CHAPTER III
RESEARCH METHODS

3.1 Object and Subject Research

3.1.1 Object Research

The object research refers to the main focus of the research. It is the subject matter or the phenomenon that researchers aim to study and understand. The object research for this study are the variables under study, these are green influencer, green brand attitude, green brand association, green purchase intention and green trust and green purchase.

3.1.2 Subject research

The subject of research refers to the individuals or entities that participate or are involved in the research study. These are the individuals or groups who are observed, interviewed, surveyed, or otherwise studied to gather data and information related to the research objectives. The subject of research can be human participants, animals, organizations, or even inanimate objects, depending on the nature of the study. In social sciences, the term "participants" or "respondents" is often used instead of "subjects" to describe the individuals involved in the research. In this study the subject research were customers of FMCGs in Ghana.

3.2 Research Design

Research design was the plan or blueprint for conducting a research study that outlined the methods and procedures to be used in collecting and analyzing data (Babbie, 2020). It specified the steps to be taken to address the research question, hypothesis, or problem, and outlined the procedures for sampling, data collection, data analysis, and interpretation of the findings. The research design provided a framework for organizing and executing a research project in a systematic and scientific manner. It helped to ensure that the study was conducted in a rigorous and unbiased manner and that the findings were valid and reliable. The research design was influenced by the research question, objectives, and the nature of the study, and determined the

appropriateness of various data collection methods, sampling strategies, and analysis techniques to be used.

The research design for this study was a cross-sectional survey design, which falls within the domain of the quantitative approach. A cross-sectional survey design was a type of research design that involved collecting data at one point in time from a sample of individuals or organizations to explore relationships between variables (Babbie, 2020). In this study, data was collected from consumers of local fast-moving consumer goods (FMCG) firms in Ghana through a self-administered survey. The survey was designed to measure the variables of interest, including green influencers, green brand attitude, green brand associations, green trust, green purchase intentions, and green purchase. The survey was administered through online and offline platforms to ensure broad representation of the population.

The sample for this study was selected through a multi-stage sampling process. First, the study selected a list of local FMCG firms operating in Ghana from Association of Ghana Industries (AGI), the Ghana National Chamber of Commerce and Industry (GNCCI) which were the major industry associations in the country and Ghana Standards Authority (GSA) which ensured products safety and standards database. Next, a sampling frame of consumers of these firms was constructed, and a random sample of consumers was selected for inclusion in the study. The cross-sectional survey design was suitable for this study as it allowed for the efficient and cost-effective collection of data from a sample of individuals at one point in time, which was appropriate for exploring relationships between variables(Babbie, 2020; Vongurai, 2022).

Secondly, a cross-sectional survey design enabled the collection of a large amount of data, which increases the statistical power of the analysis and enhanced the generalizability of the findings (Harrison et al., 2020; Mwagike & Changalima, 2022). The study aimed to collect data from consumers of local FMCG firms in Ghana, and a cross-sectional survey design enabled the collection of data from a large and diverse sample of consumers, increasing the external validity of the study. Also, the cross-

sectional survey design enabled the use of quantitative analysis techniques, such as correlation and regression analysis, to test hypotheses and explore the relationships between variables. These techniques enabled the investigation of complex relationships between variables and enabled the identification of significant predictors of consumer behavior towards green brands (Kline, 2017). The study spand from May 2023 to March 2024.

3.3 Participants

Participants of a study referred to the individuals or groups who were selected to be included in a research project (Creswell, 2014). In the context of this study, the participants were consumers of local fast-moving consumer goods (FMCG) firms in Ghana. These were individuals who purchased and consumed products from local FMCG firms in Ghana, and who were therefore the target audience for the study. The study aimed to investigate the relationship between green influencers, green brand attitude, green brand associations, green trust, green purchase intentions, and green purchase and their impact on consumer behaviour towards green brands in the context of local FMCG firms in Ghana.

To select the participants for the study, a sampling strategy was employed. The sampling strategy involved selecting a representative sample of consumers from the population of interest, which was consumers of local FMCG firms in Ghana (Mugenda & Mugenda, 2003). The sample size was determined based on statistical power analysis, which ensured that the sample size was sufficient to detect significant relationships between the variables of interest (Creswell, 2014). The sample was selected using probability sampling techniques, such as stratified random sampling or cluster sampling, to ensure that the sample was representative of the population of interest and to increased the external validity of the study.

The study incorporated feedback from consumers who had purchased and used products from the local FMCG firms, as they could provide insights into their perceptions of the brand's quality, value, and other factors that might have influenced their purchase decisions (Fotiadis et al., 2021). Incorporating feedback from consumers

who have purchased and used products from the local FMCG firms can provide valuable insights into their perceptions of the brand's quality, value, and other factors that may influence their purchase decisions (Islam et al., 2020). These insights helped to identify the strengths and weaknesses of the brand in the eyes of consumers and informed strategies for improving green purchases (Loureiro et al., 2020). Consumer feedback could also provide a more accurate picture of brand performance, as it reflected the actual experiences and opinions of those who had interacted with the brand, as opposed to relying solely on sales data or other quantitative measures (Goyal et al., 2021). Therefore, incorporating feedback from consumers could provide a more comprehensive understanding of the brand's performance and helped to identify areas for improvement.

3.4 Population and Sample

The population of a study refers to the entire group of individuals, objects, or events that the researcher was interested in studying (Fink, 2019; Nardi, 2018). In this study, the population consisted of consumers of local FMCG products in Ghana who are aged 18 years and above and had purchased and used products from local FMCG firms in the past six months. The sample frame included both regular and occasional buyers of the products. The sample size was determined using a probability sampling technique to ensured that the sample was representative of the population and could provide accurate insights into the research questions (Fink, 2019; Kothari, 2017).

Probability sampling was a widely accepted method for selecting a representative sample from a population (Babbie, 2020). By using probability sampling, the sample size could be determined based on statistical methods to ensured that the sample was representative of the population and could provide accurate insights into the research questions(Fink, 2019).

Furthermore, the study would only focus on customers of local FMCG firms in Ghana, as they represented a significant portion of the consumer goods market in the country, and there was a growing interest in sustainability and green marketing in this sector. Therefore, the population of interest for this study was the customers of local

FMCG firms in Ghana, and the sample frame consisted of customers of firms that were registered with the Association of Ghana Industries (AGI), the Ghana National Chamber of Commerce and Industry (GNCCI) which were the major industry associations in the country and Ghana Standards Authority (GSA) which ensured products safety and standards. It was important to note that the sample frame may not be representative of all customers of the local FMCG firms in Ghana, as there may be firms that were not registered with these associations. However, using these associations as the sample frame was appropriate, as they were recognized industry bodies that provided a comprehensive list of registered firms in the country. For easy management of the data collection, the data collection was limited to only two regions; the Greater Accra Region and Ashanti Region in Ghana. The major cities (Accra and Kumasi) within the selected regions was chosen. These regions was chosen because they were cosmopolitan and a majority of the products from the local FMCGs firms were sold in shops & supermarkets located in these Regions and most customers bought from them.

Besides, the study did not state the exact population because of the complexity and diversity of the population of interest. Ghana had a diverse population of over 31 million people, with different cultural, social, and economic backgrounds. Defining the exact population of consumers of green products in Ghana could be challenging and could require extensive research to identify and segment the population. Therefore, to ensure that the study remained feasible and manageable within the constraints of time and resources, the researcher had chosen to use sampling techniques to identify a representative sample of the population, rather than attempt to define the entire population. By doing so, the study was able to obtain a valid and reliable results that were generalized to the larger population of interest, while also controlling for potential biases and confounding factors.

3.4.1 Sample size Determination

The sample size for this study was determined using the formula:

$$n = \frac{(Z^2 pq)}{d^2}$$

(3.1)

where: n = sample size $Z = Z - value$ (standard normal distribution) for the desired level of confidence p = estimated proportion of the population with the characteristic of interest $q = 1 - pd$ = degree of precision or margin of error

The formula was based on the principles of statistical inference and was used to calculate the minimum sample size required to estimate a population parameter (such as a mean, proportion, or difference between means or proportions) with a given level of confidence and a specified margin of error or degree of precision. While the formula has been refined and adapted by different statisticians and researchers over time, it was not attributed to a single person. Instead, it was considered a standard formula in statistics and was widely used in various fields of research to determine sample size.

The estimated proportion of the population with the characteristic of interest (p) was based on previous studies on green marketing and consumer behavior towards green products in Ghana. The desired level of confidence will be set at 95%, which corresponds to a Z-value of 1.96. The degree of precision or margin of error was set at 5%. The estimated proportion of the population with the characteristic of interest (p) was 0.50 (i.e., 50% of the population had the characteristic), the desired level of confidence was 95%, and the degree of precision or margin of error was 5%.

$$n = \frac{(1.96^2 * 0.05 * 0.05)}{0.05^2} \qquad (3.2)$$

n = 384.16

Rounding up to the nearest whole number, the sample size was approximated at 384 respondents. Based on these parameters, the calculated sample size for this study was approximately 384 respondents. However, to account for potential non-response or incomplete data, the sample size was increased to 400 respondents. The justification for using this sample size was that it was large enough to ensure statistical power and precision in the estimation of the relationships between the variables of interest while also being feasible within the constraints of time and resources for data collection and

analysis. Additionally, this sample size was comparable to or larger than the sample sizes used in similar studies on green marketing and consumer behavior towards green products in other developing countries (e.g., Nigeria, Pakistan, and Bangladesh) (Ali et al., 2021; Okoli et al., 2020; Ullah et al., 2021).

3.5 Research Instruments

The research instrument for this study was a questionnaire consisting of three parts. The first part included questions to gather demographic information such as age, gender, income, and education level,from the respondents. The second part was focused on measuring the variables of interest, namely Green Influencer, Green Purchase Intentions, Green Trust, Green Attitude, and Green Association. The questionnaire included validated measurement statements for each of these variables, which were sourced from previous studies. Green Influencer was measured using statements capturing the extent to which individuals were influenced by environmental activists and experts in their decision-making process towards green products. These statements were sourced from Chen, T.-W. Chang, et al. (2020) and P. Lin et al. (2020). Green Purchase Intentions, Green Trust, Green Association, and Green Attitude were each measured using 7-point Likert scales with validated statements. The statements used to measure these variables were sourced from a range of studies including (Kuo et al., 2019), (Han, 2021), (Bigne et al., 2019), (Tarkiainen & Sundqvist, 2005),(Lee & Eastin, 2020), (Haji Heidari et al., 2022), (Fornell et al., 1996), and (Kujala et al., 2021).

