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Consumer Awareness, Adoption and Sustainable E-Commerce Practices: A Study of Eco-Friendly Online Shopping Behaviour

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Abstract

The rapid growth of e-commerce has significantly transformed consumer purchasing behaviour and has provided consumers with greater access to a wide range of products and services. However, the increasing use of online shopping has also raised concerns regarding packaging waste, excessive use of plastic, carbon emissions from transportation, product returns, and other environmental impacts. In this context, sustainable e-commerce has emerged as an important approach towards encouraging environmentally responsible consumption. Consumer awareness and willingness to adopt sustainable online shopping practices are therefore essential for promoting sustainable consumption in the digital marketplace. The present study aims to examine consumer awareness and adoption of sustainable e-commerce practices, with particular focus on eco-friendly online shopping behaviour. The study proposes to assess consumers' awareness of environmentally sustainable practices such as recyclable packaging, reduced packaging, eco-friendly products, sustainable delivery options, and responsible product returns. It also seeks to understand the factors influencing consumers' willingness to adopt sustainable practices while purchasing products through online platforms. The study considers variables such as environmental awareness, perceived benefits, consumer attitude, convenience, price considerations, and trust in sustainable claims.

A descriptive research design will be adopted for the study, and primary data will be collected from online shoppers through a structured questionnaire. Appropriate statistical techniques will be employed to analyse consumer awareness, attitudes, and adoption behaviour. The study is expected to provide useful insights into the relationship between consumer awareness and sustainable online shopping practices. The findings may assist e-commerce businesses and marketers in developing effective sustainable marketing strategies and encouraging environmentally responsible consumer behaviour. The study also highlights the importance of consumer participation in achieving a more sustainable digital marketplace.
Keywords: Sustainable E-Commerce; Consumer Awareness; Eco-Friendly Online Shopping; Sustainable Consumer Behaviour; Green Marketing.

I. INTRODUCTION

E-commerce has become an important part of everyday shopping. Consumers can now search for products, compare prices, read reviews and make purchases without visiting a physical store. The convenience and accessibility offered by online shopping have changed consumer habits considerably. At the same time, the rapid growth of e-commerce has raised concerns about its environmental consequences. Packaging waste, transportation, repeated deliveries, product returns and disposal of unwanted products are some of the environmental concerns associated with online shopping. The growing popularity of quick deliveries and frequent online purchases can further increase the resources required to move products from sellers to consumers. Alongside the growth of e-commerce, environmental awareness among consumers has also increased. Many consumers are becoming interested in products that use recyclable materials, sustainable packaging, responsible sourcing and environmentally safer production methods. This has created a growing need for sustainable practices within the e-commerce sector. Sustainable e-commerce is broader than simply selling eco-friendly products. It includes the environmental practices followed throughout the online shopping process, such as product sourcing, packaging, transportation, delivery and returns. From the consumer's perspective, it may involve choosing environmentally responsible products, checking sustainability information, avoiding unnecessary purchases and reusing or recycling packaging. Consumer awareness is an important starting point for sustainable consumption. A consumer who understands the environmental consequences of purchasing decisions may be more likely to consider sustainability while shopping. However, awareness does not always lead directly to action. Consumers may care about the environment but still select a conventional product because it is less expensive, more easily available or delivered faster.

This difference between what consumers know and what they actually do becomes particularly interesting in the online environment. Consumers can access product descriptions, customer reviews, ratings, eco-labels and sustainability claims before making a purchase. The quality and credibility of such information can influence their decisions. The present study therefore examines consumer awareness, adoption of sustainable e-commerce practices and eco-friendly online shopping behaviour. It also considers environmental, psychological and online-shopping factors that may influence consumers' decisions.

Statement of the Problem

The rapid growth of e-commerce has changed the way consumers search for, compare and purchase products. Online shopping provides convenience, wider product choices, easy price comparison and doorstep delivery. At the same time, the increasing use of online shopping has raised concerns about its environmental consequences. Packaging waste, excessive use of plastic and other materials, transportation emissions, repeated deliveries, product returns and disposal of unwanted products are some of the issues associated with the growth of e-commerce. The increasing availability of eco-friendly products through online platforms provides consumers with an opportunity to make more environmentally responsible choices. Products made from sustainable materials, recyclable packaging, reusable products and responsibly sourced goods are becoming more visible in online marketplaces. However, simply making such products available does not necessarily mean that consumers will choose them. Consumer awareness is an important factor in sustainable consumption. Consumers who understand environmental problems may be more willing to consider environmental information while purchasing. However, awareness alone may not always result in actual sustainable behaviour. A consumer may be concerned about environmental degradation and may have a positive attitude towards eco-friendly products but still choose a conventional product because it is cheaper, more convenient or more readily available.

