 4 = Moderately Aware, and 5 = Extremely Aware)</b>										
		<b>FOR THE ABOVE SPECIFIED PRODUCT CATEGORIES</b>					<b>Level of Awareness</b>				
						<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	
<b>45</b>	<b>Green Brand Awareness</b>										
	GB1	I am aware of the environmental efforts exerted by the green brands									
	GB2	I have seen some environmental labels and slogans for the available green brands									
	GB3	I recognize the meaning of the environmental slogans and symbols that available green brands use in its marketing campaigns.									
	GB4	I can remember some of the environmental symbols that the available green brands use in their marketing campaigns.									
	GB5	If I notice an environmental label on the green brands available, I will prefer to use it.									
<b>46</b>	<b>Perceived Green Brand Image</b>						<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
	PG1	I think brands of green products is the best benchmark in environmental commitments.									
	PG2	The green brands' environmental reputation is handled in a professional manner									
	PG3	The green brands available are successful in its environmental performance									
	PG4	Brand of green products is truly about environmental promises									
	PG5	Brand of green products is well established about environmental concern.									
<b>47</b>	<b>Perceived Quality</b>						<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
	PQ1	Green brand's quality is superior to conventional ones.									
	PQ2	Green brand's quality is reliable compared to conventional ones.									

	PQ3	Green brand's quality is effective and stable compared to conventional ones.						
	PQ4	Green brand's quality is extraordinary compared to conventional ones.						
	PQ5	Green brand's quality is far better than conventional ones.						
<b>48</b>		<b>Purchase Intention</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	
	PI1	It makes sense to use green products instead of other products because of its environmental commitments						
	PI2	Even if another product has the same features, I would prefer to use products with environmental commitments						
	PI3	Even if there is another product as good quality as green products, I prefer to use green one						
	PI4	If there is not environmental concern in other products it seems smarter to use green products						
<b>PART J (Obj. 7)</b>								
Please reflect upon the following statements measuring the Perception of various Green Marketing Tools on your Actual Purchasing Behaviour. (1 = Strongly Disagree, 2 = Disagree, 3 = Neither Disagree nor Agree, 4 = Agree, and 5 = Strongly Agree)								
		<b>GREEN MARKETING TOOLS</b>	<b>Level of Agreement</b>					
			<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	
<b>49</b>		<b>Green Perceived Product</b>						
	GP1	I find green branded products reliable						
	GP2	Green products are better than non-green products						
	GP3	I feel green brands do not truly satisfy the greening process.						
	GP4	Green labels are easy to recognize						
	GP5	I find green labels very useful in choosing a product						
	GP6	Green labels influence me to purchase the product						
	GP7	Packaging helps me distinguish a green product						
	GP8	I find eco-friendly packaging more appealing than non-eco-friendly packaging						
	GP9	I prefer to buy products that use eco-friendly packaging						
<b>50</b>		<b>Green Perceived Price</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	
	GP1	I am more eager to pay more for green products.						
	GP2	I like green products but they are expensive.						
	GP3	Price is a major concern for me to go for green products.						
	GP4	Even though I like to buy green products but I cannot afford them.						
	GP5	I will switch to green products if it is available at the same price compared to my favourite brands.						
<b>51</b>		<b>Green Perceived Place</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	
	GP1	Green products are seen very often in my community.						
	GP2	Green products can easily be found in my community.						
	GP3	I have no difficulty in finding green products in my community.						
	GP4	I cannot find green products in places where I do shopping.						
	GP5	I may purchase green products only if they are easily available						
<b>52</b>		<b>Green Perceived Promotion</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	
	GP1	I enjoy watching advertisement focusing on product's environmental values						
	GP2	Green advertising catches my attention						
	GP3	Environmental advertisement enhance my knowledge about green products						
	GP4	Environmental advertisement guide customers to making an informed purchasing decision						
	GP5	Attractive environmental advertisement will encourage me to buy green products						
	GP6	Green advertisements have low credibility among consumers						
	GP7	Green advertisements lack specificity in their environmental claims						
<b>53</b>	<b>ACTUAL GREEN PURCHASE BEHAVIOUR</b> For the below mentioned parameters, please indicate your Level of Priority when you decide on the actual product purchase of Green products with ecological features versus Non-green products.							