Finally, Part three of the questionnaire measured Green purchases (GP) using a validated 7-point Likert scale. This scale measured the degree to which the green products of the brand met consumers' expectations in terms of purchase intentions. The measurement statements used to measure GP were sourced from Kuo et al. (2019) Kuo et al. (2019), Kim and Kim (2021) and Kim et al. (2019).

3.5.1 Validity and Reliability of Research Instrument

The questionnaire used in the study was developed based on a thorough review of relevant literature on the topic. The questionnaire was designed to measure all the constructs identified in the study, and their operational definitions were clearly stated.

The questionnaire was pre-tested with a sample of 30 individuals from the target population to ensure that the questions were clear, unambiguous, and relevant to the study. To ensure content validity, the questionnaire was reviewed by experts in the field to ensure that it covered all relevant constructs and that the questions were appropriate for the target population. Feedback from the experts was incorporated into the final version of the questionnaire.

The questionnaire was tested for reliability using the test-retest method. A pilot study was conducted with a small sample of 30 individuals from the target population, and the questionnaire was administered twice to the same group of respondents with a time interval of two weeks. The data obtained was analyzed using Cronbach's alpha to test for internal consistency (DeVellis & Thorpe, 2021).

3.6 Research Procedures

The research procedures for the study on Green Influencers, Green Brand Attitude, Green Brand Associations, Green Trust, Green Purchase Intentions and Green Purchases: Evidence from Local Fastmoving Consumer Goods Firms in Ghana were executed in the following steps: **Research Design:** The first step determined the research design to be used in the study. The study employed a cross-sectional survey research design, where data was collected from a sample of the target population at a single point in time. **Sampling:** The second step determined the sample size and sampling technique used in the study. The target population for this study were consumers of local fast-moving consumer goods in Ghana. A multi-stage sampling technique was used to select the sample. In the first stage, the regions in Ghana were selected, and in the second stage, the districts within the selected regions were chosen.

Questionnaire Development: The third step was to develop a questionnaire based on a thorough review of relevant literature on the topic. The questionnaires were designed to measure all the constructs identified in the study, and their operational definitions were clearly stated. The questionnaires was pre-tested with a sample of the target population to ensure that the questions were clear, unambiguous, and relevant to the study. **Data Collection**: To collect data from the selected sample, Google Forms

was used. The questionnaires were uploaded to Google Forms, and the link to the questionnaire was sent to the research assistants for onward distribution among the sampled respondents. To ensure the accuracy of the data collected, the research assistants were supervised by the principal investigator. The principal investigator reviewed the responses entered into Google Forms on a regular basis to check for any errors or inconsistencies in the data. The use of Google Forms for data collection had several advantages.

Firstly, it was cost-effective since it eliminated the need for paper-based questionnaires, printing, and transportation costs. Secondly, it reduced the time needed for data entry and analysis since the data was automatically stored in a Google Sheets document. Finally, it enhanced the accuracy and completeness of the data collected since the data was entered directly into the questionnaire by the respondents.

After the data collection process, the data was exported from Google Sheets into a statistical software package for data analysis. Descriptive statistics were used to analyze the data, including means, standard deviations, and frequencies. Inferential statistics such as regression analysis were used to test the hypotheses formulated in the study.

Data Analysis: The fifth step was to analyze the data collected. The data was analyzed using descriptive statistics such as frequencies, percentages, means, and standard deviations to describe the characteristics of the respondents and the variables under study. Inferential statistical techniques such as correlation analysis, regression analysis, and structural equation modelling (SEM) were used to test the study hypotheses. **Ethical Considerations**: The sixth step was to ensure that ethical considerations were taken into account throughout the research process. Informed consent was obtained from all participants, and their confidentiality was maintained throughout the study. By following these research procedures, the study on Green Influencers, Green Brand Attitude, Green Brand Associations, Green Trust, Green Purchase Intentions and Green Purchase: Evidence from Local Fastmoving Consumer

Goods Firms in Ghana will produce reliable and valid results that can be used to inform practice in the local FMCGs industry in Ghana.

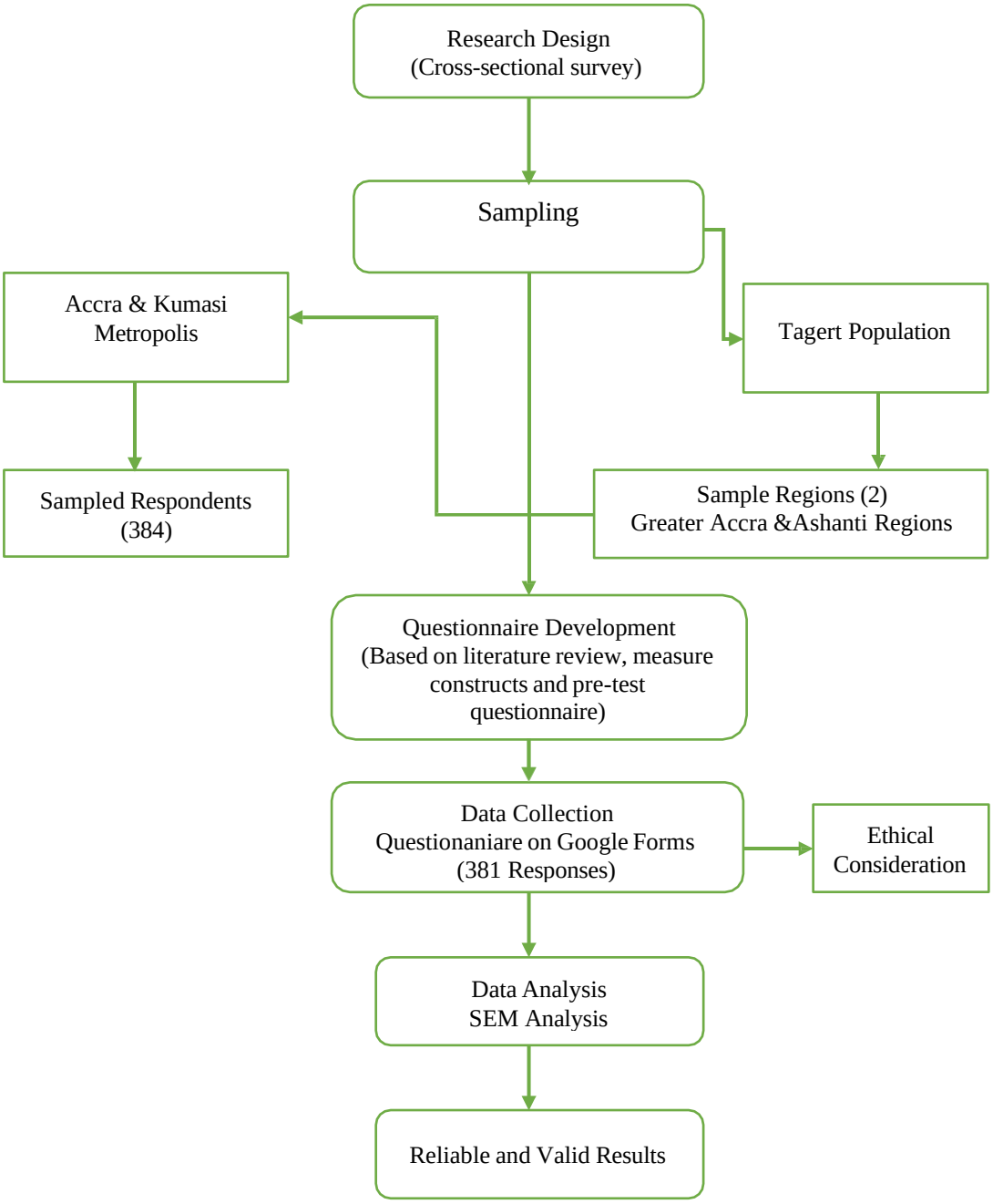

Figure 2.1 Research Procedures
Source: Author's Creation (2024)

3.6.1 Measures

According to previous research, **Green Influencer** was measured using statements that capture the extent to which individuals were influenced by environmental activists and experts in their decision-making process towards green products (Chen, T.-W. Chang, et al., 2020; Y.-C. Lin et al., 2020). An example of a statement that could be used to measure Green Influencer is "I often follow the advice of environmental experts when making decisions about purchasing green products" (Y.-C. Lin et al., 2020; Pickett-Baker & Ozaki, 2008; Young et al., 2010). The expected relationship between Green Influencer and Green Purchase Intentions was positive, as individuals who were more influenced by environmental experts were likely to have stronger intentions to purchase green products(Chen, T.-W. Chang, et al., 2020).

Green Purchase Intentions: This variable measured consumers' intention to purchase green products. It was measured using a 7-point Likert scale that ranges from "strongly disagree" to "strongly agree". Sample question: "I am willing to pay more for products that are environmentally friendly." Kuo et al. (2019), (Han, 2021). Expected sign: Positive.

Green Trust: This variable measures consumers' trust in companies that produce and sell green products. It was measured using a 7-point Likert scale that ranges from "strongly disagree" to "strongly agree". Sample question: "I trust FMCGs companies that claim their products are environmentally friendly."(Bigne et al., 2019), (Chairunnisa & Perdhana, 2020; Chen, 2010; Tarkiainen & Sundqvist, 2005). Expected sign: Positive.

Green Brand Association: This variable measures consumers' associations with green products. It was measured using a 7-point Likert scale that ranges from "strongly disagree" to "strongly agree". Sample question: "I associate green products with high quality." Sources: (Susanna Lee & Eunice Kim, 2020), (Y.-S. Chen et al., 2020; Haji Heidari et al., 2022; Wang & Horng, 2016), (Taherpouran et al., 2020). Expected sign: Positive.

Green Brand Attitude: This variable measures consumers' attitudes towards green products. It was measured using a 7-point Likert scale that ranges from "strongly disagree" to "strongly agree". Sample question: "I believe it is important to use environmentally friendly products." Sources:Gahlot Sarkar et al. (2019),Chen et al. (2017), Fornell et al. (1996), Kujala et al. (2021). Expected sign: Positive.