The online shopping environment creates additional challenges. Consumers generally depend on product descriptions, reviews, ratings, photographs, environmental claims and other digital information when making purchasing decisions. If information regarding materials, packaging, certifications or environmental benefits is incomplete or unclear, consumers may find it difficult to identify genuinely sustainable products. The presence of misleading or exaggerated environmental claims can further reduce consumer trust. Price is another important consideration. Eco-friendly products may sometimes be perceived as more expensive than conventional alternatives. Even when consumers have favourable attitudes towards sustainable products, price sensitivity may discourage them from

purchasing such products. Similarly, consumers may prioritize faster delivery, convenience and easy return options even when they understand the environmental consequences associated with these practices. Social influence can also shape online shopping decisions. Family members, friends, online reviewers, social-media communities and influencers can influence consumers' attitudes towards sustainable products. At the same time, consumers' belief that their individual purchasing decisions can contribute to environmental improvement may affect their willingness to adopt sustainable practices. Therefore, there is a need to examine sustainable online shopping not simply as a matter of environmental awareness but as a combination of awareness, knowledge, attitudes, social influence, trust, price considerations and perceived effectiveness. The present study focuses on consumers in Chengalpattu District and attempts to understand how these factors influence the adoption of sustainable e-commerce practices and eco-friendly online shopping behaviour.

Research Gap

Previous research has examined green purchasing behaviour and sustainable consumption from several perspectives. Studies have considered variables such as environmental awareness, environmental concern, environmental knowledge, attitudes towards green products, perceived consumer effectiveness and social influence. These studies have contributed to an understanding of why consumers may develop an intention to purchase environmentally friendly products. However, there is still scope for a more focused examination of sustainable consumption within the online shopping environment. Traditional green purchasing studies often consider consumers' general purchasing behaviour, whereas e-commerce introduces additional factors that can influence the decision-making process. Consumers shopping online depend heavily on digital information, product reviews, ratings, sustainability claims, eco-labels and platform-provided information. Another important gap concerns the difference between consumer intention and actual behaviour. A consumer may express an intention to purchase environmentally friendly products but may not always act accordingly. Price, convenience, product availability, delivery time and trust in environmental claims can intervene between intention and actual purchasing behaviour. Therefore, studying intention alone may not provide a complete understanding of sustainable online shopping. There is also a need to examine consumer awareness together with the adoption of sustainable e-commerce practices. Awareness may influence consumers' understanding of environmental issues, but adoption requires consumers to incorporate sustainability into actual shopping decisions. Such practices may include checking environmental claims, choosing durable products, reducing unnecessary purchases, selecting sustainable packaging or delivery options and reusing or recycling packaging.

Trust in green claims is another area that deserves attention. Online consumers cannot physically examine many products before purchasing them and therefore depend on information provided by sellers and platforms. Unclear or unsupported environmental claims may create uncertainty and make consumers hesitant to choose sustainable alternatives. Similarly, the quality and credibility of online information may influence consumers' willingness to adopt sustainable products. The geographical focus also provides a specific research opportunity. Although research on green consumption has been conducted in different parts of India, a focused study of consumers in Chengalpattu District can provide useful district-level evidence about sustainable online shopping practices. Consumer behaviour may vary according to demographic characteristics, accessibility, income, awareness and exposure to online shopping.

Thus, the present study attempts to bring together environmental, psychological and online-shopping factors within a single research framework. It examines consumer awareness, environmental concern, environmental knowledge, attitude, perceived consumer effectiveness, social influence, trust in green claims, online information quality and price sensitivity in relation to the adoption of sustainable e-commerce practices and eco-friendly online shopping behaviour. The study therefore seeks to address the gap between knowing about sustainability, intending to shop sustainably and actually adopting sustainable practices while shopping online. The findings may provide useful insights for e-commerce platforms, online retailers, consumers and policymakers seeking to encourage more responsible and environmentally conscious online consumption.

