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Influencing Factors Behind Green Consumer Choices for FMCGs in West Bengal: A Study towards Go Green

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Abstract

Growing concerns about pollution and environmental degradation have heightened interest in green consumption. This study examines the impact of traditional marketing-mix components, consumer satisfaction, and lifestyle on attitudes and purchase intentions for green Fast-Moving Consumer Goods (FMCG). It aims to enhance the understanding of green marketing and identify key factors influencing green product purchases. Using random sampling, data were collected through a questionnaire from 514 participants in West Bengal, achieving an overall reliability of 0.893. Findings indicate that green marketing awareness is highest among individuals aged 18-24, followed by those aged 25-34. Factor analysis condensed the impact variables into three main factors: Knowledge, Attitude, and Practice towards green products. Among these, a positive inclination toward green products emerged as the most influential, suggesting that marketing managers should emphasize the superior value of eco-friendly products. Consumer satisfaction and advertising significantly impact green purchasing behaviour. Thus, companies should expand beyond eco-friendly promotional campaigns to incorporate more green advertisements and digital displays to stimulate purchase intentions. This is particularly relevant as higher-income individuals tend to make more unplanned purchase decisions. This study highlights a significant gap in consumer knowledge, attitudes, and practices (KAP) regarding green FMCG in West Bengal. While previous studies have explored general sustainable consumption, limited research examines how marketing-mix elements influence green product adoption in regional markets. By analyzing localized consumer responses, this study provides valuable insights into the key drivers of green consumption in emerging economies, offering practical implications for businesses and policymakers to develop effective sustainability strategies.

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Introduction

Traditional marketing is a multifaceted process focused on identifying, creating, and delivering value to meet the needs of a targeted market, through products or services. This approach goes beyond mere transactions, aiming to forge meaningful connections with stakeholders, including customers, clients, partners, and broader society.[1] The primary objective of conventional marketing has always been to drive sales, anchored by two critical pillars: customer acquisition and retention.[2] These components collaborate to create a strong foundation for sustained business growth.

Historically, conventional marketing strategies hinged on the principles of demand and supply. However, the marketing landscape is evolving, and ecological considerations are becoming increasingly important. Businesses are recognizing the necessity of integrating environmentally sustainable practices into their marketing strategies, marking a shift towards a broader and more responsible approach.[3] This evolution reflects a growing awareness that marketing must extend beyond immediate commercial goals to encompass long-term environmental stewardship.

As the global focus on environmental preservation intensifies, marketers are challenged to meet consumer expectations while minimizing waste. This shift is particularly evident in the fast-moving consumer goods (FMCG) sector, the largest and most dynamic segment of the global economy. Traditionally driven by consumer demand for convenience and affordability, the FMCG industry is witnessing a significant change in consumer behaviour. Increasingly, consumers are shifting from non-sustainable to sustainable consumption patterns, with a growing preference for eco-friendly products.[4]

This change in consumer preferences compelled FMCG companies to adopt green practices to maintain and enhance their market reputation. Companies that have successfully integrated green marketing strategies not only gain a competitive edge, but also contribute to a broader cultural shift towards sustainability. For instance, Hindustan Unilever Limited (HUL) has made notable strides in green marketing, emphasizing the importance of educating consumers about the benefits of eco-friendly products. According to a study by Arora and Agarwal (2018),[5] 40% of respondents agreed that green marketing should be adopted by all companies for long term success. The study further highlights that the ability of green FMCG companies to generate profits is closely linked to their commitment to sustainable practices.

The growing consumer demand for environmentally sustainable products is not just a trend but also a fundamental shift in purchasing behaviour. Ottman (2017)[6] highlighted this in her exploration of the "New Rules of Green Marketing," where she emphasized that environmental considerations are increasingly influencing consumer decisions. This is particularly true among younger generations, who are more environmentally conscious and demand transparency from brands regarding their sustainability.

In the Indian context, the FMCG sector, valued at approximately USD 110 billion in 2020, is expected to grow at a compound annual growth rate (CAGR) of 14.9% to reach USD 220 billion by 2025.[7] This growth has been accompanied by an increasing demand for eco-friendly products. A report by Sarkar (2023)[8] revealed that 45% of Indian consumers actively seek brands that promote environmental sustainability. Khanna (2023)[9] further found that 72% of Indian consumers are willing to pay a premium for environmentally friendly products, underscoring the significant market potential for green FMCG products.

In West Bengal, the focal point of this study, the FMCG market has witnessed similar trends. A recent report revealed that the state's FMCG sector is expected to grow by 12% annually, driven by a growing number of consumers opting for sustainable products.[10] This creates significant opportunities for FMCG companies to implement green marketing strategies that cater to environmentally conscious consumers of West Bengal, aligning their business practices with evolving market demands.

The contemporary FMCG industry increasingly depends on the transition to sustainable consumption, facilitated by eco-friendly products aligned with government-endorsed green policies. This study examined three essential FMCG products-edible oil, shampoo, and ready-to-cook chicken-to assess

their sustainability compatibility. Edible oil and ready-to-eat chicken can be categorized under the "sustainable food and beverages" section, whereas shampoo is classified under "Eco-Friendly Personal Care Products" section in accordance with green policies. Organic edible oils produced through cold-pressing techniques contribute to environmental sustainability by eliminating synthetic pesticides, harmful chemicals, and excessive plastic packaging, thereby preventing soil and water pollution. Shampoos with biodegradable, sulfate-free, and paraben-free ingredients reduced water toxicity. Ready-to-cook chicken sourced from farms practicing ethical animal husbandry and utilizing free-range animals raised without antibiotics addresses the antibiotic resistance and environmental degradation associated with intensive poultry operations. These product categories align with the United Nations Sustainable Development Goals (SDGs)[11] and India's Plastic Waste Management Rules (Ministry of Environment, Forest and Climate Change [MoEFCC],[12] supporting green marketing initiatives within the FMCG sector. Integrating sustainable features in FMCG marketing is crucial for promoting environmentally beneficial outcomes and fostering ethical consumer practices as eco-friendliness awareness increases.