Based on previous studies, **green purchases** was measured with a self-reported measure using survey questions. For instance, the study by Kuo and Chen (2018) used a self-reported measure by asking participants to indicate the extent to which they had purchased environmentally friendly products in the past year on a 7-point Likert scale ranging from "never" to "always" The measurement was also presented in Table 3.1a.

Table 3.1a Variable, Indicators/Dimension and Item Questions

VARIABLES	INDICATORS /DIMENSIONS	ITEM QUESTIONS
Green Influence (GI): The extent to which influencers shape consumers' green product preferences and purchase decisions (Vinyals-Mirabent et al., 2021; Ferreira and Marques, 2020) (Knupfer, Neureiter, & Matthes, 2023; Nezafati, Afrazeh, & Jalali, 2009)	**GI 1: Perception of social norms**.	**GI1: perception of social norms**. A) the recommendations of family and friends influence my decision to purchase green products. B) I agree that social media has an impact on my decision to purchase green products. C) the opinions of experts and authority figures influence my decision to purchase green products.
	GI 2: trust in influencers.	**GI 2: Trust in influencers**. A) I am influenced by the opinion of others when it comes to purchasing green products. B) I agree that the endorsements of celebrities and influencers influence your decision to purchase green products. C) the opinions of experts and authority figures influence my decision to purchase green products.
	GI 3: preference for green influencers	**GI 3: Preference for Green Influencers.** A) advertisements and promotional materials influence my decision to purchase green products. B) I am are willing to pay more for green products that have been endorsed by trustworthy sources.

Source: Author's Compilation (2024)

Table 3.2b Variable, Indicators/Dimension and Item Questions

VARIABLES	INDICATORS /DIMENSIONS	ITEM QUESTIONS
Green Purchase Intentions (GPI) The likehood of consumers to purchase green products in the future. (Thogersen, 2019; Yadav and Pathak 2017) (Moslehpour et al., 2023; Palomino Rivera & Barcellos-Paula, 2024; Pathak, Aggarwal, & Singh, 2021; Zhu & Thøgersen, 2023)	**GPI 1: Attitude towards green products**.	**GPI 1: Attitude towards green products**: A) I am willing to pay a premium for environmentally friendly products. B) I will buy products that are environmentally sustainable. C) I will choose a product with an eco- label or certification indicating its environmentally friendly. D) I am willing to change my purchasing habits to support firm's that prioritises sustainable practices.
	GPI 2: willingness to pay for green products.	**GPI 2: willingness to pay for green products**: A) I am willing to pay for a higher price for products that are environmentally friendly. B) I consider the environmental impact of a product to be an important factor when deciding whether or not to pay a premium for it. C) I will allocate a larger portion of my budget for green products compared to conventional alternatives. D) I intend to buy the brand out of concern for the environment.
	GPI 3: Perceived behavioural control	**GPI 3: Perceived behavioural control**: A) I feel confident in my ability to make environmentally friendly choices in my daily life. B) I have a considerable amount of control over my ability to adopt sustainable behaviour. C) I engage in environmentally friendly actions. D) I feel empowered to make a difference in protecting the environment through my everyday choices and actions

Source: Author's Compilation (2024)

Table 3.3c Variable, Indicators/Dimension and Item Questions

VARIABLES	INDICATORS /DIMENSIONS	ITEM QUESTIONS
Green Trust (GT): The extent to which consumers trust a brand's environmental claims and actions (Nguyen-Viet, Tran, & Ngo, 2024; Wahyoedi, Wardhana, & Tannady, 2023)	**GT 1: Perceptions of brand credibility.**	**GT 1**: **Perceptions of brand credibility**: A) green products offered by FMCGs companies are trustworthy and reliable. B) FMCGs companies promoting green products as having a positive brand reputation. C) FMCGs companies promoting green products are socially responsible,
	GT 2: perceived honesty of environmental claims.	**GT 2: Perceived honesty of environmental claims**: A) I trust FMCGs companies that promote green products to be environmentally responsible. B) I believe the green marketing messages and claims of FMCGs companies promoting green products. C) my friends and family influence my trust in green products from FMCGs. D) Media and advertising influence my trust in green products from FMCGs.
	GT 3: perceptions of environmental performance	**GT 3: perception of environmental performance**: A) I care about the environment and sustainability. B) I think green products are effective in achieving their environmental benefits. C) I perceive green products to be of high quality.
Green brand Association The degree to which consumers associate a brand with positive environmental attributes (Dangaiso, 2024; Nguyen, Tran, & Do, 2023)	**GBA 1: Perceptions of brand reputation**	**GBA 1 Perceptions of brand reputation**: A) I associate green products with being of higher quality, B) I associate green products with being healthier or safer for you and your family. C) I associate green products with being innovative or cutting-edge. D) I associate green products with being expensive or overpriced.
	GBA 2: perceived congruence between brand and environmental values	**GBA 2 perceived congruence between brand and environmental values**: A) environmental conscious brands align with my personal values. B) environmentally conscious brands reflect and promote sustainable practices. C) Environmental conscious brands genuinely care about the environment.

Source: Author's Compilation (2024)

Table 3.4d Variable, Indicators/Dimension and Item Questions

VARIABLES	INDICATORS /DIMENSIONS	ITEM QUESTIONS
	GBA 3: environmental product attributes	**GBA 3 environmental product attributes**: A) environmental product attributes such as recyclability & energy efficiency are important factors when making purchase decisions. B) I value products made from sustainable or renewable resources. C) I place value on products manufactured with minimal environmental impact such as reduced emissions and waste. D) I prefer products that are certified as environmentally friendly, such as having eco- labels or certifications.
Green Brand Attitude Consumers' overall evaluation of green products and their willingness to support environmental causes (Akbar, Yousafzai, & Akbar, 2023)	**GBAT 1: Attitude towards the environment.**	**GBAT 1 Attitude towards the environment**: A) Green products are better for the environment than non-green products. B) I believe that using green products can make a difference in protecting the environment. C) it is important to protect and preserve the environmental for future generation.
	GBAT 2: attitude towards green products.	**GBAT 2 attitude towards green products** A) I prefer to buy products from environmentally responsible companies. B) I feel good about myself when I buy green products. C) I believe that using green products is important for my health and well-being. D) I recommend green products to my family and friends.
	GBAT 3: involvement in environmental causes	**GBAT 3 involvement in environmental causes**: A) I participate in environmental initiatives. B) I am committed to promoting & supporting environmental sustainability. C) I engage in activities that contribute to environmental conservation. D) I feel personally responsible to protect and preserve the environment.

Source: Author's Compilation (2024)

Table 3.5e Variable, Indicators/Dimension and Item Questions

VARIABLES	INDICATORS /DIMENSIONS	ITEM QUESTIONS
Green purchase (GP): The extent to which consumers purchase environmentally-friendly products (Nekmahmud & Fekete-Farkas, 2020; Yadav & Pathak, 2017)(Khan, Yu, & Farooq, 2023)	**GP1: Quantity of eco-friendly products**.	**GP1: Quality of eco-friendly products**. A) Eco-friendly product I have purchased exhibit high quality B) I am aware of the environmental certifications and labels for eco-friendly products, C) I believe ecofriendly products offer the same level of quality as conventional products. D) I am satisfied with the performance & functionality of eco-friendly products i have purchased.
	GP2: Purchased frequency	**GP2: Purchased frequency**. A) I purchase eco-friendly products often, B) I make a conscious effort to regularly buy eco-friendly products. C) I prioritise purchasing eco-friendly products over conventional alternatives. D) I seek out eco-friendly options when making a purchase.
	GP3: motivation to purchase eco-friendly products.	**GP3: motivation to purchase eco-friendly products**. A) I am motivated to buy eco-friendly products because of my concern for the environment. B) I am motivated to buy eco-friendly products because of their positive impact on my personal health. C) I consider the environmental impact of a product before making a purchase. D) I would purchase more eco-friendly products if I had more information about them.

Source: Author's Compilation (2024)

3.6.1.1 Exploratory factor analysis (EFA)

This section serves as a crucial phase to decipher the latent structures underlying green influencer, green brand attitude, green brand association, green trust, green purchase intention, and green purchases. The primary objective of this analysis is to delineate the number of discernible factors that adequately represent the data set and to quantify the magnitude of association between each variable and the corresponding extracted factors (Tabachnick et al., 2019). For the current investigation, principal component analysis (PCA) was adopted as the extraction technique, a method that

transmutes the original variables into a new ensemble of uncorrelated variables termed principal components. This technique ensures that each principal component captures a maximal amount of variability present in the data, with subsequent components accounting for progressively smaller portions of the remaining variability (Bandalos & Finney, 2018).

To augment the efficacy of EFA in this context, Varimax rotation with Kaiser normalisation was applied, optimising the clarity of factor loadings across the factors and thereby simplifying the interpretative process (Kaiser, 1991). Preliminary assessments, including the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity, were conducted to validate the suitability of the dataset for factor analysis. The KMO index, with its range from 0 to 1, serves as an indicator of the adequacy of sampling, where values approaching 1 signify that the data is apt for yielding distinct and robust factors (Kaiser, 1991). Bartlett's Test of Sphericity further tests the hypothesis that the original correlation matrix is an identity matrix, which if true, would imply that the variables do not possess underlying relationships conducive to factor analysis (Bartlett, 1995). The results from this analysis are thus presented and discussed.

Table 3.6 KMO and Bartlett's Test for Green Influencer (GINF)

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.793
Bartlett's Test of Sphericity	Approx. Chi-Square	1907.281
	Df	28
	Sig.	0.000

Source: Field Data (2024)

The Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test results, as displayed in Table 3.6, provide critical insights into the appropriateness of conducting an EFA on the green influencer construct. The KMO measure of sampling adequacy is 0.793, exceeding the recommended threshold of 0.6 (Kaiser, 1991), which suggests that the data is well-suited for factor analysis. This is further supported by Bartlett's test of sphericity, which yielded an approximate Chi-Square value of 1907.281 with a significance level of 0.000, firmly rejecting the null hypothesis that the variables are

uncorrelated in the population. Together, these tests validate the appropriateness of EFA for examining the underlying structure of the green influencer construct, indicating that the dataset possesses sufficient inter-item correlations for a meaningful factor analysis.