FIGURE 1: CONSUMER AWARENESS–ADOPTION–BEHAVIOUR PROCESS

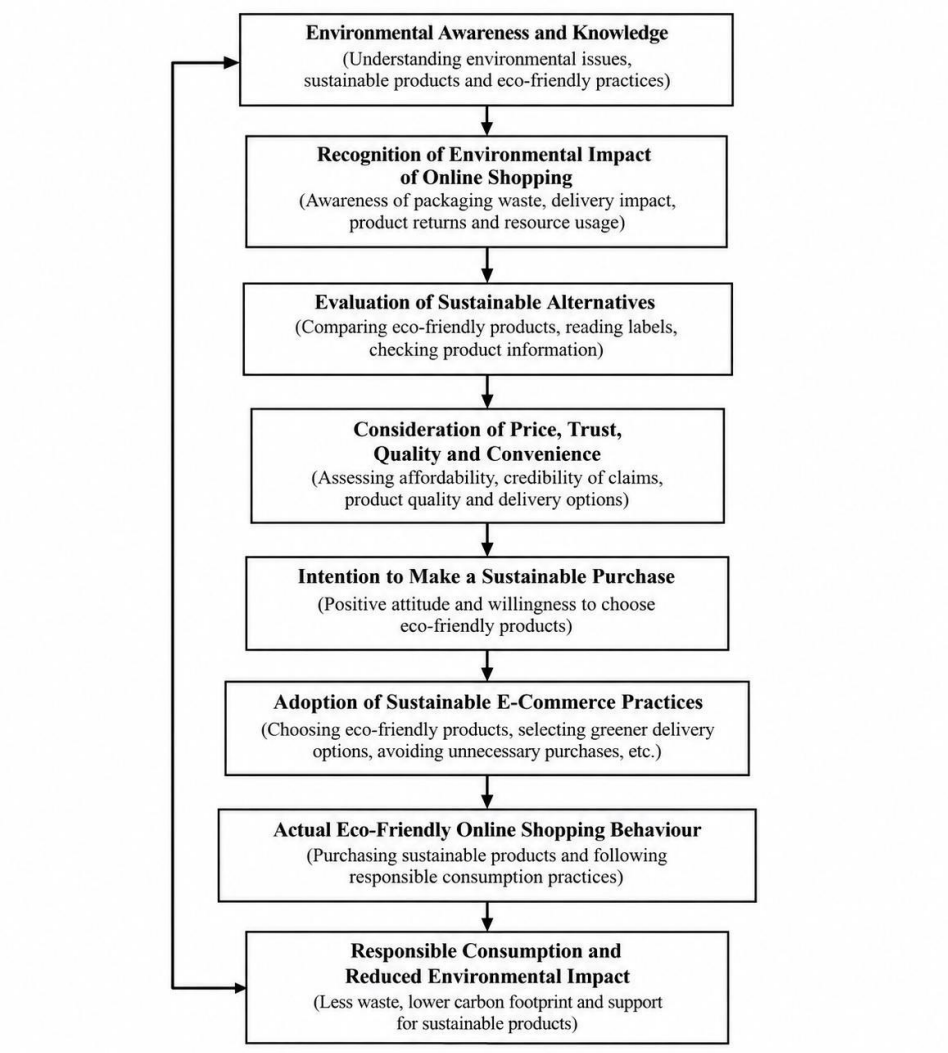


Figure 1: Consumer Awareness – Adoption – Behaviour Process in Sustainable E-Commerce

The figure illustrates the general pathway from awareness and knowledge to evaluation, adoption and actual behaviour. It also shows why awareness alone may not be sufficient to produce sustainable online shopping.

Review of Literature

Consumer Awareness

Consumer awareness refers to the extent to which consumers understand environmental issues and are familiar with environmentally responsible products and consumption practices. In online shopping, awareness may include understanding the environmental impact of packaging, knowing the meaning of sustainability labels and recognizing the environmental consequences of frequent deliveries and product returns. Awareness can encourage consumers to think beyond price and convenience when making purchasing decisions. However, awareness by itself may not always result in sustainable behaviour. Attitude, affordability, trust and convenience can also affect the final decision.

Environmental Concern

Environmental concern refers to the extent to which a person is worried about environmental problems and their consequences. Consumers who are concerned about pollution, waste, climate change and the depletion of natural resources may pay greater attention to environmental characteristics when choosing products. Environmental concern can influence the way consumers evaluate products before purchasing them. However, the strength of this influence may differ depending on individual circumstances and the alternatives available.

Environmental Knowledge

Environmental knowledge refers to what consumers know about environmental problems, sustainable products and responsible consumption.

For example, consumers may know the difference between recyclable and non-recyclable packaging or understand why excessive packaging contributes to waste.

Knowledge can help consumers make better-informed decisions. It may also help them question unsupported environmental claims. At the same time, knowledge does not automatically guarantee sustainable behaviour because price and convenience can still influence purchasing decisions.

Attitude Towards Eco-Friendly Products

Attitude refers to a consumer's overall positive or negative evaluation of eco-friendly products. Consumers who believe that environmentally friendly products are useful and worthwhile may be more willing to consider them during online shopping. The Theory of Planned Behaviour gives an important role to attitude because an individual's evaluation of a behaviour can influence their intention to perform it. This makes attitude an important variable in studies of sustainable consumption.

Perceived Consumer Effectiveness

Perceived consumer effectiveness refers to the belief that an individual's actions can contribute towards addressing environmental problems.