Materials and Methods
This study employs a quantitative, questionnaire-based survey design to examine the factors influencing consumer preferences for green FMCG products in West Bengal. A random sampling method was used to ensure diverse representation of respondents from both urban and rural areas. The questionnaire was developed through a comprehensive literature review and expert validation, followed by pilot testing with 30 respondents to enhance its clarity and reliability. To strengthen the robustness of the study, Cronbach's Alpha (0.893) was to confirm internal consistency, and factor analysis (Varimax rotation, KMO = 0.945, Bartlett's Test p < 0.001) validated construct adequacy. Measures were implemented to minimize response bias and ensure methodological rigor.

Study Design and Sample Size
To explore the facets of green marketing related to sustainability, we selected three FMCG products: Edible Oil, Shampoo, and Ready Chicken. Edible

Oil, a staple in most Kolkata households, is a crucial energy source that can contribute to coronary disease if it is consumed in excess. Shampoo, a common hair-washing product, and Ready Chicken, a popular protein-rich food that supports weight management and heart health, were also chosen.

A structured questionnaire comprising 33 product-specific questions, excluding demographic questions, was developed. Participants were selected through a random sampling method to ensure representation from diverse demographic backgrounds, including various age groups, income levels, educational qualifications, and geographic locations (both urban and rural) in West Bengal. Eligibility for participation was restricted to individuals who regularly purchased and consumed at least one of three fast-moving consumer goods (FMCG) products.

Additionally, respondents were required to have prior experience or awareness of green products in at least one of the three categories to provide relevant insights into green consumer behavior. A total of 514 individuals were surveyed (Fig. 1), encompassing both urban and rural regions, to obtain a comprehensive understanding of green consumer behavior in West Bengal.

This figure illustrates the geographic sampling zones across West Bengal where data collection was conducted for the study on green consumer behaviour towards Fast-Moving Consumer Goods (FMCG). A total of 514 respondents were sampled from both urban and rural regions using random sampling.

Statistical Analysis
Structured Schedule
Given the descriptive nature of this research, a categorical analysis was conducted to derive meaningful insights and enable comprehensive comparisons across product categories.

Questionnaire Validation and Study Robustness
Expert Validation
A structured questionnaire was developed to investigate consumer behavior regarding green fast-moving consumer goods (FMCG) products. The process consisted of three stages:
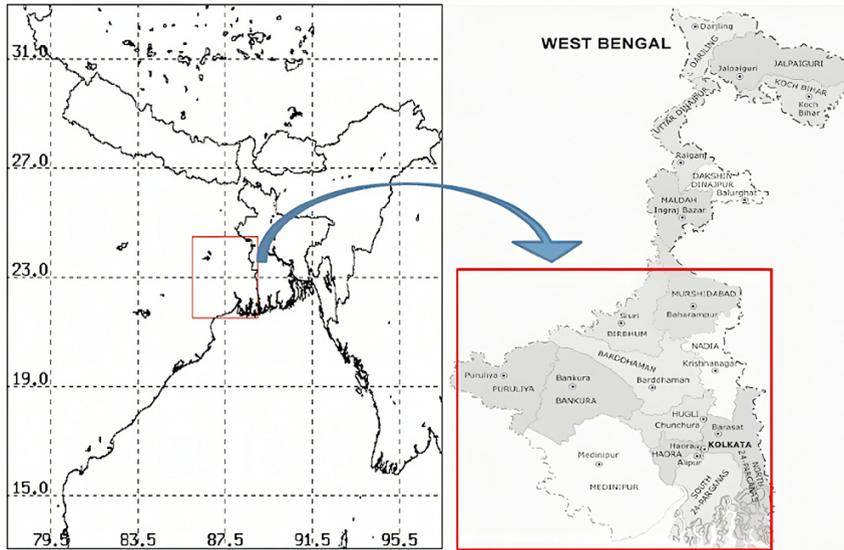
Fig. 1: Geographic Distribution of Sampling Zones in West Bengal for Green Consumer Behaviour Study

Literature Review and Expert Validation

Initial questions were formulated after reviewing the literature on green marketing, consumer behavior, and sustainability practices. The draft questionnaire was evaluated for content validity by three experts in marketing, consumer psychology, and sustainability.

Pilot Testing

A preliminary survey with 30 respondents' evaluated clarity, reliability, and response consistency. Minor revisions were made based on feedback.

Finalization

The final questionnaire included 33 product-specific questions (excluding demographics) in three sections: Knowledge (e.g., awareness of green product benefits), Attitude (e.g., willingness to pay a premium for eco-friendly products) and Practice (e.g., frequency of purchasing green FMCG products).

Scale and Measurement

The questionnaire used a 5-point Liker scale for most items, with anchors: 1 - Strongly Disagree, 2 – Disagree, 3 – Neutral, 4 – Agree, 5 - Strongly Agree. Categorical questions were included for demographic profiling, whereas multiple-choice and ranking-based questions assessed consumer preferences.

Study Robustness

The reliability of the final questionnaire was evaluated using Cronbach's Alpha (0.893), which indicated strong internal consistency. Construct Validity: Factor analysis (KMO = 0.945, Bartlett's Test p < 0.001) confirmed the suitability of the data for further analysis.

Exploring Reliability Statistics through Results of Reliability Test

To ensure the reliability of the questionnaire, Cronbach's alpha was calculated, which yielded a strong value of 0.893 for the 33 items (Table 1). This measure confirms the internal consistency of the Likert-scale questions. Exploratory factor analysis further validated the reliability of the instrument.

Table1: Reliability Test using Cronbach Alpha

Reliability Statistics	
Cronbach's Alpha	**No of Items**
0.893	33

This table presents the results of a reliability analysis conducted utilizing Cronbach's Alpha to evaluate the internal consistency of the questionnaire items

employed in the study. Cronbach's Alpha coefficients range from 0 to 1, with higher values indicating greater reliability. In social science research, a coefficient exceeding 0.7 is generally considered acceptable for scale reliability. The table displays the reliability coefficients for the entire questionnaire as well as its individual components (e.g., Knowledge, Attitude, and Practice factors).

Factor Analysis

To assess the suitability of the data for factor analysis, researchers employed the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity. The results, including a KMO value of 0.945 and statistically significant Bartlett's Test (Chi-Square = 6423.578, df = 435, p < 0.001), confirmed that the data were suitable for this analytical approach. In accordance with the objectives of the study, the analysis retained only the initial three factors.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy

The KMO Measure of Sampling Adequacy is a pivotal indicator ranging from 0 to 1, with values closer to 1 indicating a more suitable dataset for factor analysis. As proposed by Nkansah *et al.* (2011),[13] a value of at least 0.6 is considered the recommended minimum threshold wherein the researcher received a KMO value of 0.9. This measure gauges the extent to which the observed variables in the dataset are correlated, providing insights into whether the dataset is appropriate for further factor analysis.