Table 3.7 Communalities for Green Influencer

Items	Initial	Extraction
GINF1	1.000	0.863
GINF2	1.000	0.359
GINF3	1.000	0.779
GINF4	1.000	0.828
GINF5	1.000	0.693
GINF6	1.000	0.639
GINF7	1.000	0.811
GINF8	1.000	0.639

Extraction Method: Principal Component Analysis.

Source: Field Data (2024)

Table 3.7 presents the communalities before and after extraction for each item within the green influencer construct, derived through principal component analysis. Communalities represent the proportion of each item's variance that can be explained by the extracted factors, with initial communalities set at 1.000 for all items. After extraction, the communalities range from 0.359 (GINF2) to 0.863 (GINF1), indicating varying degrees of common variance among the items. Items with higher communalities, such as GINF1 and GINF4, suggest that a significant portion of their variance is accounted for by the factors extracted, underscoring their strong association with the underlying construct. Conversely, the lower communality of GINF2 highlights its relatively weaker connection with the extracted factors. This variation in communalities underscores the heterogeneity within the green influencer construct, suggesting that while some aspects of green influence are well-represented by the factors, others may not be as closely related, guiding the interpretation and subsequent analysis of these dimensions within the context of consumer behaviour towards green products.

Table 3.8 Total Variance Explained for Green Influencer

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Var	Cum %	Total	% of Var	Cum %	Total	% of Var	Cum %
1	4.427	55.334	55.334	4.427	55.334	55.334	3.206	40.077	40.077
2	1.184	14.800	70.134	1.184	14.800	70.134	2.405	30.057	70.134
3	0.864	10.799	80.933						
4	0.579	7.243	88.177						
5	0.336	4.204	92.380						
6	0.277	3.467	95.847						
7	0.209	2.609	98.456						
8	0.124	1.544	100.000						

Extraction Method: Principal Component Analysis.

Source: Field Data (2024)

Table 3.8 details the total variance explained for the green influencer construct, illustrating the outcome of the principal component analysis. The initial eigenvalues indicate that the first component accounts for a substantial 55.334% of the variance, with the second component explaining an additional 14.800%, cumulatively accounting for 70.134% of the variance. This significant proportion of variance explained by the first two components underscores their importance in representing the underlying structure of the Green Influencer construct. The sharp decline in the percentage of variance explained by subsequent components, as visualized in the accompanying Scree plot (Figure 3.1), further supports the decision to extract two components, highlighting the existence of a clear 'elbow' that distinguishes the major components from the less informative ones. This analysis effectively reduces the dimensionality of the construct while retaining the most critical aspects of green influence as perceived by consumers.

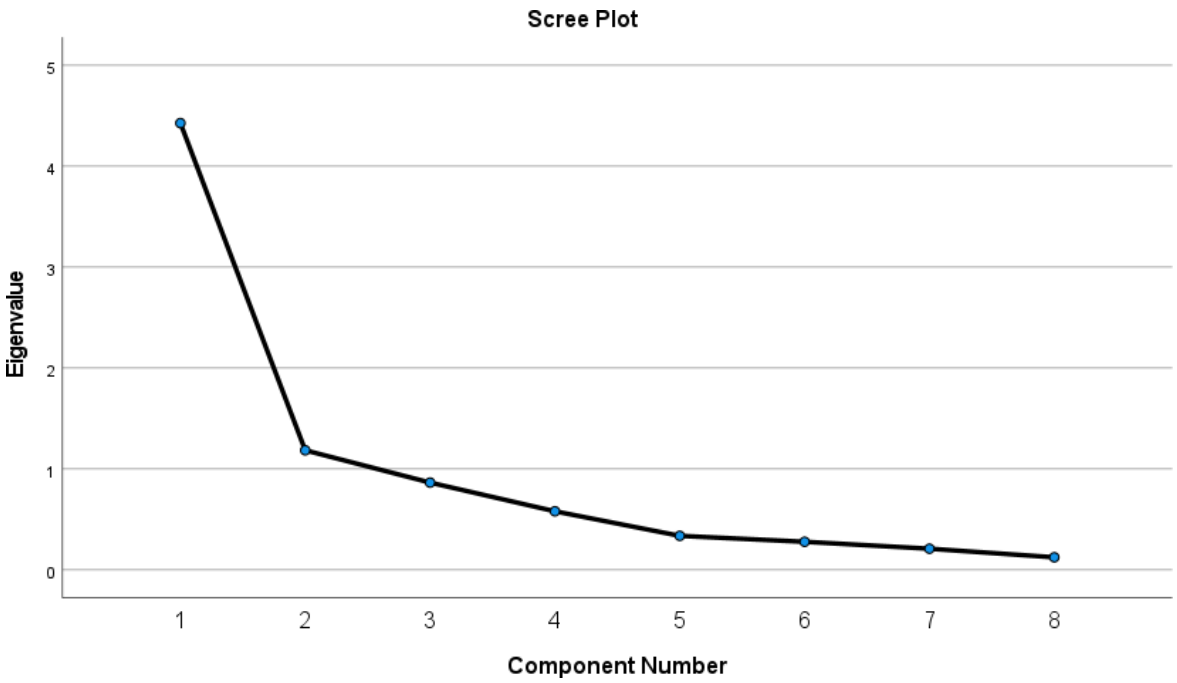

Figure 3.1 Scree plot for Green Influencer

Source: Field Data (2024)

Table 3.9 Rotated Component Matrix for Green Influencer

Items	Component	
	1	2
GINF1	0.047	0.928
GINF2	0.537	0.265
GINF3	0.319	0.823
GINF4	0.608	0.677
GINF5	0.684	0.475
GINF6	0.738	0.307
GINF7	0.894	0.107
GINF8	0.795	0.080

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Source: Field Data (2024)

The rotated component matrix for green influencer, presented in Table 3.9, provides deeper insights into the factor structure following Varimax rotation, facilitating the interpretation of the two extracted components. Items GINF1, GINF3,

GINF4, GINF5, GINF6, GINF7, and GINF8 exhibit significant loadings across both components, with GINF7 and GINF8 showing particularly strong affiliations with Component 1, and GINF1 displaying a dominant loading on Component 2. This distribution suggests a differentiation within the construct, where Component 1 might represent a more intrinsic or motivational aspect of green influence, and Component 2 could correspond to external or behavioural dimensions. The variance in item loadings across components highlights the multifaceted nature of the green influencer construct, indicating that consumer influence towards green products encapsulates both internal values and external actions.

Table 3.10 KMO and Bartlett's Test for Green Brand Attitude (GBA)

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.867
Bartlett's Test of Sphericity	Approx. Chi-Square	3320.786
	Df	55
	Sig.	0.000

Source: Field Data (2024)

The result in Table 3.10 reveals a robust foundation for conducting EFA for green brand attitude. A KMO value of 0.867 substantially exceeds the commonly accepted minimum of 0.6, suggesting a high degree of sampling adequacy and indicating that the partial correlations among items are not negligible. This is complemented by the Bartlett's Test of Sphericity, which returns an approximate Chi-Square of 3320.786 with a significance level of 0.000, decisively rejecting the null hypothesis of the identity matrix and affirming the items' suitability for factor analysis due to their inter-correlations. These metrics collectively affirm the coherence and appropriateness of the dataset for uncovering the underlying factor structure of green brand attitude, signifying that the data is well-suited for further factor analytical procedures.

Table 3.11: Communalities for Green Brand Attitude

Items	Initial	Extraction
GBA1	1.000	0.667
GBA2	1.000	0.733
GBA3	1.000	0.690
GBA4	1.000	0.589
GBA5	1.000	0.723
GBA6	1.000	0.767
GBA7	1.000	0.648
GBA8	1.000	0.838
GBA9	1.000	0.767
GBA10	1.000	0.812
GBA11	1.000	0.746

Extraction Method: Principal Component Analysis.

Source: Field Data (2024)

Table 3.11 details the communalities for the green brand attitude construct before and after extraction, employing principal component analysis. Initial communalities are set at 1.000, reflecting the total variance in each item. The extraction communalities, which range from 0.589 (GBA4) to 0.838 (GBA8), represent the proportion of each item's variance accounted for by the extracted factors. These figures suggest that the factors identified capture a significant portion of the variance in most items, with GBA8, GBA10, and GBA9 showing particularly high communalities, indicating that a considerable amount of their variance is explained by the underlying dimensions of green brand attitude. This distribution highlights the relevance of these items to the core facets of the construct, providing a solid basis for understanding the dimensions that encapsulate consumers' attitudes towards green brands, which is crucial for developing targeted marketing strategies that resonate with these attitudes.

Table 3.12 Total Variance Explained for Green Brand Attitude

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Var	Cum %	Total	% of Var	Cum %	Total	% of Var	Cum %
1	6.375	57.954	57.954	6.375	57.954	57.954	4.136	37.603	37.603
2	1.605	14.588	72.543	1.605	14.588	72.543	3.843	34.939	72.543
3	0.652	5.928	78.470						
4	0.530	4.821	83.291						
5	0.460	4.186	87.478						
6	0.405	3.678	91.155						
7	0.288	2.614	93.769						
8	0.218	1.980	95.749						
9	0.207	1.886	97.635						
10	0.138	1.254	98.889						
11	0.122	1.111	100.000						

Extraction Method: Principal Component Analysis.

Source: Field Data (2024)

As detailed in Table 3.12, the total variance explained for green brand attitude demonstrates the outcome of the principal component analysis, highlighting the presence of two principal components with significant explanatory power. The first component accounts for a substantial 57.954% of the variance, while the second component explains an additional 14.588%, cumulatively capturing 72.543% of the total variance. This significant concentration of variance within the first two components underscores their importance in representing the underlying structure of the green brand attitude construct. The clear delineation provided by the accompanying Scree plot (Figure 3.2) supports the extraction of these two components, suggesting they sufficiently encapsulate the critical dimensions of consumers' attitudes towards green brands.