For example, a consumer may believe that choosing products with less packaging or selecting reusable products can make a meaningful contribution even though the effect of one individual purchase is relatively small. Consumers who believe that their choices matter may be more willing to adopt sustainable purchasing practices.

Social Influence

Consumers are influenced by the people and communities around them. Family members, friends, colleagues, online reviewers, social-media communities and influencers can all affect purchasing decisions. This influence is particularly relevant to online shopping because consumers frequently encounter ratings, comments, recommendations and social-media content before making a purchase.

When sustainable consumption is encouraged within a person's social environment, the consumer may be more willing to consider eco-friendly alternatives.

Trust in Green Claims

Trust is important when consumers cannot physically examine a product before purchasing it. Online sellers may describe products using terms such as "eco-friendly", "biodegradable", "recyclable", "organic" or "sustainably sourced". Consumers have to decide whether such claims are genuine and supported by reliable information. When consumers do not trust environmental claims, they may hesitate to purchase sustainable products, especially when these products cost more. Clear information and credible certification can help improve consumer confidence.

Online Information Quality

Online information quality refers to the accuracy, clarity, completeness and usefulness of information provided on an e-commerce platform.

For sustainable shopping, consumers may look for information about:

- Product materials
- Packaging
- Environmental certifications
- Sourcing
- Recyclability
- Manufacturing practices
- Delivery options and
- Environmental benefits.

When such information is difficult to find or presented in vague language, consumers may find it difficult to compare sustainable alternatives.

Price Sensitivity

Price remains an important consideration in online shopping. Consumers may support environmentally friendly products but hesitate to purchase them when they are substantially more expensive than conventional products. Since online platforms make price comparison easy, price differences can have a considerable influence on purchasing decisions. Price sensitivity may therefore affect whether positive environmental attitudes are translated into actual purchases.

Adoption of Sustainable E-Commerce Practices

Adoption refers to the extent to which consumers incorporate sustainable practices into their online shopping activities.

Such practices may include:

- Selecting eco-friendly products
- Choosing products with reduced packaging
- Checking environmental information
- Selecting durable products
- Avoiding unnecessary purchases
- Choosing sustainable delivery options
- Reducing unnecessary returns and
- Reusing or recycling packaging.

Adoption represents an important stage between awareness and actual sustainable behaviour.

Eco-Friendly Online Shopping Behaviour

Eco-friendly online shopping behaviour refers to purchasing and post-purchase actions that attempt to reduce environmental impact. It may include selecting environmentally friendly products, supporting sustainable brands, avoiding unnecessary purchases, considering packaging and delivery impacts and reusing or recycling packaging. The distinction between intention and behaviour is important because consumers may intend to behave sustainably without consistently doing so in actual situations.

Sustainable E-Commerce Practices

Sustainable e-commerce involves considering environmental consequences throughout the online shopping process. From the business side, it can involve responsible sourcing, sustainable packaging, transparent environmental information and more environmentally responsible delivery systems. From the consumer side, it involves making purchasing and post-purchase decisions while considering their environmental consequences. Sustainable e-commerce therefore depends on both business practices and consumer choices.

Figure 2: Sustainable Online Shopping Cycle

The following cycle illustrates how sustainability can be incorporated into the consumer's online shopping process.

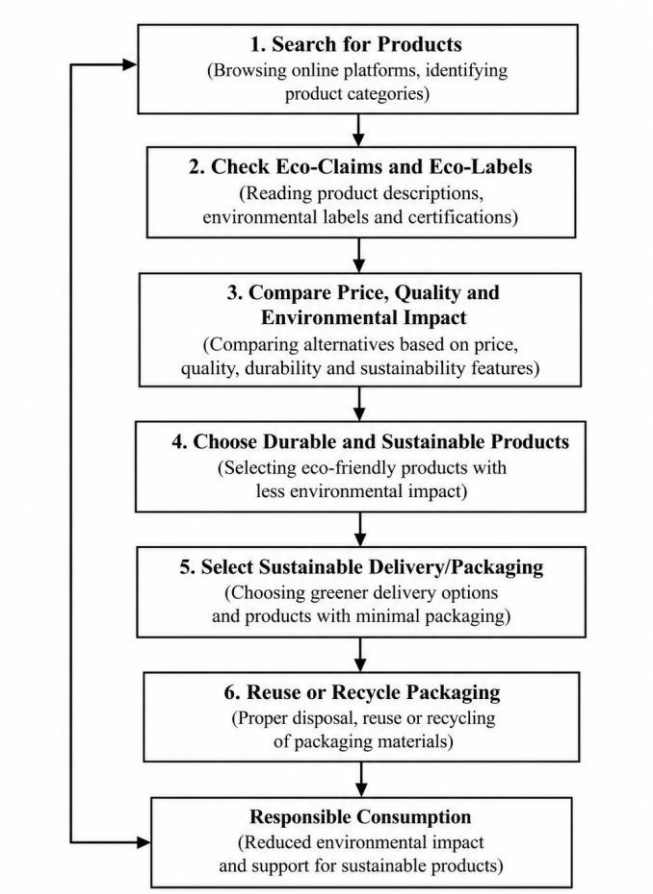


Figure 2: Sustainable Online Shopping Cycle

Figure 2: Sustainable Online Shopping Cycle

The cycle shows that sustainable shopping does not end when the product is purchased. Packaging, delivery, reuse and disposal are also part of responsible consumption.