Bartlett's Test of Sphericity

Bartlett's Test of Sphericity is a statistical method employed to assess whether the correlation matrix of the observed variables significantly deviates from an identity matrix. An identity matrix is characterized by diagonal elements of one and off-diagonal elements of 0. This test evaluates the null hypothesis to determine whether the data exhibit sufficient correlation to warrant factor analysis. Rejection of the null hypothesis indicates that the dataset is suitable for factor analysis or principal component analysis.[14]

Integration and Minimum Standards

As emphasized by Dziuban *et al.* (1973),[15] the combination of these two assessments establishes a baseline criterion that must be satisfied prior to employing factor analysis or principal component analysis. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy verifies that the dataset exhibits sufficient intercorrelation among variables, while Bartlett's Test of Sphericity assesses the overall configuration of the correlation matrix.

This meticulous approach in the Methods section guarantees a rigorous validation process, enhancing the reliability of the factor analysis outcomes and contributing to the overall methodological robustness of the study. The strong KMO value (0.945) allows researchers to move further in terms of factor analysis (Table: 2).

The table presents the results of two statistical tests: the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity. The KMO value assesses the suitability of the data for factor analysis, with values approaching 1 indicating greater adequacy. Bartlett's Test evaluates whether the correlation matrix significantly deviates from an identity matrix, where a p-value below 0.05 suggests that factor analysis is appropriate for the data.

Table 2: KMO and Bartlett's Test Results

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.945
Bartlett's Test of Sphericity	Approx. Chi-Square	6423.578
	Df	435
	Sig.	.000

Table 3: Calculation of Initial Eigenvalues

	Total	% of Variance	Cumulative %
1	10.556	35.185	35.185
2	1.677	5.589	40.774
3	1.535	5.118	45.892

Initial Eigenvalues

Eigenvalues, representing the variances of the factors, were analysed. The first factor accounted for the highest variance (35.19%) (Table 3), with subsequent factors explaining diminishing proportions. This approach provides a nuanced understanding of the underlying structure and variance distribution within a dataset.

Subsequently, the remaining variance is captured in a hierarchical fashion, with each successive factor explaining a diminishing proportion of the overall variance, as elucidated by Grossman *et al*. (1991).[16]

The eigenvalue represents the amount of variance captured by each factor, with values greater than 1 indicating significant factors. The cumulative percentage reflects the proportion of total variance accounted for by these factors, providing insight into their relative importance.

Rotated Component Matrix

The rotated component matrix was refined using varimax rotation to enhance interpretability by ensuring that each component had clear, positive loadings without any negative values. Factor loadings below 0.50 were excluded, improving the clarity and precision of the matrix were excluded. This meticulous selection process ensured that the resulting matrix was a robust representation of the underlying factors, thus fostering a clearer understanding of the data structure.

Factor Analysis (Rotation Method) was performed utilizing Varimax rotation to improve interpretability by maximizing the variance among factor loadings. Three principal factors were retained based on eigenvalues greater than 1, accounting for 45.89% of the total variance.

Limitations of Random Sampling

While random sampling ensures an unbiased selection process, it presents certain limitations:

Sampling Bias Risk: Certain consumer segments may be underrepresented. Non-Response Bias: Discrepancies may exist between respondents and non-respondents. Resource Intensive: Large-scale random sampling requires considerable effort.

Effect Sizes in Reliability and Factor Analysis

To further evaluate the strength of the relationships, effect sizes were examined. Cronbach's Alpha (0.893) indicated a large effect size, confirming the high internal consistency. In the context of factor analysis, the first factor accounted for 35.19% of the variance, with a cumulative variance of 45.89%, suggesting a moderate-to-strong effect size in explaining green consumer behavior. The KMO Measure (0.945) and Bartlett's Test ($p < 0.001$) indicate a strong effect of sampling adequacy on factor analysis.

Bias Minimization

To minimize potential biases, the following measures were implemented:

- **Anonymity & Confidentiality:** Participants were assured anonymity to reduce social desirability bias.
- **Neutral Wording:** Questions were framed neutrally to avoid leading respondents toward a particular answer.
- **Randomization of Question Order:** To counteract order bias, the questionnaire items were presented in a randomized sequence.
- **Pilot Testing:** The survey was pre-tested with 30 respondents to identify and eliminate ambiguous or misleading questions.
- **Balanced Sample Representation:** Random sampling was employed to include respondents from diverse demographic backgrounds, reducing selection bias

Results

This section presents the findings of the factor analysis conducted to understand the key

determinants of green consumer behaviour in the context of Fast-Moving Consumer Goods (FMCGs) in West Bengal. The analysis revealed three significant factors that influence consumer choices: knowledge, attitude, and practice (Table 4). These factors provide critical insights into how consumers perceive and engage with eco-friendly products. First, the knowledge factor emphasizes consumer awareness of green products and environmental concerns. This highlights the extent to which consumers are informed of the ecological benefits of sustainable choices. Second, attitudes reflect consumers' predispositions and perceptions toward green consumption. It sheds light on how positively or negatively individuals view sustainable products, which are often shaped by personal values, social influence, and environmental consciousness. Finally, practice indicates the behavioural aspect, showcasing how these attitudes and knowledge translate into actual purchasing decisions and day-to-day actions supporting eco-friendly choices.