<b>(1 = Not a priority, 2 = Low priority, 3 = Medium priority, 4 = High priority, and 5 = Essential)</b>						
	<b>Parameters</b>	<b>Level of Priority</b>				
		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<i>P1</i>	Label and brand name					
<i>P2</i>	Look and feel					
<i>P3</i>	Recommendation from relatives and friends					
<i>P4</i>	Persuasion from salesman					
<i>P5</i>	Personal research from website and newspaper before purchase					
<i>P6</i>	Cost incentive attached like easy EMI, festival offer, free gifts					
<i>P7</i>	Energy saving					
<i>P8</i>	Convenient to use					
<i>P9</i>	Health reasons					
<i>P10</i>	Latest and smart technology					
<i>P11</i>	Price					

## Annexure II

### A2 - Sample Size Determination

In recent times the researcher needs to recognize the method of determining the sample size which should be representative of a given population. In the current study, sample size was determined by using the formula of proposed by Naresh K. Malhotra (2007) 'Marketing Research – An Applied Orientation' 6<sup>th</sup> Edition, Pearson, Page number 364. The calculation for it is as under:

**Formula for determining sample size:**

$$n = \frac{n(1-n)z^2}{D^2}$$

n = required sample size

n = the estimated population (based in researcher's judgment and estimates that 65% (0.65) of the target population will be considered)

z = suppose the level of confidence is 95% than associated z value is 1.96

D = the level precision and desired precision is such that the allowable interval is set as D = p (sample proportion) – n (population proportion) = + or -0.05

**This below formula was used by Naresh K. Malhotra (2007) 'Marketing Research – An Applied Orientation' 6<sup>th</sup> Edition, Pearson, Page number 364.**

**Calculation of Sample Size:**

$$n = \frac{n(1-n)z^2}{D^2}$$

$$n = \frac{0.65(1-0.65)(1.96)^2}{(0.05)^2}$$

$$n = \frac{0.65(0.35)(3.8416)}{0.0025}$$

$$n = \frac{0.8740}{0.0025}$$

n = 349.58 so, Sample size is **350**

Based on total 350 sample size we can determine the total sample size, considering three selected cities as three strata, by multiplying 350 with three strata (I.e. 350 x 3 = 1050)

Total Sample size for three cities is given in the following table. As the size of population is different in all three cities, the Stratified Random Sampling method is used and city wise allocation of sample is calculated as follows. Thus, the sample size was fixed as 1050 consumers.

Stratified random sampling

$$n_1 = \frac{n N_1}{N}, n_2 = \frac{n N_2}{N}, n_3 = \frac{n N_3}{N}$$

Where,

n = Total Sample size (1,050)

$n_1, n_2$  and  $n_3$  = required total sample size for each group.  $N_1, N_2$  and  $N_3$  = Size of population for each group (208762, 836691, 624843), N = Sum total of population of all four groups (1670296)

**By applying the formula sample size is calculated as follows: (Figures rounded off)**

$$n_1 (\text{Gandhinagar}) = \frac{1050 \times 208762}{1670296}$$

So,  $n_1$  is 131 Sample Size for Gandhinagar.

$$n_2 (\text{Ahmedabad}) = \frac{1050 \times 836691}{1670296}$$

So,  $n_2$  is 525 Sample Size for Ahmedabad.

$$n_3 (\text{Vadodara}) = \frac{1050 \times 624843}{1670296}$$

So,  $n_3$  is 392 Sample Size for Vadodara.

**Table: City wise distribution of Sample Size**

Sr. No.	Name of the cities in Gujarat	Total population as per census of India, 2011	Extent of penetration (15% of total population)	Calculated sample size (Figures Rounded off)
1	Gandhinagar	1,391,753	2,08,762	132
2	Ahmedabad	55,77,940	8,36,691	525
3	Vadodara	4,165,626	6,24,843	393
	Total Estimated Sample Size	1,11,35,319	16,70,296	1,050

Source: <https://www.census2011.co.in>

The target population for this study is majorly divided in three sets. The study will be done in three major selected districts of Gujarat namely Gandhinagar, Ahmedabad and Vadodara. The samples size of the respondents will be around 1,050.