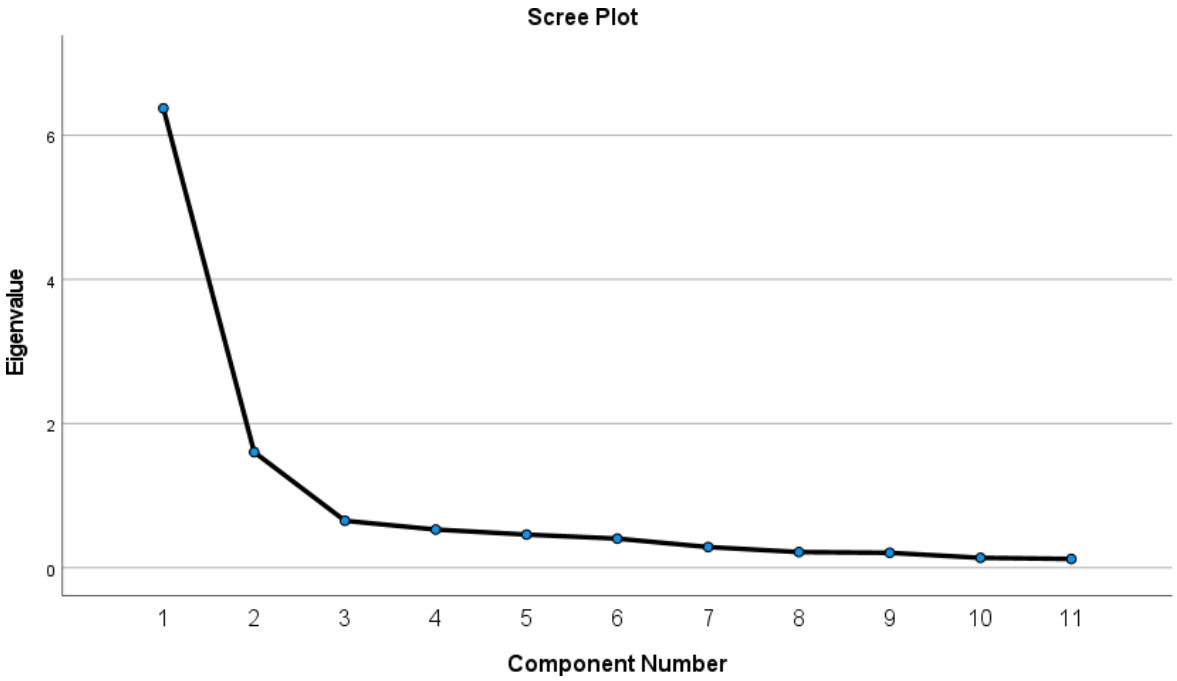

Figure 3.2 Scree plot for Green Brand Attitude

Table 3.13 Rotated Component Matrix for Green Brand Attitude

Items	Component	
	1	2
GBA1	0.810	0.107
GBA2	0.813	0.268
GBA3	0.822	0.114
GBA4	0.617	0.457
GBA5	0.759	0.384
GBA6	0.800	0.356
GBA7	0.531	0.605
GBA8	0.192	0.895
GBA9	0.197	0.853
GBA10	0.182	0.882
GBA11	0.394	0.768

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Source: Field Data (2024)

The rotated component matrix for green brand attitude, presented in Table 3.13, reveals that items GBA1, GBA2, GBA3, GBA4, GBA5, GBA6, and GBA7 show

significant loadings on component 1. This component encapsulates consumers' intrinsic beliefs and perceived benefits of green products. These items reflect an internalized understanding and valuation of green products' environmental benefits, health implications, and the personal satisfaction derived from making environmentally friendly purchasing decisions. This dimension highlights the cognitive and affective aspects of green brand attitude, underlining the importance of awareness and personal values in shaping consumers' predispositions towards green products.

The second component, strongly linked with statements GBA8 through GBA11, represents a commitment to active engagement in environmental sustainability. This component goes beyond mere belief in the importance of green products to include participation in environmental initiatives, commitment to environmental sustainability, engagement in conservation activities, and a sense of personal responsibility towards environmental protection. This actionable dimension of green brand attitude underscores the behavioural aspect, indicating that for a segment of consumers, their attitudes towards green brands are not just theoretical but translate into tangible actions aimed at supporting environmental sustainability. Such distinctions are invaluable for marketers and firms in the FMCG sector, as they reveal that effective engagement with consumers on green issues requires addressing both their internal beliefs and motivations as well as their commitment to environmental action. Strategies developed by FMCG firms can thus be tailored to reinforce consumers' intrinsic values while also encouraging and facilitating their active participation in environmental sustainability.

Table 3.14 KMO and Bartlett’s Test for Green Brand Association

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.815
Bartlett's Test of Sphericity	Approx. Chi-Square	2679.635
	Df	55
	Sig.	0.000

Source: Field Data (2024)

As outlined in Table 3.14, the KMO value of 0.815 far exceeds the recommended threshold, suggesting a high degree of correlation among variables that justifies the factorability of the data set. Bartlett’s Test further confirms the potential for meaningful factor analysis with a significant chi-square value of 2679.635, decisively rejecting the

null hypothesis that the variables are orthogonal (i.e., uncorrelated). This combination of a high KMO measure and a significant Bartlett's test indicates that the dataset is suitably structured for uncovering underlying patterns in green brand associations among consumers.

Table 3.15 Communalities for Green Brand Association

Items	Initial	Extraction
GBAS1	1.000	0.849
GBAS2	1.000	0.644
GBAS3	1.000	0.565
GBAS4	1.000	0.197
GBAS5	1.000	0.790
GBAS6	1.000	0.515
GBAS7	1.000	0.630
GBAS8	1.000	0.772
GBAS9	1.000	0.708
GBAS10	1.000	0.804
GBAS11	1.000	0.554

Extraction Method: Principal Component Analysis.

Source: Field Data (2024)

Communalities after extraction, presented in Table 3.15, offer insights into the amount of variance in each item that can be accounted for by the extracted factors. The initial communalities are set at 1.000 for each item, representing the total variance before factor analysis. After extraction, the communalities range from 0.197 (GBAS4) to 0.849 (GBAS1), highlighting significant disparities in how well the extracted factors explain the variance in each item. Items such as GBAS1, GBAS5, and GBAS10 exhibit high communalities, indicating that a large portion of their variance is captured by the underlying factors, thereby affirming their strong association with the concept of green brand association. Conversely, the notably low communality for GBAS4 suggests that the factors extracted do not adequately account for the variance in this item, potentially indicating that it may not align closely with the principal dimensions of green brand association identified through this analysis.

Table 3.16 Total Variance Explained for Green Brand Association

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Var	Cum %	Total	% of Var	Cum %	Total	% of Var	Cum %
1	5.516	50.141	50.141	5.516	50.141	50.141	4.567	41.514	41.514
2	1.511	13.739	63.880	1.511	13.739	63.880	2.460	22.365	63.880
3	0.981	8.922	72.802						
4	0.699	6.352	79.154						
5	0.607	5.518	84.672						
6	0.552	5.023	89.695						
7	0.338	3.075	92.770						
8	0.306	2.784	95.554						
9	0.205	1.867	97.421						
10	0.166	1.513	98.934						
11	0.117	1.066	100.000						

Extraction Method: Principal Component Analysis.

Source: Field Data (2024)

The results detailed in Table 3.16 reveals that the first component accounts for a substantial 50.141% of the variance, with the second component contributing an additional 13.739%, cumulatively capturing 63.880% of the total variance. This significant concentration of variance within the first two components indicates their critical role in encapsulating the essence of green brand association as perceived by consumers. The steep decline in the percentage of variance explained by subsequent components, as visually supported by the Scree plot (Figure 4.3), validates the extraction of two principal components. This reduction effectively simplifies the construct, enabling a focused examination of the core aspects of green brand association, which are pivotal for understanding consumer perception towards environmentally conscious brands.

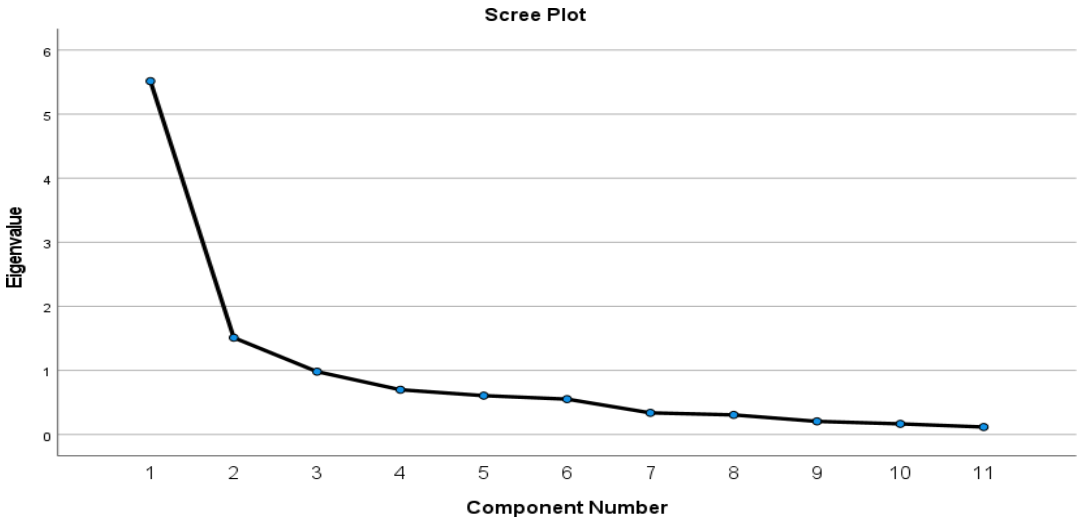

Figure 3.3 Scree plot for Green Brand Association

Table 3.17 Rotated Component Matrix for Green Brand Association

Items	Component	
	1	2
GBAS1	0.186	0.902
GBAS2	0.275	0.754
GBAS3	0.580	0.478
GBAS4	-0.071	0.438
GBAS5	0.717	0.524
GBAS6	0.517	0.498
GBAS7	0.757	0.241
GBAS8	0.871	0.116
GBAS9	0.839	-0.054
GBAS10	0.895	0.046
GBAS11	0.705	0.239

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Source: Field Data (2024)

As presented in Table 3.17, the items GBAS1, GBAS2, and GBAS10, which relate to the perception of green products as higher quality, healthier, and manufactured with minimal environmental impact, load significantly on component 2. This suggests a dimension that encompasses perceived product quality and health benefits associated with green products. Conversely, component 1 is strongly associated with items GBAS5, GBAS7, GBAS8, and GBAS9, reflecting personal values alignment, genuine

care for the environment, and the importance of recyclability and sustainable resources. This delineation indicates that while one dimension captures the intrinsic values and ethical considerations driving green product association, the other focuses on the tangible benefits and attributes of green products. These insights are crucial for marketers aiming to enhance the appeal of green brands by aligning with consumer values and highlighting the tangible benefits of their products.