Table 4: Structured Schedules pertaining to factorization

How important is it for you to buy edible oils labelled as "chemical-free" or "natural"?	.631		Consumer's Knowledge Factor
How much do you care about how edible oils are made when you buy them?	.532		
Heavy metals like cadmium (Cd), lead (Pb), and mercury (Hg) in edible oil can be harmful to health. It's best to avoid oils contaminated with these metals to stay healthy.	.631		
Chemical-free edible oils often cost more than regular oils.	.586		
How much do you think herbal shampoos help your hair and scalp compared to regular ones?	.796		
Having sulphates, parabens, and sodium chloride in shampoo can be harmful to your hair and scalp. It's better to choose shampoos without these ingredients for healthier hair.	.712		
How much do you think about where the ingredients come from when you buy herbal shampoos?	.533		
How improper handling or consumption of chicken can lead to foodborne illnesses caused by bacteria such as Salmonella or Campylobacter.	.796		
How important is it for you to know the specific herbal ingredients used in the production of the ready-to-cook chicken you purchase?	.712		
Do you know what antibiotic resistance is	.549		
Food safety is essential for society		.631	Consumer's Attitude Factor
How likely are you to pay a premium price for edible oils that are certified as chemical-free or organic?		.734	
To what extent do you believe that consuming chemical-free edible oils contributes to your overall health and well-being?		.574	
To what extent do you believe that chemical-free edible oils taste better compared to oils that may contain additives or undergo extensive processing?		.529	
How likely are you to pay a premium price for herbal shampoos that are certified as organic or herbal?		.574	
How likely are you to switch to a different brand or supplier if you find out your current herbal shampoo brand does not align with your environmental values?		.508	
To what extent do you believe that purchasing herbal shampoos contributes to your personal well-being and lifestyle choices and better for environment also?		.734	

How likely are you to pay a premium price for herbal ready-to-cook chicken that is certified as organic or herbal?	.615
Does Chopping and packing in a wet market raise the danger of microbial contamination?	.737
To what extent do you believe that consuming herbal ready-to-cook chicken offers additional health benefits compared to conventional ready-to-cook chicken products?	.737

|		
When choosing edible oils, how often do you read the ingredient labels to ensure they are free from additives or chemicals?	.770	Consumer's Practice
How likely are you to switch brands or suppliers to ensure you are purchasing chemical-free edible oils?	.696	Factor
How often do you share information or recommendations about chemical-free edible oils with friends or family?	.773	
How likely are you to research the environmental sustainability practices of the brands producing herbal shampoos before making a purchase?	.661	
How often do you consider the impact of the packaging materials used for herbal shampoo products before making a purchase?	.770	
How often do you consult online reviews or recommendations before purchasing herbal shampoos?	.696	
How likely are you to purchase herbal ready-to-cook chicken products from retailers that offer organic or sustainably sourced options?	.773	
How frequently do you consider the packaging materials used for herbal ready-to-cook chicken products (e.g. recyclable, biodegradable & not making harm to the product inside it)	.661	
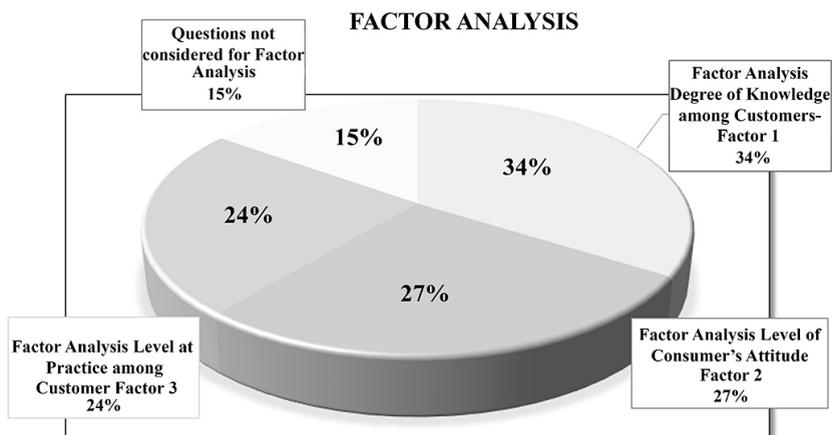
Fig. 2: Summary of Vendors' Response (Factor Analysis)

Factorized components of the marketing mix, consumer satisfaction, and lifestyle factors influencing green FMCG purchases

The pie chart presents (Fig. 2) the results of the factor analysis conducted on the responses of 514 participants to 33 questions regarding green consumer choices for FMCGs in West Bengal. After factorization, three main factors emerged:

Degree of Knowledge (Factor 1)

This factor accounts for 34%, indicating that consumer awareness and understanding of green products play the most significant role in influencing green FMCG choices.

Customer's Attitude (Factor 2)

Representing 27%, this factor highlights the importance of attitudes and beliefs towards sustainability in shaping consumer decisions.

Level of Practice (Factor 3)

With 24%, this factor shows how consumer behaviour, in terms of actual sustainable practices, impacts green product choices.

Additionally, 15% of the questions were not considered in the factor analysis, suggesting that they did not align with the identified core factors.

This analysis underlines that knowledge, attitude, and practice are the primary factors that influence green FMCG consumption in the region.

This figure illustrates the key factors derived from the vendors' responses regarding green FMCG products. Factor analysis reduced the variables into three main categories: Knowledge, Attitude, and Practice (KAP) towards green products. Each factor is depicted with its corresponding variance, highlighting the most influential aspects shaping vendors' perceptions and behaviour.

Recognizing the potential impact of informed and conscientious consumer choices, this study postulates that consumers, armed with the right knowledge, attitude and practice can actively contribute to fostering a more sustainable and environmentally friendly market for FMCG products.

Discussion
Exploring Consumer Knowledge in Sustainable Product Consumption: A Comprehensive Analysis

This shift is marked by increasing awareness of the ingredients, materials, and environmental impacts associated with the production of everyday products. As noted by Joshi and Rahman (2015),[17] consumer environmental awareness has become a key determinant of green purchase behaviour, especially in the FMCG sector. Key facets of consumer knowledge have emerged as pivotal influencers in the realm of purchasing green FMCG product. These include as follows:

Environmental Impact Awareness

Consumers are now more attuned to the environmental consequences of their choices.[18] Understanding the ecological footprint of FMCG products becomes a guiding factor in their decision-making process.[19]

Product-Specific Knowledge

The study did not merely explore general awareness but went a step further to investigate consumers' knowledge about specific green FMCG products. Studies have revealed that informed consumers often make more sustainable choices.[20] Edible Oil, Shampoo, and Ready Chicken were the focal points, shedding light on the depth of understanding within these product categories.

