
Studying the Moderating Effect of Consumers' Demographics on the Relationship between Green Marketing Strategies and Perception of Climate Change: A Field Study on Fast Food Restaurants in Egypt

Rehab Mohamed El Bordiny¹

Marketing department

October University for Modern Sciences and Arts, Faculty of Management Sciences,
Egypt

Email: rmohammed@msa.edu.eg

Abstract: This research aims to study the effect of green marketing strategies (environmentally friendly marketing activities from production to product delivery) of fast-food restaurants on Egyptian consumers' perception of climate change, given the moderating (modifying) effect of their demographic characteristics in a step toward increasing their environmental concern and participation in limiting the implications of climate change. The research is conducted to fill the research gap of rarely applying that relationship to Egypt and in different sectors rather than fast food restaurants. A field study was conducted on consumers of fast food using a non-probability snowballing sample, as the researcher could not access the mean and variance of all consumers geographically dispersed in Egypt. The data was collected using Google Forms and shared with public pages and the researcher's friends on Facebook, WhatsApp, and Gmail, who in turn nominated and shared it with others. The collected data were then analyzed using descriptive statistics of the research variables, confirmatory factor analysis, normality tests, correlation tests, and two multiple regression models, one to test the first hypothesis and the other to test the second hypothesis. The analysis proved a significant and positive effect of each green product, green place, and green promotion on consumers' perception of climate change, as the p-value was less than 0.05. While green prices and green packaging did not affect consumers' perception of climate change, Moreover, a significant difference in the relationship between green marketing strategies and consumers' perception of climate change was found with respect to consumers' demographics as moderating variables.

Keywords: *green marketing strategies, consumers' perception of climate change, consumers' demographics*

JEL Codes: M3

¹**ORCID iD** 0009-0003-9977-1613

Introduction

Climate change has become an important issue, especially after the climate disasters that the world witnessed recently, like forest fires, floods, and droughts. That is why governments are trying to take steps toward decreasing carbon emissions. Of these steps, launching the different sessions of the Conference of the Parties (COP) and providing facilities to the business sector encourages them to invest in projects that protect the environment. In light of that, past studies have started to discuss how firms can participate in protecting the environment through their marketing activities through the concept of green marketing strategies.

Green marketing is a set of practices that ensures all activities engaged in marketing, from production to product delivery, are carried out in an environmentally friendly way. Green marketing strategies include the product that consists of natural and environmentally friendly components, the prime price paid for that product, the place or distribution channel from which consumers get the product, the promotional activities that communicate the product with consumers, and the packages that highlight the information provided by the product about the environmental effects accompanied by its manufacture or consumption (Dewi, 2021; Kaur et al., 2022; Mogaji et al., 2022).

For green marketing strategies to be effective, they should affect consumers' perception of climate change, which is their concern about its dangerous implications like forest fires, floods, droughts, and hurricanes (Abraham et al., 2022; Moutouama et al., 2022; Nam et al., 2022). To the best of the researcher's knowledge, past studies mentioned the effect of green marketing strategies of firms in shaping consumers' perception of climate change, but their results varied about the significance of this effect due to the change in area and sector in which their studies applied, from one side, and the moderating role of consumers' demographic characteristics (age, gender, education, occupation, and income) that modifies that effect, from the other side. Moreover, as mentioned by Anggraeni et al. (2022) and Khashan et al. (2023), the need for fast food has become a part of the lifestyle in urban communities, and it is one of the most widespread industries around Egypt. These restaurants can play an effective role in shaping consumers' perception of climate change, taking a step toward increasing their concern about protecting the environment and avoiding climate disasters.

From that point, this research is going to contribute to the literature by studying the relationship between green marketing strategies of fast food restaurants in Egypt and consumers' perception of climate change, given the modifying role of their demographic characteristics, that is, to the best of the researcher's knowledge, intensively applied to different sectors in various

countries, especially developed ones. To do so, this research covers what was mentioned in previous literature about the research variables and hypotheses development, the research problem, research questions, research hypotheses, discussion of results, research recommendations, and then the research limitations.