Table 3.18 KMO and Bartlett's Test for Green Trust

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.812
Bartlett's Test of Sphericity	Approx. Chi-Square	3608.142
	Df	45
	Sig.	0.000

Source: Field Data (2024)

From Table 3.18, the KMO value of 0.812 indicates that the dataset has a substantial amount of common variance, which is optimal for conducting exploratory factor analysis. This is further validated by Bartlett's Test of Sphericity, which yields a chi-square statistic of 3608.142 with a significance level of 0.000, strongly rejecting the null hypothesis that the variables are orthogonal and, hence, suitable for a factor analysis. These results collectively affirm the adequacy of the dataset for factor analysis.

Table 3.19 Communalities for Green Trust

Items	**Initial**	**Extraction**
GT1	1.000	0.792
GT2	1.000	0.798
GT3	1.000	0.847
GT4	1.000	0.810
GT5	1.000	0.878
GT6	1.000	0.670
GT7	1.000	0.624
GT8	1.000	0.758
GT9	1.000	0.855
GT10	1.000	0.768

Extraction Method: Principal Component Analysis.

Source: Field Data (2024)

The results in Table 3.19 indicate a significant amount of item variance accounted for by the factors, as the communalities range from 0.624 (GT7) to 0.878 (GT5). High communalities, especially for items like GT5 and GT9, suggest that a substantial portion of the variance in these items is explained by the underlying factors of green trust, underscoring their strong relation to the construct. Conversely, the relatively lower communalities for GT6 and GT7 hint at a weaker connection to the extracted factors, highlighting the complexity within the construct of green trust and suggesting potential areas for deeper exploration to better understand the nuances of consumer trust in green brands.

Table 3.20 Total Variance Explained for Green Trust

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Var	Cum %	Total	% of Var	Cum %	Total	% of Var	Cum %
1	5.791	57.910	57.910	5.791	57.910	57.910	4.709	47.091	47.091
2	2.008	20.078	77.988	2.008	20.078	77.988	3.090	30.896	77.988
3	0.555	5.546	83.534						
4	0.437	4.366	87.900						
5	0.355	3.549	91.448						
6	0.333	3.332	94.781						
7	0.199	1.991	96.772						
8	0.144	1.442	98.214						
9	0.119	1.192	99.406						
10	0.059	0.594	100.000						

Extraction Method: Principal Component Analysis.

Source: Field Data (2024)

As detailed in Table 3.20 and Figure 3.4, the initial eigenvalues indicate two dominant components. The first component is particularly dominant, accounting for 57.910% of the total variance, indicating its substantial role in representing the construct of Green Trust. The second component adds another 20.078% to the explained variance, cumulatively accounting for nearly 78% of the total variance with just two components. This high level of cumulative variance explained by the first two components signifies a strong underlying structure within the green trust construct, suggesting that these components effectively capture the essential aspects of trust as it pertains to green products and the companies that promote them. The clear distinction

between the components' explanatory power underscores the presence of two distinct yet critical dimensions within the concept of Green Trust, highlighting the multifaceted nature of consumer trust in the context of green marketing and environmental claims. Figure 3.4, the scree plot for green trust, visually supports the analytical findings from Table 3.21 by illustrating the eigenvalues of each component and identifying the point at which the eigenvalues begin to level off, known as the “elbow”.

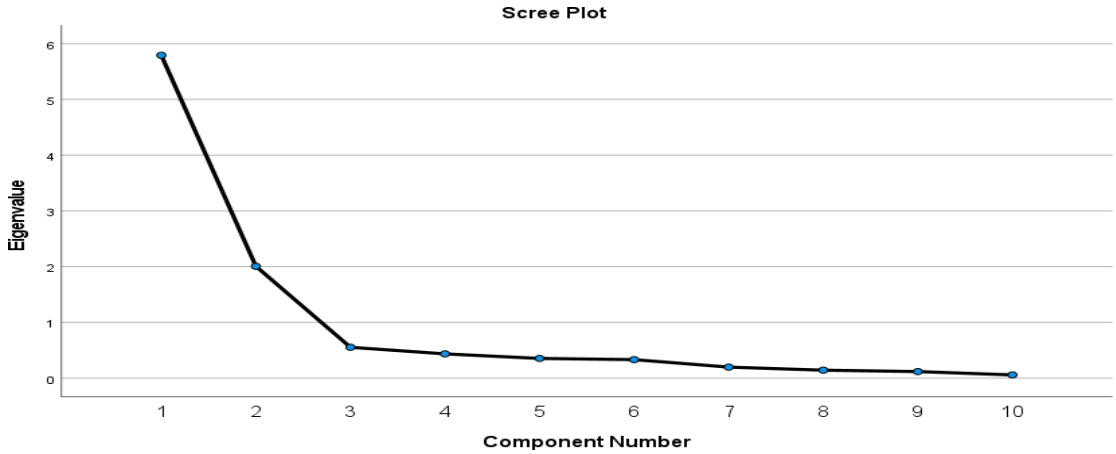

Figure 3.4 Scree plot for Green Trust

Table 3.21 Rotated Component Matrix for Green Trust

Items	Component	
	1	2
GT1	0.821	0.344
GT2	0.873	0.186
GT3	0.867	0.309
GT4	0.864	0.251
GT5	0.936	0.035
GT6	0.454	0.681
GT7	0.785	0.088
GT8	0.072	0.868
GT9	0.118	0.917
GT10	0.236	0.844

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Source: Field Data (2024)

The rotated component matrix results in Table 3.21 shows clear factor loadings, with items GT1 to GT5 loading strongly on the first component, reflecting trust in the reliability and social responsibility of FMCG companies promoting green products.

Items GT8 to GT10, which load significantly on the second component, seem to reflect personal environmental values and perceptions of green product effectiveness and quality. This bifurcation suggests that green trust encompasses both trust in companies' environmental claims and actions, as well as individual environmental beliefs and values, providing a nuanced understanding of the factors that contribute to consumer trust in green products.

Table 3.22 KMO and Bartlett's Test for Green Purchase Intention

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.894
Bartlett's Test of Sphericity	Approx. Chi-Square	3312.521
	Df	66
	Sig.	0.000

Source: Field Data (2024)

As revealed in Table 3.22, the KMO value of 0.894 for green purchase intention affirm the data's suitability for EFA. Bartlett's Test further corroborates this suitability with an approximate Chi-Square of 3312.521 and a significance level of 0.000, strongly rejecting the null hypothesis that the variables are orthogonal. These results indicate that the variables related to green purchase intention are sufficiently correlated for factor analysis, promising a robust exploration of underlying factors that influence consumers' intentions to purchase green products.

Table 3.23 Communalities for Green Purchase Intention

Items	**Initial**	**Extraction**
PEPI1	1.000	0.588
PEPI2	1.000	0.713
PEPI3	1.000	0.663
PEPI4	1.000	0.580
PEPI5	1.000	0.632
PEPI6	1.000	0.688
PEPI7	1.000	0.580
PEPI8	1.000	0.638
PEPI9	1.000	0.742
PEPI10	1.000	0.564
PEPI11	1.000	0.842
PEPI12	1.000	0.874
Extraction Method: Principal Component Analysis.		

Source: Field Data (2024)

Table 3.23 details the communalities for the green purchase intention construct, highlighting the proportion of each item's variance that can be explained by the extracted factors. After extraction, communalities range from 0.564 (PEPI10) to 0.874 (PEPI12), indicating significant variation in how well the extracted factors account for the variance in individual items. High communalities, particularly for PEPI11 and PEPI12, suggest that a large portion of the variance in these items is captured by the underlying factors, indicating their strong association with the construct of green purchase intention. Conversely, the lower communalities for some items, such as PEPI10 and PEPI4, suggest that the factors extracted do not fully account for their variance, pointing to the complex and multifaceted nature of the construct. This variability underscores the importance of considering a wide range of factors when analysing consumer intentions to purchase green products, as different aspects may be more significant to certain individuals than others.

Table 3.24 Total Variance Explained for Green Purchase Intention

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Var	Cum %	Total	% of Var	Cum%	Total	% of Var	Cum %
1	6.917	57.642	57.642	6.917	57.642	57.642	4.777	39.807	39.807
2	1.187	9.891	67.533	1.187	9.891	67.533	3.327	27.726	67.533
3	0.775	6.457	73.989						
4	0.646	5.384	79.373						
5	0.548	4.567	83.941						
6	0.470	3.918	87.859						
7	0.341	2.841	90.700						
8	0.307	2.558	93.259						
9	0.286	2.382	95.641						
10	0.237	1.977	97.618						
11	0.174	1.449	99.067						
12	0.112	0.933	100.000						

Extraction Method: Principal Component Analysis.

Source: Field Data (2024)

Table 3.24 delineates the total variance explained for the construct of green purchase intention, showcasing the effectiveness of the principal component analysis in distilling significant components from the dataset. The analysis reveals that the first component singularly accounts for 57.642% of the total variance, underscoring its pivotal role in encapsulating the essence of green purchase intention. The addition of the second component brings the cumulative explained variance to 67.533%, indicating

that together, these components significantly capture the core dimensions of consumers' intentions towards purchasing green products. This substantial proportion of variance explained by just two components highlights their centrality in understanding the construct, suggesting that they embody the principal factors driving or influencing green purchase intentions among consumers. The data reduction achieved through this analysis simplifies the complexity of the construct, enabling a focused investigation into the key elements that sway consumers' green purchasing decisions as visually supported by the scree plot (Figure 3.5).