Alignment with Values

A crucial aspect of consumer knowledge is the alignment of their values with the products they choose. Eminent report suggest that values strongly influence green purchase intentions, with consumers seeking products that mirror their commitment to sustainability and environmentally friendly practices.[21]

Role of Conscious Choices

The study emphasizes that consumers, through their informed and conscious choices, hold the power to influence and shape a more sustainable market for FMCG products. This is in line with Peattie (2010),[22] who argues that consumer knowledge is a vital driver in advancing sustainability practices in FMCG markets. This underscores the transformative potential of consumer knowledge in steering the industry towards environmentally responsible practices.

Transparency and Information

Consumers are increasingly seeking transparency from companies regarding their environmental practices.[23] Brands that provide detailed information about their supply chain, manufacturing processes, and sustainability initiatives are gaining trust among environmentally conscious consumers.[24] This transparency fosters a sense of accountability,

nurturing a more informed and discerning consumer base.

Reviews and Ratings
Before committing to a purchase, consumers often turn to reviews and ratings to gauge a product's environmental performance.[25] Positive feedback in this regard can significantly influence purchasing decisions, underscoring the importance of public opinion in shaping the market for sustainable FMCG products.

Educational Efforts
Educational campaigns, spearheaded by both companies and environmental organizations, play a pivotal role in increasing consumer awareness. Existing reports highlight the role of consumer education in fostering sustainable consumption.

Well-informed consumers, armed with knowledge about environmental issues, are more likely to make sustainable choices.[26] This underlines the transformative power of education in cultivating a conscious consumer culture.

Continuous Learning
Consumer knowledge in the sustainability domain is perpetually evolving. Staying informed about the latest developments, technologies, and best practices in green manufacturing empowers consumers to make progressively sustainable choices over time.[27] This ongoing learning process is crucial in driving continuous improvement in consumer choices and encouraging businesses to adopt greener practices throughout their supply chains.

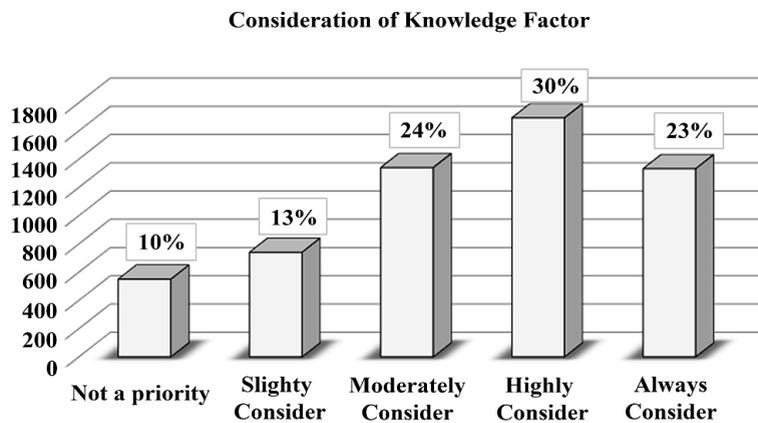**Consideration of Knowledge Factor**

Fig. 3: Understanding Sustainable Choices: A Look at Consumer Knowledge

This figure illustrates the distribution of consumer knowledge regarding sustainable product choices across different demographics. Key variables include environmental awareness, familiarity with eco-labels, and understanding of sustainable practices. The graph highlights the correlation between consumer knowledge levels and their likelihood to choose eco-friendly Fast-Moving Consumer Goods (FMCG).

Knowledge factor plays a pivotal role in shaping consumers' choices of green Fast-Moving Consumer Goods (FMCGs) in West Bengal. As shown (Fig. 3), 30% of consumers give considerable weight to their knowledge of environmental benefits and product sustainability, emphasizing the influence of awareness on eco-friendly decision-making.

Furthermore, 23% of consumers consistently choose green options based on their understanding, while 24% took it into moderate consideration. Collectively, 77% of the consumers factor in their knowledge when making green FMCG choices to some degree. Conversely, 13% of consumers only slightly considered their knowledge, and 10% did not prioritize it at all. This gap in awareness and motivation presents a clear opportunity for targeted educational efforts to promote greener consumption. Thus, consumer knowledge is a critical driver of green FMCG choices, and raising awareness can further accelerate the adoption of sustainable purchasing behaviours. While knowledge can shape attitudes, factors such as price, availability, and scepticism often constrain behaviour. This observation aligns

with the Attitude-Behaviour Gap as identified by Joshi and Rahman (2015).[17] In decisions related to green purchasing, external factors frequently exert a greater influence than awareness.

Attitude
Unveiling Consumer Sentiments towards Green FMCG Products

Consumer attitudes towards purchasing green Fast-Moving Consumer Goods (FMCG) products are undergoing a transformative shift, emblematic of an augmented awareness of concerning environmental and social concerns.[17] In the realm of green FMCG products, consumers exhibit a tapestry of attitudes that intricately influence their purchasing decisions:

Environmental Concerns
Cultivating a Greener Lifestyle

Elevating environmental consciousness is steering consumers towards prioritizing green FMCG products.[28] The fervent desire to diminish ecological footprints and actively contribute to sustainability propels individuals to opt for products aligned with environmental conservation.[29]

Health and Well-being
A Holistic Approach to Consumer Choices

A notable subset of consumers perceives green products as an embodiment of healthier and safer alternatives.[30] The discerning choice for products devoid of harmful chemicals, pesticides, or artificial additives mirrors a commitment to personal and environmental well-being.[31]

Quality and Performance
Green Without Compromise

An entrenched attitude prevails, dictating that green products should not be synonymous with compromise.[32] Consumers are more likely to embrace eco-friendly options if these prove to be as efficacious or superior to conventional alternatives, reinforcing the symbiosis of quality and sustainability.[33]

Balancing Affordability and Sustainability

While a segment of consumers willingly invests in premium green products, others remain anchored in price sensitivity.[34] The affordability of green alternatives emerges as a pivotal factor, acting as a linchpin in attracting a broader consumer base to sustainable options.[35]

Innovation and Technology
Magnetism for Sustainable Progress

Consumers gravitate towards green products adorned with innovation and sustainable technologies.[36] Packaging solutions that champion eco-friendliness, energy-efficient features, and groundbreaking recycling methods capture the attention of those who value technological advancements in tandem with ecological responsibility.[37]

Lifestyle Alignment
The Confluence of Values and Choices

Consumers weave green FMCG products into the fabric of their lifestyle choices and values.[38] Individuals adhering to sustainable or minimalist lifestyles actively seek products that seamlessly integrate with and complement their overarching approach to life.[18]