Literature Review and Hypotheses Development

This section covers some of the previous researchers that studied the concept of green marketing and its strategies, consumers perception of climate change, the relationship between green marketing strategies and consumers' perception, and an overview of fast food restaurants in Egypt:

Green Marketing Concept

During the past decade, green marketing has attracted extensive attention among marketing researchers who have introduced different definitions of it (Vilkaite-Vaitone et al., 2022). From these definitions, Mogaji et al. (2022) defined green marketing as a set of practices that ensures all activities engaged in marketing, from production to product delivery, are carried out in a greener way. Consequently, green marketing considers the social and environmental impact of marketing activities. Therefore, sustaining the environmental success of green marketing requires effective communication of the green offerings embedded in a product or service offered by an organization. Consistently communicating the green offerings of an organization's products and services will influence consumers' perception of climate change and encourage them to protect the environment, which in turn will save their lives.

Also, Mogaji et al. (2022) added that green marketing meets the current needs of businesses and consumers while ensuring the preservation of resources for future generations. Consumers are key stakeholders in the sustainability process; without them, the environmental goals of green marketing will not be achieved. Karimi & Nassery (2022) defined green marketing as the creation of goods that are harmless to the environment and valuable to humanity that can be used in the long run as businesses' duty. Dewi (2021) added that green marketing is a marketing practice that raises environmental issues, as the process of production activities carried out by the company often impacts environmental degradation. To decrease this degradation, green marketing covers almost all company activities, including modifications to products, production processes, product packaging, and advertisements. Also, companies are expected to shape consumers' perception of good habits that care about the environment, such as saving paper, using recyclable paper, and saving energy for both present and future lives. Moreover, Machová et al. (2022) and Zhang & Berhe (2022) defined

green marketing as environmental marketing or eco-marketing and added that although it may be seen as a new phenomenon, its emergence started in the 1960s. It can be defined as a sales process that is based on the environmental friendliness of the product or service. In other words, sustainability is a key to green marketing, as it takes into account the long-term interests of society to connect consumers, companies, and the environment.

Consumers' Perception of Climate Change

Consumer perception is his or her ability to remember and interpret the meaning of a marketing object. It is shaped by consumer exposure to that object through different communication channels (advertisements, billboards, newspapers, catalogues, television, and social media websites), consumer attention to that object, and his or her interpretation of the meaning of that object. From this definition, consumer perception of climate change is derived, which is consumers' concern about climate and environmental crises through their exposure and attention to phenomena like flooding, extreme storms, forest fires, rises in sea level, and rivers drying up, and their ability to interpret their effects like food security fluctuations and poverty (Davidson & Kecinski, 2021; Ellis et al., 2021; Piguet, 2021; Elasri et al., 2022; Moutouama et al., 2022). Bestari & Butarbutar (2021), Abraham et al. (2022), and Mogaji et al. (2022) considered creating consumers' awareness of climate change a first step toward shaping their perception of this phenomenon, as this awareness will help in avoiding the impact of environmental problems. Elasri et al. (2022), Moutouama et al. (2022), and Nam et al. (2022) clarified these environmental problems as changing global average temperature rates, rising sea levels, heat waves, hurricanes, droughts, and floods, which result in diminishing agricultural productivity, soil quality, farmers' economies, and food security.

When comparing consumers' perception of climate change in developed countries with that in developing countries, Han et al. (2022) found that consumers' perception in developing countries is relatively low and adoption of environmental behaviors among citizens is limited, as well, as they proved the significance of this relationship. So, they recommended that more studies be conducted in developing countries to increase consumers' perceptions of climate change and intensify their concern about protecting the environment.

The Relationship between Green Marketing Strategies and Consumers' Perception of Climate Change

García-Salirrosas & Rondon-Eusebio (2022) explained green marketing through four approaches; the first approach describes the actions from the point of view of product development, specifying that products must be eco-friendly from the choice of raw materials, design, marketing, and consumption. The second approach focuses on market development and involves carrying out activities with a minimum negative impact on the natural environment. While the third approach is oriented toward satisfying the needs of two types of customers, including those who have environmentally responsible purchasing behavior and those who need to develop their perception of climate change problems, The fourth approach focuses on green communication, which involves advertising strategies to improve consumer perception of a green brand and influence their purchasing behavior toward green products.