Theoretical Framework

Theory of Planned Behavior

The present study is primarily based on the Theory of Planned Behavior (TPB) proposed by Icek Ajzen. The theory provides a useful framework for understanding how an individual's beliefs and perceptions influence behavioural intention and, ultimately, behaviour. It has been widely applied in studies related to consumer

behaviour, environmental consumption and sustainable purchasing. According to the Theory of Planned Behavior, an individual's behavioural intention is mainly influenced by three factors: attitude towards the behaviour, subjective norms and perceived behavioural control. Behavioural intention represents a person's willingness or readiness to perform a particular behaviour, while actual behaviour refers to the action that is eventually carried out.

Attitude Towards Behaviour

Attitude refers to the individual's favourable or unfavourable evaluation of a particular behaviour. In the context of the present study, it refers to consumers' attitudes towards purchasing eco-friendly products and adopting sustainable online shopping practices. A consumer who believes that buying sustainable products is useful, responsible and beneficial to the environment may develop a stronger intention to choose such products. On the other hand, if consumers perceive eco-friendly products as expensive, inconvenient or less effective than conventional alternatives, their intention to purchase them may be reduced. Therefore, attitude towards eco-friendly products is considered an important factor in understanding sustainable online shopping behaviour.

Subjective Norms and Social Influence

Subjective norms refer to the perceived expectations of people who are important to an individual. Consumers may be influenced by family members, friends, colleagues and other social groups when making purchasing decisions. In the online environment, this influence can extend to social-media communities, online reviewers and influencers. Product recommendations, reviews and discussions about sustainable lifestyles may encourage consumers to consider environmentally responsible alternatives. The present study therefore includes social influence as an important factor associated with sustainable e-commerce adoption.

Perceived Behavioural Control and Consumer Effectiveness

Perceived behavioural control refers to an individual's perception of how easy or difficult it is to perform a particular behaviour. In sustainable online shopping, consumers may want to purchase eco-friendly products but may face barriers such as high prices, limited availability, lack of information or inconvenient delivery options. The study also considers perceived consumer effectiveness, which refers to the consumer's belief that individual purchasing decisions can contribute to addressing environmental problems. Consumers who believe that their choices can make a difference may be more willing to adopt sustainable shopping practices.

Environmental Awareness and Knowledge

Although environmental awareness and environmental knowledge are not the three original components of TPB, they are relevant extensions of the framework for the present study. Environmental awareness represents consumers' understanding of

environmental problems and the importance of sustainable consumption. Environmental knowledge refers to their understanding of sustainable products, environmental impacts and responsible consumption practices. Greater awareness and knowledge may help consumers recognize the environmental consequences of their purchasing decisions and evaluate available alternatives more carefully. However, knowledge alone may not guarantee sustainable behaviour because other factors such as price, convenience and trust can affect the final decision.

Trust, Online Information Quality and Price Sensitivity

The online shopping environment creates factors that are particularly important to sustainable e-commerce. Consumers depend on digital information when evaluating products. Therefore, trust in green claims and online information quality can influence their willingness to choose environmentally friendly products. Consumers may hesitate to purchase a product if sustainability claims are unclear, exaggerated or unsupported. Reliable and transparent information can make it easier for consumers to evaluate sustainable alternatives. Price sensitivity is another important factor. Even when consumers have positive attitudes towards eco-friendly products, higher prices may discourage them from purchasing those products. Price therefore represents a practical consideration that may affect the translation of intention into actual behaviour.

Application of TPB to the Present Study

Based on the Theory of Planned Behaviour, the present study proposes that environmental and psychological factors influence consumers' adoption of sustainable e-commerce practices. Consumer awareness, environmental concern, environmental knowledge, attitude, perceived consumer effectiveness and social influence represent important consumer-level factors, while trust in green claims, online information quality and price sensitivity represent important online-shopping considerations. The study proposes that these factors influence the adoption of sustainable e-commerce practices, which is subsequently associated with eco-friendly online shopping behaviour. Thus, the theoretical framework brings together the central concepts of the Theory of Planned Behaviour with additional environmental and e-commerce variables. It provides a structured basis for examining why consumers may move from simply being aware of sustainability to adopting sustainable practices and demonstrating eco-friendly behaviour while shopping online.