Word of Mouth and Social Influence
The Ripple Effect of Peer Opinions

Consumer attitudes undeniably echo the sentiments of their social circles.[39] Positive word-of-mouth, social media endorsements, and online reviews collectively shape the decision-making process, underscoring the profound impact of peer experiences on consumer choices.[40]

Brand Loyalty and Corporate Reputation
A Covenant of Sustainability

Brand loyalty intertwines with corporate commitment to sustainability.[41] Consumers forge enduring allegiances with brands that consistently demonstrate dedication to environmental causes. The broader corporate reputation, encompassing environmental and social initiatives, emerges as a potent influencer of consumer preferences.[29]

Convenience and Accessibility
Navigating the Green Landscape

The ease of accessing green products is an instrumental factor in shaping consumer attitudes.[17] The prevalence of eco-friendly options in local stores, online platforms, and other convenient outlets directly influences purchasing decisions, underscoring the importance of accessibility in steering consumer choices.[32]

This figure presents the key factors derived from factor analysis that influence consumer attitudes towards green FMCG products. The three main

factors identified—Knowledge, Attitude, and Practice (KAP)—demonstrate how higher levels of knowledge correlate with a greater inclination to purchase eco-friendly products. The implications for marketing strategies are also discussed, focusing on the role of satisfaction and advertising in shaping consumer behaviour.

The chart (Fig. 4) reflects consumer attitudes towards the green factors in FMCG purchases in West Bengal. Most respondents moderately consider (31%) environmental aspects, followed by highly consider (28%.) and always consider (17%). Smaller percentages either slightly considered (17%) or viewed it as not a priority (10%). This suggests that while environmental concerns are significant for many, they are not yet a primary factor for all consumers in their buying decisions.
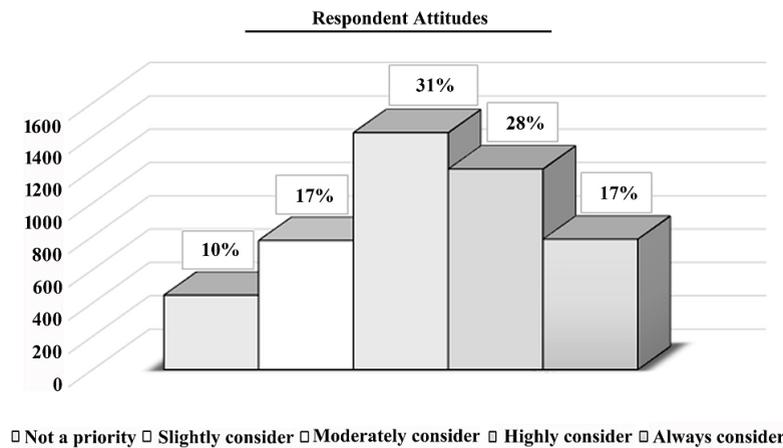

Fig. 4: Consumer Sentiments: Exploring Attitudes Towards Green FMCG Products

These findings emphasize that while a growing number of consumers are concerned about the environmental impact, many still consider it only moderately or less. This insight could be essential for businesses seeking to effectively tailor green marketing strategies in West Bengal.

Practice
Decoding Consumer Behaviours in the Green FMCG Sphere
Consumer practices in the realm of green Fast-Moving Consumer Goods (FMCG) products encapsulate the tangible behaviours and actions individuals' exhibit when making purchasing decisions.[17] Here are some prevalent practices observed among consumers in the dynamic arena of purchasing green FMCG products:

Label Reading for Sustainability
Many consumers actively check for eco-labels, certifications, and sustainability information to ensure their purchases align with environmental values.[42]

Research and Information Seeking
Consumers often conduct thorough research before buying, including reading reviews and exploring brands' environmental practices.[36]

Willingness to Pay a Premium
Many consumers are willing to spend more on eco-friendly products that align with their personal values.[43]

Support for Local and Eco-Friendly Brands
Consumers increasingly seek out local or eco-friendly brands to minimize environmental impact and support local economies.[35]

Minimizing Single-Use Plastics
Reducing plastic use by opting for eco-friendly packaging and reusable alternatives is a key practice among green consumers.[28]

Social Media Influence

Sharing sustainable choices on social platforms helps spread awareness and encourages others to adopt eco-friendly habits.[40]

Government Influence

Regulations, such as recycling initiatives and eco-labelling, play a significant role in promoting greener consumer behaviour.[18]
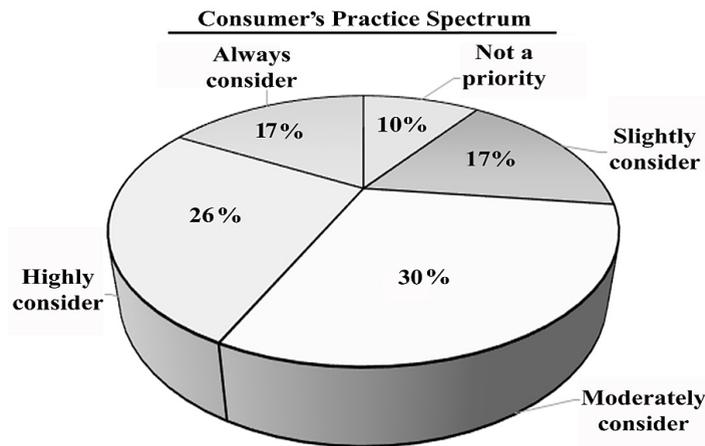

Fig. 5: Practices in Focus: Understanding Consumer Behaviour in Green FMCGs

This (Fig. 5) illustrates the key factors influencing consumer behaviour towards green fast-moving consumer goods (FMCGs), including awareness levels, purchasing intentions, and the impact of marketing strategies.

- **Moderately Consider (30%):** The largest portion of consumers moderately factor in sustainable practices when making purchases.
- **Highly Consider (26%) and Always Consider (17%):** These segments reflect consumers who consistently prioritize sustainability in their decisions.
- **Slightly Consider (17%) and Not a Priority (10%):** A smaller proportion of consumers only slightly or do not prioritize sustainability, indicating opportunities for further awareness and education.

In summary, the chart underscores varying levels of engagement in green practices, with most consumers considering sustainability.