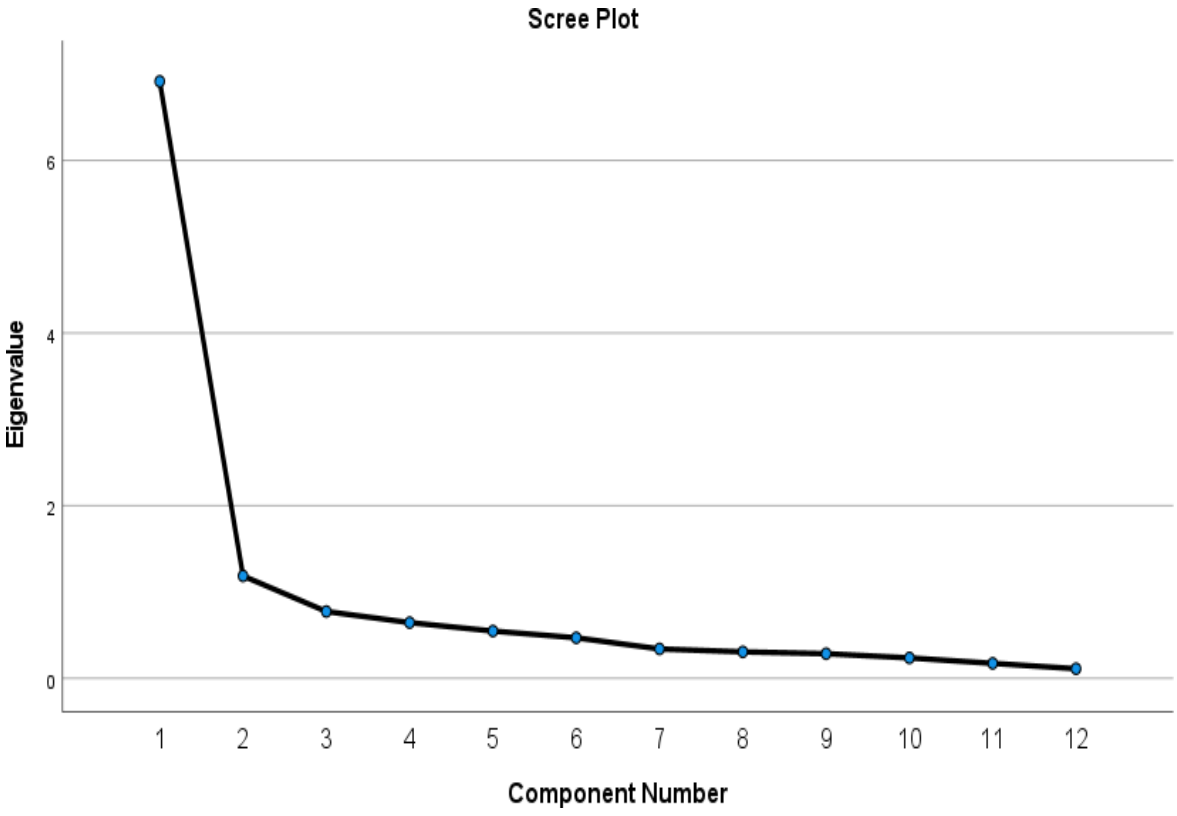

Figure 3.5 Scree plot for Green Purchase Intention

Table 3.25 Rotated Component Matrix for Green Purchase Intention

Items	Component	
	1	2
PEPI1	0.727	0.245
PEPI2	0.785	0.312
PEPI3	0.765	0.279
PEPI4	0.719	0.249
PEPI5	0.775	0.177
PEPI6	0.738	0.379
PEPI7	0.624	0.437
PEPI8	0.710	0.366
PEPI9	0.404	0.761
PEPI10	0.427	0.618
PEPI11	0.352	0.848
PEPI12	0.149	0.923
Extraction Method: Principal Component Analysis.		
Rotation Method: Varimax with Kaiser Normalization.		

Source: Field Data (2024)

The rotated component matrix for green purchase intention, as presented in Table 3.25, further clarifies the structure of the construct through the delineation of item loadings across the two identified components. This bifurcation reveals that the first component is strongly associated with direct intentions towards purchasing and paying a premium for environmentally sustainable products (e.g., PEPI1, PEPI2, PEPI3, PEPI5), reflecting a proactive stance towards environmental sustainability in purchasing decisions. In contrast, the second component predominantly captures items related to consumers' confidence and perceived control over making environmentally friendly choices (e.g., PEPI9, PEPI10, PEPI11, PEPI12), indicating a more intrinsic, empowerment-based dimension of green purchase intention. This distinction between components suggests a nuanced understanding of green purchase intentions, encompassing both the practical aspects of making sustainable purchases and the psychological empowerment that underpins such decisions, offering valuable insights for formulating strategies to enhance consumer engagement with green products.

Table 3.26 KMO and Bartlett's Test for Green Purchases

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.915
Bartlett's Test of Sphericity	Approx. Chi-Square	4497.498
	Df	66
	Sig.	0.000

Source: Field Data (2024)

The KMO measure and Bartlett's Test of Sphericity for green purchases, highlighted in Table 3.26, confirm the appropriateness of the dataset for EFA, with a high KMO value of 0.915 indicating a strong degree of common variance among items, and Bartlett's Test showing a significant chi-square value (Chi-Square of 4497.498; p =0.000), supporting the factorability of the data. This setup is optimal for identifying underlying factors that influence green purchase behaviours among consumers.

Table 3.27 Communalities for Green Purchases

Items	**Initial**	**Extraction**
GP1	1.000	0.698
GP2	1.000	0.643
GP3	1.000	0.521
GP4	1.000	0.710
GP5	1.000	0.669
GP6	1.000	0.732
GP7	1.000	0.852
GP8	1.000	0.724
GP9	1.000	0.701
GP10	1.000	0.617
GP11	1.000	0.653
GP12	1.000	0.557

Extraction Method: Principal Component Analysis.

Source: Field Data (2024)

Communalities after extraction, shown in Table 3.27, range from 0.521 to 0.852, indicating that the factors extracted explain a significant portion of the variance for most items, with GP7 showing particularly high communality. This suggests that certain aspects of green purchases are strongly represented by the underlying factors identified, highlighting key dimensions of consumer behaviour toward green products.

Table 3.28 Total Variance Explained for Green Purchases

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Var	Cum %	Total	% of Var	Cum%
1	8.077	67.308	67.308	8.077	67.308	67.308
2	0.815	6.788	74.096			
3	0.770	6.419	80.515			
4	0.544	4.534	85.049			
5	0.437	3.640	88.689			
6	0.328	2.732	91.421			
7	0.247	2.062	93.483			
8	0.222	1.851	95.334			
9	0.214	1.780	97.114			
10	0.160	1.329	98.443			
11	0.111	0.926	99.369			
12	0.076	0.631	100.000			

Extraction Method: Principal Component Analysis.

Source: Field Data (2024)

The total variance explained for green purchases, outlined in Table 3.28, along with the scree plot (Figure 3.6), effectively demonstrates the predominance of a single component in explaining a significant portion of the variance within the dataset. This component alone accounts for 67.308% of the variance, highlighting its substantial role in capturing the essence of green purchasing behaviours. The steep decline observed in the scree plot after the first component further supports the decision to focus on this dominant factor, indicating a significant drop in the eigenvalue magnitude and thereby suggesting the limited incremental value added by subsequent components. This analysis underscores the strong unidimensional nature of green purchasing behaviours captured by the dataset, emphasising the predominant influence of a singular construct that encapsulates key aspects of consumers' eco-friendly purchasing decisions.

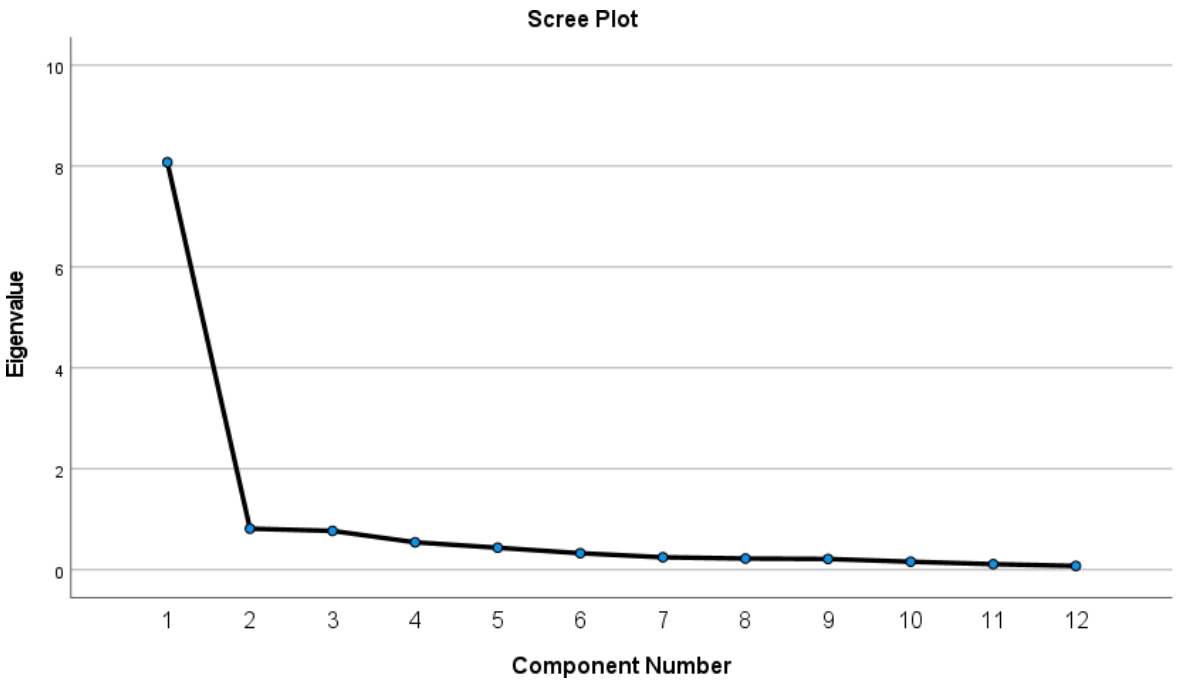

Figure 3.6 Scree plot for Green Purchases

Table 3.29 Component Matrix for Green Purchases

Items	Component
	1
GP1	0.835
GP2	0.802
GP3	0.722
GP4	0.843
GP5	0.818
GP6	0.855
GP7	0.923
GP8	0.851
GP9	0.837
GP10	0.786
GP11	0.808
GP12	0.746
Extraction Method: Principal Component Analysis.	

Source: Field Data (2024)

The component matrix's result for green purchases, presented in Table 3.29, further solidifies the analysis with all items showing strong loadings on the first component.

This indicates a cohesive factor that resonates across various aspects of green purchasing, from the quality and satisfaction with eco-friendly products to the motivation driven by environmental concern and personal health. Items such as GP7 ("I prioritise purchasing eco-friendly products over conventional alternatives") and GP6 ("I make a conscious effort to regularly buy eco-friendly products"), which exhibit among the highest loadings, reflect a strong commitment and proactive approach towards eco-friendly purchasing. The uniformity in the component matrix underscores a clear pattern in consumer behaviour, revealing a deep-seated inclination towards green products that is consistent across different facets of purchasing decisions, thereby offering valuable insights into the primary drivers of green purchases among consumers.