Figure 3: Conceptual Framework

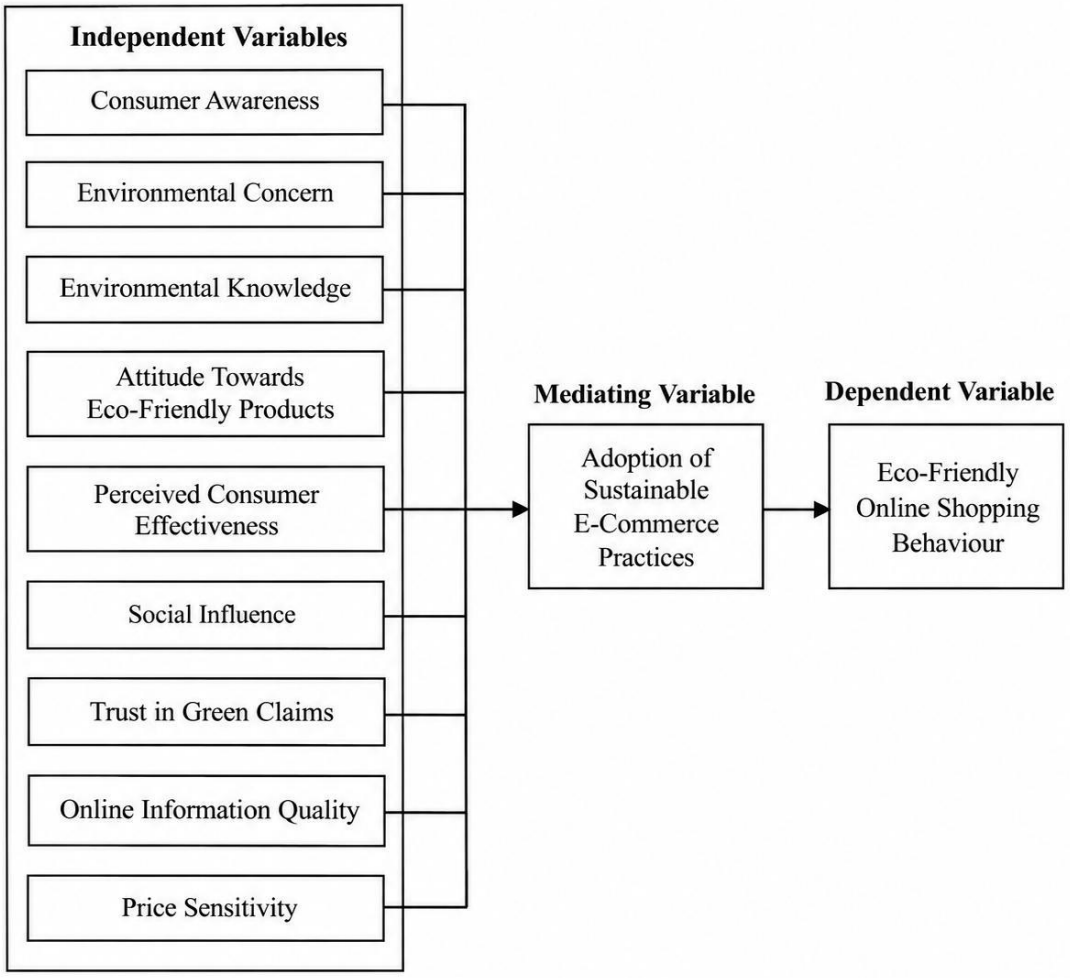


Figure 3: Conceptual Framework of Consumer Adoption of Sustainable E-Commerce Practices

The conceptual framework proposes that environmental, psychological and online-shopping factors influence the adoption of sustainable e-commerce practices, which in turn is associated with eco-friendly online shopping behaviour.

Objectives of the Study

1. To assess the level of consumer awareness regarding sustainable e-commerce practices among online consumers in Chengalpattu District.
2. To identify the factors that influence consumers' adoption of sustainable e-commerce practices.
3. To examine the relationship between environmental concern and adoption of sustainable e-commerce practices.
4. To study the relationship between environmental knowledge and adoption of sustainable e-commerce practices.
5. To examine the influence of attitude towards eco-friendly products on sustainable online shopping adoption.
6. To understand the role of perceived consumer effectiveness in eco-friendly online shopping behaviour.
7. To examine the influence of social influence on consumers' adoption of sustainable online shopping practices.
8. To analyse the role of trust in green claims and online information quality in sustainable purchasing decisions.
9. To examine the influence of price sensitivity on consumers' willingness to adopt sustainable online shopping practices.
10. To determine whether adoption of sustainable e-commerce practices is associated with eco-friendly online shopping behaviour.
11. To examine whether eco-friendly online shopping behaviour differs across selected demographic characteristics.
12. To suggest suitable measures that can encourage consumers and e-commerce businesses to adopt more sustainable practices.