The findings are consistent with those of Vermeir and Verbeke (2008),[27] indicating that while consumer awareness is substantial, factors such as price and advertising significantly influence behavior. Similarly, Gleim *et al*. (2013)[32] found that cost and

inconvenience frequently deter action, even among well-informed consumers.

Enhanced knowledge contributes to positive attitudes; however, it does not invariably result in behavioral change, thereby supporting the Attitude-Behaviour Gap theory Joshi & Rahman (2015).[17] Highlighting Behavioral Barriers: Factors such as price sensitivity, availability, and skepticism exert a more significant influence than knowledge alone Gleim *et al*., (2013).[32] Providing Managerial Implications: Companies should prioritize affordability, targeted advertising, and the cultivation of consumer trust to effectively bridge the gap between awareness and action.

Study Limitations

This study had several limitations that should be acknowledged. First, the sample was limited to 514 respondents from West Bengal, which may restrict the generalizability of the findings to other regions with different economic, cultural, or environmental conditions. Second, reliance on self-reported data introduces the potential for social desirability bias, as participants may overstate their sustainable practices. Third, while random sampling was used, sampling bias could still exist if certain consumer segments (e.g., lower-income groups or rural populations) were underrepresented. Fourth, non-response bias might have influenced the results, as

individuals who were less interested in sustainability may have opted out of the survey. Finally, this study does not account for longitudinal consumer behavior—future research could assess shifts in green purchasing trends over time through repeated surveys or panel studies. Despite these limitations, our findings provide meaningful insights into green consumer behaviour in an emerging market context.

Future Research
- Future studies could employ experimental methodologies or track actual purchase behaviour rather than rely solely on self-reported data.
- Comparative studies across different Indian states and international markets would provide a broader perspective on regional variations in sustainable consumer behaviour.
- Investigating the impact of digital marketing strategies and social media on green FMCG purchases could yield critical insights for businesses.
- Finally, further exploration of psychological factors, such as trust in eco-labelling and skepticism towards green claims, could help bridge the gap between awareness and action in sustainable consumption.

Conclusion
This study investigates consumer Knowledge, Attitudes, and Practices (KAP) concerning green Fast-Moving Consumer Goods (FMCG), with a particular focus on edible oil, shampoo, and ready-to-eat chicken. The findings underscore a gap in the literature regarding the influence of marketing-mix elements on the adoption of green products, especially in regional markets such as West Bengal. Although consumers exhibit a high level of awareness about environmental issues, this awareness does not consistently translate into purchasing behavior due to factors such as price sensitivity, availability challenges, and scepticism regarding green claims. This study underscores the necessity for businesses to improve the affordability, credibility, and accessibility of green FMCG products to facilitate their adoption. Given the study's limitations, including its concentration on three FMCG products, reliance on self-reported data, and focus on a single geographic region, the results should

not be overly generalized. Future research should broaden the range of product categories, incorporate behavioural tracking, and compare findings across different regions to enhance insights into sustainable consumer behaviour. As sustainability becomes increasingly important to consumers, businesses must adapt their marketing strategies to align themselves with evolving preferences. Policymakers can also support green initiatives by promoting eco-friendly incentives and implementing stricter labelling regulations. Understanding these dynamics will assist businesses and stakeholders in effectively navigating the evolving green consumerism landscape.

For businesses, it is imperative to prioritize affordability and accessibility. Given that cost and availability constitute significant barriers, companies should concentrate on implementing competitive pricing strategies and expanding their distribution networks. For marketers, it is crucial to enhance consumer trust through transparency. This can be achieved by employing clear eco-labelling and engaging in authentic green advertising, which can mitigate consumer scepticism. It is essential for policymakers to support green initiatives. This can be accomplished by providing incentives for sustainable product development and by enforcing stricter regulations, thereby encouraging consumer adoption.

Conflict of Interest
All the authors declare no conflict of interest.

Data Availability Statement
All data utilized in the analysis are available upon request from the authors.

Ethics Statement

The study has the approval of the Ethics Committee, Department of Management, The Neotia University (TNU). This research does not involve any clinical, bio-medical or health related data. Participation in the survey was entirely voluntarily and the identity and personal information of all the participants has been kept strictly confidential and will not be disclosed under any circumstances in future.

Informed Consent Statement

This study did not involve human participants, and therefore, informed consent was not required.

Clinical Trial Registration

This research did not involve any clinical trials.

Permission to Reproduce Material from Other Sources

Not Applicable.

Author Contributions

*   **Sagarika Basu:** Conceptualization, Data collection & Original draft preparation
*   **Sweta Rani:** Data analysis and manuscript formatting
*   **Ranojit Kumar Sarker:** Conceptualization & quality improvement of the manuscript
*   **Madhurima Das Gupta:** Writing – Review & Editing.

References

1. Maignan I., Ferrell O. C., Ferrell L. A stakeholder model for implementing social responsibility in marketing. *Eur J Mark*. 2005; 39(9-10):956-977.

2. Payne A., Frow P. A strategic framework for customer relationship management. *J Mark.* 2005; 69(4):167-176. https://doi.org/10.1509/jmkg.2005.69.4.167

3. Spangenberg J. H., Von Haaren C., Settele J. The ecosystem service cascade: further developing the metaphor. Integrating societal processes to accommodate social processes and planning, and the case of bioenergy. *Ecol Econ.* 2014; 104:22-32. https://doi.org/10.1016/j.ecolecon.2014.04.025

4. Gomes da Silva F. J., Gouveia R. M. Sustainable consumption. In: Cleaner Production: Toward a Better Future. 2020:77-128. https://doi.org/10.1007/978-3-030-23165-1

5. Arora T, Agarwal B, Kumar A. A study of millennials' preferences for social media advertising in Delhi NCR. *Indian J Mark.* 2018;48(10):34-51.

6. Ottman J. The New Rules of Green Marketing: Strategies, Tools, and Inspiration for Sustainable Branding. *Routledge*; 2017.

7. Chauhan P. Analysis and management of logistics distribution performance in the FMCG sector. Dehradun, India: College of Management and Economic Studies, UPES; 2023.

8. Sarkar J. G., Sarkar A., Sreejesh S. Developing responsible consumption behaviours through social media platforms: sustainable brand practices as message cues. *Information Technology & People*. 2023; 36(2):532-563.