Sedky & Abdelraheem (2021) and Zhang & Berhe (2022) added that green marketing considers the fulfillment of customers and public interests by offering eco-friendly marketing activities that aim to reduce waste, save energy, promote environmental safety and sustainability, and educate consumers about them. Mukonza & Swarts (2020) expressed eco-friendly marketing activities through green marketing strategies, which are green products, green prices, green places, green promotion, green people, and green processes that help meet the needs of current consumers without affecting the ability of future generations to meet their own needs. Karimi & Nassery (2022), Mahadevappa & Sinha (2022), and Mogaji et al. (2022) added green packaging and product labeling that positively affect consumers perception and convert them into green consumers.

In addition to that, Ahmed et al. (2021) categorized green marketing strategies into seven: lean green strategy, defensive green strategy, shaded green strategy, extreme green strategy, green innovation, firm greening, and green alliances. They differ according to their emphasis on marketing mix elements; the lean green strategy focuses on the product, the defensive green strategy emphasizes both product and promotion, and the shaded green strategy focuses on product, price, and promotion. The extreme green strategy concerns the product, price, place, and promotion. However, green innovation is related to innovative products and services that meet customers' requirements and protect the environment. Furthermore, firm greening is the management's commitment to environmental responsibility, green procedures, and supply chain management. Green alliances are partnerships formed with other firms to create an environment-friendly system, such as joint ventures and consortia. When

studying the relationship between green marketing strategies and consumers' perception of climate change, past researchers, like Mukonza & Swarts (2020); Sedky & Abdelraheem (2021); García-Salirrosas & Rondon-Eusebio (2022); Karimi & Nassery (2022); Mahadevappa & Sinha (2022); Mogaji et al. (2022); and Zhang & Berhe (2022), agreed on the significance and positivity of this relationship. So, the first hypothesis that could be derived from past findings is:

***H₁**: There is a significant and positive effect of green marketing strategies on consumers' perception of climate change.*

Moreover, past studies agreed on five elements of green marketing strategies: green products, green prices, green places, green promotion, and green packaging. Mukonza & Swarts (2020), Dewi (2021), Kaur et al. (2022), and Mogaji et al. (2022) agreed that green products are environmentally friendly as they do not cause any harm to the health and safety of humans and nature, do not cause air pollution, are made from safe and recyclable materials, should not be easily damaged, and allow for the conservation of natural resources for future generations. Also, a positive relationship is found between green products and consumers' perception of climate change, as firms use their products to encourage consumers to become environmentally responsible by taking steps to reduce their carbon footprint. So, the following is the hypothesis that could be derived from H₁:

***H_{1.a}**: Green product significantly and positively affects consumers' perception of climate change*

The green price is usually higher than that of non-green products because it reflects the added value of green products, which represents maintaining good quality, the usage of substitutes for chemicals, and the enhanced cost of production due to increased environmental restrictions (Mukonza & Swarts, 2020; Dewi, 2021; Sedky & Abdelraheem, 2021; Mogaji et al., 2022). Also, Sedky & Abdelraheem (2021) conducted several studies on India, Vietnam, Portugal, Taiwan, and the United States of America (USA). They found that green prices affect consumers' perception of green products in India and Vietnam, as they become willing to pay a premium price to buy them. While in Portugal, Taiwan, and the USA, consumers show their rejection of the high price of green products and suggest companies use price discounts to encourage them to buy green products. The researchers suggested that firms can design marketing activities that highlight the benefits of green products to support the increase in their prices. In light of these findings,

H_{1.b}: Green price significantly and positively affects consumers' perception of climate change.

Regarding green place or green distribution, Mukonza & Swarts (2020) and Kaur et al. (2022) mentioned that it refers to the strategies adopted by marketers to make green products available at the right time, in the correct quantity, at the right place, and cause minimal environmental damage. Also, green places include savings in costs and time and enhanced service to consumers who prefer to find green products available in all places, which in turn affects their perception.