Hypotheses of the Study

H1: There is no significant relationship between consumer awareness and adoption of sustainable e-commerce practices.
H2: There is no significant relationship between environmental concern and adoption of sustainable e-commerce practices.
H3: There is no significant relationship between environmental knowledge and adoption of sustainable e-commerce practices.
H4: There is no significant relationship between attitude towards eco-friendly products and adoption of sustainable e-commerce practices.
H5: There is no significant relationship between perceived consumer effectiveness and adoption of sustainable e-commerce practices.
H6: There is no significant relationship between social influence and adoption of sustainable e-commerce practices.

H7: There is no significant relationship between trust in green claims and adoption of sustainable e-commerce practices.
H8: There is no significant relationship between online information quality and adoption of sustainable e-commerce practices.
H9: There is no significant relationship between price sensitivity and adoption of sustainable e-commerce practices.
H10: There is no significant relationship between adoption of sustainable e-commerce practices and eco-friendly online shopping behaviour.
H11: There is no significant difference in eco-friendly online shopping behaviour based on selected demographic characteristics.
H12: The selected independent variables do not significantly predict eco-friendly online shopping behaviour.

Research Methodology

Research Design

The study will adopt a descriptive and analytical research design. The descriptive part will provide information about the respondents, their awareness and their sustainable shopping practices. The analytical part will examine the relationships between the selected variables.

Study Area

The study will be conducted in Chengalpattu District, Tamil Nadu, India.

Population of the Study

The population will consist of consumers residing in Chengalpattu District who have experience using online shopping platforms.

Sampling

A suitable sampling technique will be selected based on respondent accessibility and the final research protocol approved by the research guide. A structured questionnaire will be administered to online shoppers from different demographic and socio-economic backgrounds.

Sample Size

The final sample size will be determined before data collection in consultation with the research guide and according to the statistical techniques selected. A target of approximately 400 valid respondents may be considered, subject to feasibility and approval.

Sources of Data

Primary Data

Primary data will be collected directly from online consumers through a structured questionnaire. The questionnaire will contain sections covering:

- Demographic characteristics
- Consumer awareness
- Environmental concern
- Environmental knowledge
- Attitude
- Perceived consumer effectiveness
- Social influence
- Trust in green claims
- Online information quality
- Price sensitivity
- Adoption of sustainable e-commerce practices and
- Eco-friendly online shopping behaviour.

Secondary Data

Secondary information will be collected from:

- Peer-reviewed journal articles;
- Academic books;
- Government publications;
- Official reports;
- Sustainability reports;
- E-commerce literature
- Research databases and
- Other reliable academic sources.

Variables of the Study

Category	Variables
Independent Variables	Consumer Awareness
Environmental Concern	Environmental Knowledge
Attitude Towards Eco-Friendly Products	Perceived Consumer Effectiveness
Social Influence	Trust in Green Claims
Online Information Quality	Price Sensitivity
Mediating Variable	Adoption of Sustainable E-Commerce Practices
Dependent Variable	Eco-Friendly Online Shopping Behaviour

Proposed Data Analysis

Descriptive Statistics

Descriptive statistics will be used to understand the demographic profile of respondents and their responses to the major variables.

Reliability Analysis

Cronbach's alpha may be used to examine the internal consistency of the questionnaire scales.

Correlation Analysis

Correlation analysis may be used to determine the relationship between the major study variables.

Regression Analysis

Regression analysis may be used to examine the contribution of the selected independent variables to sustainable e-commerce adoption and eco-friendly shopping behaviour.

t-Test and ANOVA

These tests may be used where appropriate to examine differences in sustainable shopping behaviour among different demographic groups.

Structural Equation Modelling

If the final sample size and research design permit, Structural Equation Modeling may be used to examine the relationships represented in the conceptual framework.

Practical Implications

Implications for E-Commerce Platforms

E-commerce platforms can make sustainable shopping easier by providing clear eco-labels, sustainability filters and product information. Consumers could also be given the option of comparing products on sustainability-related characteristics.

Implications for Online Retailers

Retailers can improve transparency by providing information about product materials, packaging, sourcing and environmental certifications.

Implications for Digital Marketers

Digital marketing can be used to educate consumers about sustainable choices. Environmental claims should be clear and supported by appropriate evidence.

Implications for Consumers

Consumers can contribute by checking environmental claims, comparing alternatives, avoiding unnecessary purchases, selecting durable products and reusing or recycling packaging.