9. Khanna D. Impact of sustainable marketing practices by the food & beverage industry on consumer buying behaviour in the FMCG sector. Switzerland: *American Business Management and Technology College*; 2023.

10. Norstedt J., Sjölinder F. Bridging the attitude-behavior gap: a case study for how an FMCG company may decrease the attitude-behavior gap. 2021.

11. United Nations. (2015). Transforming our world: The 2030 agenda for sustainable development. *United Nations Department of Economic and Social Affairs.* https://sdgs.un.org/2030agenda

12. Ministry of Environment, Forest and Climate Change. (2016). Plastic Waste Management Rules, 2016. Government of India. https://moef.gov.in/wp-content/uploads/2017/07/Final_PWM_Rules_2016.pdf

13. Nkansah B. K. On the Kaiser-Meier-Olkin's measure of sampling adequacy. Math Theory Model. 2011; 8:52-76.

14. Shrestha N. Factor analysis as a tool for

survey analysis. *Am J Appl Math Stat.* 2021; 9(1):4-11. doi: 10.12691/ajams-9-1-2.

15. Sternberg, R. J., & Glück, J. Criterion-Referenced Assessment of Intelligence as Adaptation to the Real World. *Journal of Intelligence.* 2022; 10(3), 1-17.

16. Bernard, A. B., & Moxnes, A. Learning trade opportunities through production networks. arXiv preprint arXiv. 2024; 2405.13422. https://arxiv.org/abs/2405.13422

17. Joshi Y., Rahman Z. Factors affecting green purchase behaviour and future research directions. *Int Strateg Manag Rev.* 2015; 3(1-2):128-143.

18. Testa F., Cosic A., Iraldo F. Determining factors of curtailment and purchasing energy-related behaviours. *J Clean Prod.*2019;228:88-98.

19. Ghazali E., Soon P. C., Mutum D. S. Nguyen B. Health and cosmetics: Investigating consumers' values for buying organic personal care products. *J Retail Consum Serv.* 2017; 39:154-163.

20. Chaudhary, A., Hurrah, S. A., & Maqbool, S. The influence of corporate social responsibility on actual buy*ing behaviour: A study of Indian consumers. Metamorphosis: A Journal of Management Research.* 2020; 19(1), 1–11. https://doi.org/10.1177/0972622520931700

21. Thogersen J., Zhou Y. Chinese consumers' adoption of a 'green' innovation: The case of organic food. *J Mark Manag.* 2012;28(3-4):313-333.

22. Peattie K. Green consumption: behavior and norms. *Annu Rev Environ Resour.* 2010;35(1):195-228.

23. Cone Communications. Cone Communications CSR Study: Companies are expected to be responsible. Published 2017. Accessed [30/09/2024]. https://www.conecomm.com

24. Wagner T., Bicen P., Hall Z. R. The role of supply chain transparency in fostering sustainable consumption. *J Bus Res.*2021;124:591-600.

25. Rezai G., Teng P. K., Mohamed Z., Shamsudin M. N. Consumers' awareness and consumption intention towards green foods. *Afr J Bus Manag.* 2012;6(12):4496-4503.

26. Nohekhan, M., & Barzegar, M. Impact of green marketing strategy on brand awareness: Business, management, and human resources aspects. arXiv preprint

arXiv. 2024; 2401.02042. https://arxiv.org/abs/2401.02042

27. Vermeir I., Verbeke W. Sustainable food consumption among young adults in Belgium: Theory of planned behaviour and the role of confidence and values. *Ecological Economics*. 2008;64(3):542-553.

28. Magnier L., Crie D. Communicating packaging eco-friendliness: an exploration of consumers' perceptions of product packaging. *Int J Retail Distrib Manag.* 2015;43(4-5):350-366.

29. Nguyen T. N., Lobo A., Nguyen B. K. Young consumers' green purchase behaviour in an emerging market. *J Strateg Mark.* 2019;27(7):540-556.

30. Schäufele I., Hamm U. Consumers' perceptions, preferences and willingness-to-pay for wine with sustainability characteristics: A review. *J Clean Prod.* 2018;147:379-394.

31. Chen T. B., Chai L. T. Attitude towards the environment and green products: consumers' perspective. *Management Science and Engineering.* 2010;4(2):27-39.

32. Gleim M. R., Smith J. S., Andrews D., Cronin J. J. Against the green: a multi-method examination of the barriers to green consumption. *J Retailing*. 2013;89(1):44-61.

33. Oliver J. D., Lee S. H. Hybrid car purchase intentions: a cross-cultural analysis. *J Consum Mark.* 2010;27(2):96-103.

34. Verain M. C. D., Bartels J., Dagevos H. Segments of sustainable food consumers: A literature review. *Int J Consum Stud.* 2012;36(2):123-132.

35. Lim W. M., Ting D. H., Bonaventure V., Sendiawan T., Tanusina E. S. What happens when consumers realign brand equity and sustainability? *J Brand Manag*. 2013;20(4):351-368.

36. Tung V. W. S., Schneider I. E., Pennington-Gray L. Is corporate social responsibility (CSR) in the eyes of the beholder? *Int J Tourism Res.* 2012;14(4):292-303.

37. Bocken N. M. P., Short S. W., Rana P., Evans S. A literature and practice review to develop sustainable business model archetypes. *J Clean Prod.* 2016;65:42-56.

38. Smith S., Paladino A. Eating clean and green? Investigating consumer motivations towards the purchase of organic food. *Australasian Mark J.* 2010;18(2):93-104.

39. Chu S. C., Kim Y. Determinants of consumer engagement in electronic word-of-mouth (eWOM) in social networking sites. *Int J Advert*. 2011;30(1):47-75.

40. Shao W., Grace D., Ross M. Consumer motivation and luxury consumption: testing moderating effects. *J Bus Res*. 2020;116:441-452.

41. Schäufele I, Hamm U. Organic wine purchase behaviour in Germany: Exploring the attitude-behaviour gap with data from a household panel. *Food Qual Prefer.* 2018; 63:1-11.

42. D'Souza C., Taghian M., Lamb P., Peretiatkos R. Green products and corporate strategy: An empirical investigation. *Society Bus Rev.* 2006;1(2):144-157.

43. Nielsen. The sustainability imperative: new insights on consumer expectations. *Nielsen Global Survey of Corporate Social Responsibility and Sustainability.* 2015.