H_{1.c}: Green place significantly and positively affects consumers' perception of climate change

Green promotion is an effective awareness tool for communicating, informing, and reminding stakeholders about firms' commitment and achievements in environmental protection efforts (Mukonza & Swarts, 2020; Mogaji et al., 2022). These efforts include describing the relationship between products and protecting the environment, encouraging green lifestyles, and sustaining environmentally responsible corporate images (Mogaji et al., 2022).

Dewi (2021), Sedky & Abdelraheem (2021), Kaur et al. (2022), and Sadom & Mohammad (2022) added that green promotion plays an important role in increasing consumers' knowledge, concern, and perception, which motivates them to become green consumers by accepting only environmentally friendly products. Green promotion is necessary to communicate the positive effects of green products through advertising, public relations, direct marketing, and sales promotions that highlight terms such as phosphate-free, recyclable, ozone-friendly, and environmentally friendly and attach to firms' activities (Dewi, 2021; Anggraeni et al., 2022; Mogaji et al., 2022; Rahman & Nguyen-Viet, 2022).

In the light of that argument, promotion of green products can influence consumers' perception of climate change, because if firms succeed in informing, persuading, and reminding consumers about green products' social, environmental, and economic benefits through different promotional activities, this may garner consumers' attention and so their ability to interpret climate change phenomena (García-Salirrosas & Rondon-Eusebio, 2022; Kaur et al., 2022; Machová et al., 2022; Mogaji et al., 2022).

H_{1.a}: Green promotion significantly and positively affects consumers' perception of climate change

Moreover, green packaging is necessary to highlight the information provided by a product about the environmental effects associated with its manufacture or consumption. It also helps consumers identify green products

through symbols, logos, color codes, or others and encourages them to choose those products. This, in turn, can affect consumers' perception of the importance of green products in protecting the environment. (Dewi, 2021; Park et al., 2021; Sedky & Abdelraheem, 2021; Anggraeni et al., 2022; Mahadevappa & Sinha, 2022; Mogaji et al., 2022; Sodom & Mohammad, 2022).

H_{1.e}: Green packaging significantly and positively affects consumers' perception of climate change

Sedky & Abdelraheem (2021) mentioned that consumers' perception of climate change are affected by their demographic characteristics, such as age, gender, income, and education, and they found that Malaysian consumers with high levels of income and older American consumers are ready to pay high prices for green products. Also, Kaur et al. (2022), Nam et al. (2022), and Ruiu et al. (2022) added that women and educated people perceived that climate change was a risk and tried to change their lifestyles to protect the environment. Moreover, Kaur et al. (2022) concluded that occupation and income level have a significant effect on consumers' perception of climate change. So, the second hypothesis is:

H₂: Consumers' demographics (age, gender, education, occupation, income) significantly and positively moderate the relationship between green marketing strategies and consumers' perception of climate change.

Green Marketing and Consumer Perception in the Egyptian Context

Kordy (2023) and Shaheen (2023) indicated that temperatures in Egypt have reportedly increased over the past decades (0.53°C per decade over the last 30 years), with such temperatures expected to increase by mid-century between 1.5°C and 3°C. Heat waves are also expected to increase in duration, frequency, and severity, with an average of 40 additional days that are considered to be extremely hot on an annual basis, projected by mid-century. Such high temperatures will lead to a number of adverse impacts, including an increase in the country's high evaporation rate, accelerated crop transpiration, a functional increase in soil drought, and increased water requirements for both agricultural and human consumption. Evidence also reflects that temperature increases between 26°C and 31°C can result in a 30% drop in the country's labor productivity. Additionally, climate change impacts lead to a high level of uncertainty around the timing as well as the volume of Nile River water available in the country. As indicated by the World Bank, the variability of the region's rainfall is projected to increase by 50% by 2100, impacting the flow of the Nile to Egypt.