3.7 Data Analysis

3.7.1 Steps in analysing structural equation modelling (SEM)

Step 1: Data Collection, Screening and Measurement Scales for SEM Statistical Tests

The first stage in conducting structural equation modelling (SEM) analysis was the collection of data, which served as the fundamental basis for the investigation. The collection of this data may be achieved via several methods such as surveys, experiments, or other data sources. After the collection of data, a comprehensive screening process is conducted. This process entails conducting assessments to identify any instances of missing numbers, outliers, and other data integrity concerns that might potentially impact the overall quality of the study. Data cleaning was an essential component of this stage, as it plays a crucial role in verifying the accuracy and preparing the information for further analysis.

To effectively utilize SEM, it is essential to understand the different measurement scales used for the variables within the model. There are four primary measurement scales: nominal, ordinal, interval, and ratio. Each scale has specific characteristics that influence how the data is analyzed and interpreted in SEM.

The nominal scale is the most basic measurement level, where variables are categorized without any quantitative value. Categories are mutually exclusive and exhaustive, meaning each observation fits into one and only one category, and all possible categories are included. In SEM, nominal variables are often used as grouping variables or exogenous variables to categorize data into distinct groups. For example, gender (male, female), types of products (eco-friendly, non-eco-friendly), or regions (urban, rural) can be nominal variables.

The ordinal scale represents variables with a clear, ordered relationship between categories, but the intervals between categories are not necessarily equal. This scale is used to rank order items based on some criterion. In SEM, ordinal variables can be used to measure attitudes, preferences, or other ranked data. For example, a Likert scale rating customer satisfaction (very unsatisfied to very satisfied) is ordinal because it indicates a rank order but does not quantify the exact difference between ranks.

The interval scale includes ordered categories with equal intervals between them, but it lacks a true zero point. This scale allows for the measurement of the magnitude of difference between values. In SEM, interval scales are used to measure continuous data where the exact difference between values is meaningful. For instance, temperature measured in Celsius or Fahrenheit and IQ scores are examples of interval scales. Interval data is crucial in SEM for creating latent variables and assessing relationships between variables with precise measurement intervals.

The ratio scale is the highest level of measurement, featuring ordered categories with equal intervals and a meaningful zero point, allowing for the calculation of ratios. This scale is used to measure continuous data where both differences and ratios are meaningful. Examples of ratio scales include weight, height, income, and age. In SEM, ratio scales provide the most detailed level of measurement and are used for variables that require precise quantification.

In this study, the measurement scales employed include ordinal and interval scales. The use of Likert scales to measure consumer attitudes, perceptions, and purchase intentions represents ordinal data. This scale captures the rank order of

responses but does not quantify the exact difference between the response categories. Meanwhile, interval scales are utilized to measure continuous variables where the magnitude of difference between values is meaningful, providing a detailed understanding of consumer behavior towards environmentally sustainable FMCGs.

Step 2: Exploratory Factor Analysis (EFA)

Following the completion of data gathering and screening, the subsequent stage involves the use of Exploratory Factor Analysis (EFA). Exploratory Factor Analysis (EFA) was a statistical technique used to elucidate the latent structure and interconnections inherent in the dataset. EFA encompassed multiple crucial processes, which included data screening and processing, extraction of eigenvalues, determination of the optimal number of solution factors, rotation of the solution factors to enhance clarity, and interpretation of the obtained findings.This process aided in the reduction of data dimensionality and the identification of latent factors that may have had an impact on the variables of interest.

Step 3: Confirmatory Factor Analysis (CFA)

After performing the Exploratory Factor Analysis (EFA), the researcher proceeded to perform Confirmatory Factor Analysis (CFA) in order to evaluate the measurement model of the study. The CFA method enables the establishment of associations between observable variables and latent constructs, hence facilitating the validation of measuring instruments.

Academics evaluate standardised coefficients, crucial ratios, and different model fit indicators in order to evaluate the degree of alignment between the measurement model and the gathered data.

Step 4: Structural Equation Modeling (SEM)

The structural equation modelling (SEM) framework served as the central component of the study, including many sequential phases. The research process starts with the first step of model selection, when the researcher carefully determines the most suitable structural model that effectively captured and depicted the intricate interactions existing among latent variables. The computation of parameter estimates

allows for the examination of the magnitude and direction of these interactions, therefore offering valuable insights. The evaluation of model fit to data is conducted with rigour, ensuring that the selected model appropriately reflects the observed data. The interpretation of model parameters plays a crucial role in comprehending the causal connections between latent variables, hence providing insights into research ideas.

Step 5: Two-Stage Statistical Approach

The research model was assessed using a two-stage statistical technique (Hair et al., 2019). In the first phase, an analysis was conducted on the CFA assessment model in order to ascertain the validity of the measurement model. In the subsequent phase, SEM was used to ascertain causal connections among latent variables, so facilitating a more profound comprehension of the study themes.

Step 6: Reliability and Validity Assessment

Reliability was measured by the use of measures such as Cronbach's alpha (CA) and composite reliability (CR). These measurements ascertain the reliability of the variables in the research. Convergent validity was assessed by calculating the Average Variance Extracted (AVE) and examining the factor loading values after standardisation, as recommended by Hair et al. (2019). Discriminant validity was assessed by established methodologies such as Fornell and Larcker (1981) and the Heterotrait-Monotrait ratio (HTMT).

Step 7: Model Fit Evaluation

Various fit indicators used to assess the appropriateness of the measurement and structural models. The indices used in this study include chi-square divided by degrees of freedom ($\chi 2/df$), goodness-of-fit index (GFI), standard root-mean-square residual (SRMR), root-mean-square error of approximation (RMSEA), comparative fit index (CFI), normed fit index (NFI), incremental fit index (IFI), and Tucker-Lewis index (TLI). The fit indices jointly assessed the degree to which the model corresponds to the observed data, offering valuable insights into the overall quality of fit.

3.7.2 Empirical model

The SEM econometric model showing the relationship between the variables under consideration was discussed as follows:

Relationship between Green Influencers and Green Purchase Intentions

Latent Variable: Green Influencers (X)– > Green Purchase Intentions (Y)

Model 1: $Y = \lambda X + \varepsilon$ (3.3)

Effect of Green Influencers on Green Purchases:

Latent Variable: Green Influencers (X)– > Green Purchases (Y)

Model 1: $Y = \lambda X + \varepsilon$ (3.4)

Mediating Role of Green Brand Association in the Relationship between Green Influencers and the Green Brand Attitude

Latent Variables: Green Influencers $(X1)$, Green Brand Associaition $(M1)$, Green Brand Attitude (Y)

Model 5: $M1 = \lambda 1X1 + \varepsilon_1$ (3.5)

$Y = \lambda 2X1 + \lambda 3M1 + \varepsilon_3$ (3.6)

Mediating Effect of Green Brand Attitude on the Relationship between Green Influencers and Green Purchase Intentions

Latent Variables: Green Influencers $(X1)$, Green Brand Attitude $(M1)$ Green Purchase Intentions (Y)

Model 5: $M1 = \lambda 1X1 + \varepsilon_1$ (3.7)

$Y = \lambda 2X1 + \lambda 3M1 + \varepsilon_3$ (3.8)

Moderating Effect of Green Trust tn The Relationships between Green Influencers, Green Brand Attitude, and Green Brand Association

$Y = \lambda 1X1 + \lambda 2GBA*GT + \lambda 3GBAss*GT + \varepsilon_3$ (3.9)

Green Purchase Intentions on the Green Purchases

Latent Variable: Green Purchase Intentions (X) $->$ Green Purchases (Y)

Model 1: $Y = \lambda X + \varepsilon$ (3.10)

Where**:** λ represents the path coefficient, X and Y represent the latent variables, and ε represents the error term, GBA: Green brand attitude, GBAss: Green brand aasociaition, GT: Green trust.

Details of other diagnostics test to be conducted are:

Chi-Square: A statistical test that assesses the degree of discrepancy between the observed data and the model. A nonsignificant chi-square indicates that the model fits the data well. However, the chi-square test is sensitive to sample size, which means that even small deviations from perfect fit can lead to a significant chi-square value **Root Mean Square Error of Approximation (RMSEA**): A measure of how well the model reproduces the observed covariance matrix. Values of RMSEA below 0.05 indicate a close fit, while values between 0.05 and 0.08 indicate a reasonable fit **Comparative Fit Index (CFI):** A measure of how well the model reproduces the observed covariance matrix, relative to the fit of a baseline model. Values of CFI above 0.90 indicate a good fit, while values above 0.95 indicate a very good fit. **Tucker-Lewis Index (TLI**): A measure of how well the model reproduces the observed covariance matrix, relative to the fit of a baseline model. Values of TLI above 0.90 indicate a good fit, while values above 0.95 indicate a very good fit.

3.8 Ethical Issues

Ethical considerations were crucial when conducting research to ensured that participants were treated with respect and their rights were protected. In this study, several ethical considerations were taken into account to ensured that the research was conducted in an ethical manner.

Firstly, the study adhered to the principles of informed consent. Informed consent was another essential ethical consideration in this study. The participants in

this study had a clear understanding of the purpose of the research and what their involvement entailed. The researcher provided adequate information to the participants to help them make an informed decision about their participation in the study. The participants were informed that their participation was voluntary, and they had the right to withdraw from the study at any point without any penalty. Confidentiality was also crucial in this study. The researcher ensured that the participants' information was kept confidential and that no unauthorized person had access to the data. The data collected was used for research purposes only, and the participants' identity was not revealed in any publication or report.

Secondly, the study ensured that no harm was caused to the participants. The questions asked were not intrusive or offensive and did not cause any harm to the participants. The study also did not discriminate against any participants based on race, gender, or other personal characteristics. Thirdly, the study ensured that ethical approval was obtained from relevant bodies before the study was conducted. The ethical approval ensured that the study was conducted in accordance with the ethical principles and guidelines that govern research in the field. Lastly, the study ensured that the findings were reported accurately and honestly, and that no misrepresentations were made. The data collected was analyzed in an objective and unbiased manner to ensure that the results are valid and reliable.