Implications for Policymakers

Policymakers can encourage clearer environmental standards, reliable sustainability labels and consumer-awareness programmes relating to sustainable e-commerce.

Challenges And Barriers

Price Barrier

Some consumers may find sustainable products more expensive than conventional alternatives.

Greenwashing

Consumers may find it difficult to determine whether environmental claims made by sellers are genuine.

Limited Product Information

Incomplete information about materials, packaging and environmental impact can make sustainable comparison difficult.

Lack of Standardization

Different businesses may use different sustainability labels and terminology, which can create confusion.

Limited Availability

Consumers may want sustainable products but may not find suitable alternatives within their preferred price range.

Convenience

Consumers may prioritize lower prices, faster delivery and convenience over environmental considerations.

Attitude–Behaviour Gap

Consumers may genuinely care about environmental issues but still choose conventional products because of price, convenience or availability.

Suggestions

1. E-commerce platforms should make eco-friendly products easier to identify.
2. Sustainability labels should be presented in a clear and understandable manner.
3. Retailers should provide environmental information that consumers can verify.
4. Environmental claims should be supported by appropriate evidence or certification.
5. Consumers should be educated about eco-labels and misleading environmental claims.
6. Businesses should reduce unnecessary packaging and encourage reusable or recyclable alternatives.
7. E-commerce platforms can introduce sustainability-based product comparison features.
8. Retailers should explore ways to make sustainable alternatives more affordable.
9. Digital campaigns can educate consumers about the environmental effects of purchasing, delivery and returns.
10. Online retailers should provide greater transparency regarding packaging and delivery practices.

11. Consumers should be encouraged to reuse and recycle packaging wherever possible.
12. Consumer-awareness programmes can be conducted to promote responsible online consumption.

Limitations of the Study

1. The study is geographically limited to Chengalpattu District, and the findings may not represent consumers from all parts of Tamil Nadu or India.
2. The study will primarily depend on self-reported information, which may not always correspond perfectly with actual behaviour.
3. Online shopping practices change with technology, platform policies and consumer preferences.
4. The study focuses on selected environmental, psychological and online-shopping factors. Other variables may also influence sustainable purchasing behaviour.
5. Since the study is cross-sectional, it will reflect consumer behaviour during a particular period rather than long-term changes.
6. The sample may not represent every demographic and socio-economic group equally.

Scope for Future Research

1. Similar studies can be conducted in other districts of Tamil Nadu.
2. Researchers can compare rural, semi-urban and urban consumers.
3. Differences between younger and older consumers can be examined.
4. Future studies can focus on specific categories such as clothing, groceries, cosmetics or electronic products.
5. The influence of social-media influencers on sustainable purchases can be examined.
6. Greenwashing and consumer trust can be studied in greater depth.
7. Sustainable packaging and environmentally responsible delivery can be examined separately.
8. Future research can explore the role of artificial intelligence in recommending sustainable products.
9. Structural Equation Modelling can be used to examine complex relationships among awareness, intention, adoption and behaviour.
10. Longitudinal research can examine whether consumers continue sustainable practices over time.
11. Comparative studies can be conducted between consumers from different regions or countries.

II. CONCLUSION

Online shopping has changed the way consumers search for and purchase products. While it provides convenience and accessibility, its environmental effects have also become a matter of concern. Packaging, transportation, delivery and product returns are some of the issues that need to be considered when discussing sustainable e-commerce. The present study focuses on the relationship between consumer awareness, adoption of sustainable e-commerce practices and eco-friendly online shopping behaviour among consumers in Chengalpattu District. Environmental awareness is an important starting point, but it does not necessarily lead directly to sustainable behaviour. Consumers may understand environmental problems and still choose conventional products because they are cheaper, easier to obtain or more convenient. This makes factors such as attitude, environmental concern, knowledge, perceived consumer effectiveness, social influence, trust and online information important areas of study. The online environment adds another dimension to the decision-making process. Product descriptions, customer reviews, sustainability labels, environmental claims and price comparisons can influence the way consumers evaluate sustainable alternatives. The proposed study therefore considers both consumer-related factors and e-commerce-related factors. Studying these factors together can provide a clearer understanding of why consumers adopt sustainable online shopping practices and why they may sometimes fail to do so. The findings may be useful to e-commerce platforms and retailers when designing sustainability-related features and communicating environmental information. They may also help consumers become more aware of the environmental consequences of their online purchases. Policymakers may use such findings to strengthen consumer education and encourage greater transparency in environmental claims. Sustainable e-commerce is ultimately not only about selling environmentally friendly products. It also depends on whether consumers can identify sustainable choices, understand the information provided, trust environmental claims and find those choices practical and affordable. When these factors come together, online shopping can become more environmentally responsible while continuing to provide the convenience that consumers expect from modern e-commerce.

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