Therefore, climate change is expected to deepen current social and economic challenges in the country, with the population living on less than US\$4 per day expected to increase by 0.8% by 2030 as a result of the adverse impacts of climate change on agriculture, health, temperature, and natural disasters. Such indications created the importance of speeding up the green transition within the Egyptian context, which requires first shaping Egyptians' perception of climate change implications and then direct their behavior toward a sustainable one. This can be done through green marketing strategies since they are closely related to sustainable behavior and can encourage Egyptian consumers to recognize the challenges accompanied by climate change (Machová et al., 2022).

An Overview of Fast Food Restaurants in Egypt

Fast food restaurants are one of the most widespread industries in Egypt and have become a main characteristic of modern urban and semi-urban life styles. The demand for these restaurants is driven by working women, teenagers, and consumers who seek quick meals throughout the day. In addition to new Egyptian internet platforms, such as Talabat, that connect customers to restaurants because of their popularity, affordability, convenience, and relevance, fast food restaurants have experienced expansion since 1970, and sources predict that the market will continue to grow annually at 15%. Among the most popular chains are Auntie Annie's, Burger King, Pizza Hut, Domino's Pizza, Cook Door, Papa John's, KFC, Hardees, McDonalds, Dunkin Doughnuts, Starbucks, and Subway (Mahmoud et al., 2021; Khashan et al., 2023; Sayed, 2023).

Also, Sayed (2023) mentioned that there are about 600 franchises in Egypt, including food franchisees and non-food franchisees with hundreds of individual outlets. Franchising has been widely developed over a short period of time and is considered one of the most successful business models available. The industry consists of 60% international franchises and 40% local franchises, and 30% of the international franchises are American chains. Despite the high level of competition in the fast-food industry, restaurateurs use various methods to gain market share while creating a pleasant environment for their customers. As a result of the rapid increase in the number of fast-food restaurants, not only those belonging to global franchises but also those belonging to independent brands. Consequently, those restaurants are differentiating their green marketing strategies to survive in the competitive market of increased interest in business sustainability.

Moreover, Labib et al. (2023) mentioned that some fast food restaurants are starting to be interested in increasing consumer perceptions about how food is consumed and recycled as a consequence of growing environmental concerns. This increase in perception shifted the focus of some of the consumers towards

a preference for effective environmental responsibility, as they showed their willingness to pay more for products that have a lower environmental impact.

While Sedky & Abdelraheem (2021) and Sayed (2023) focused on the need for more effective marketing strategies to increase Egyptian consumers' perception of climate change, they found that they are still unfamiliar with green products and perceive their price as high and unfair, except for those who gain high levels of income and represent only 10% of the total population. Also, those consumers prefer to buy green products from hypermarkets, which are attractive places because of the discounts they offer, the availability of variable products, saving shopping time, and providing parking areas.

Exploratory Study

To check the validity of the research problem, an exploratory study of five questions (Appendix 1) was conducted during the period from December 2022 to January 2023, after the end of the COP27 session in November 2022, that raised the concepts of climate change and sustainability. The researcher asked 20 Egyptian consumers of fast food restaurants, whose demographic characteristics ranged between 8 males and 12 females, with age groups ranging from less than and equal to 20 years old to 50 years old and above. Some of them were students, while others were working in the private and public sectors. Their level of income ranged from less than or equal to 1000 L.E. to more than or equal to 6,000 L.E. per month.

Regarding the first question of how you perceive climate change, the researcher found that 11 out of 20 respondents in their age group less than 30 years old have a limited perception of climate change, while the rest of the 9 participants aged 30 and older showed their concern about climate change crises like flooding, extreme storms, forest fires, rises in sea level, and rivers drying up. When asking question two about the concept of green marketing, 8 of the respondents heard about it but did not understand its meaning, while the rest 12 could define it as an eco-friendly product.

While question three was asking the respondents about the green marketing activities of fast food restaurants, 6 of the respondents mentioned using recyclable packages, 7 mentioned using eco-friendly ingredients, and the rest 7 did not know about those activities. Then, based on the respondents' answers to question three, the researcher asked question four: to what extent do the green marketing activities of fast food restaurants make them more concerned about climate change? Five respondents mentioned that they started to follow the news about climate change and understand the usage of recyclable

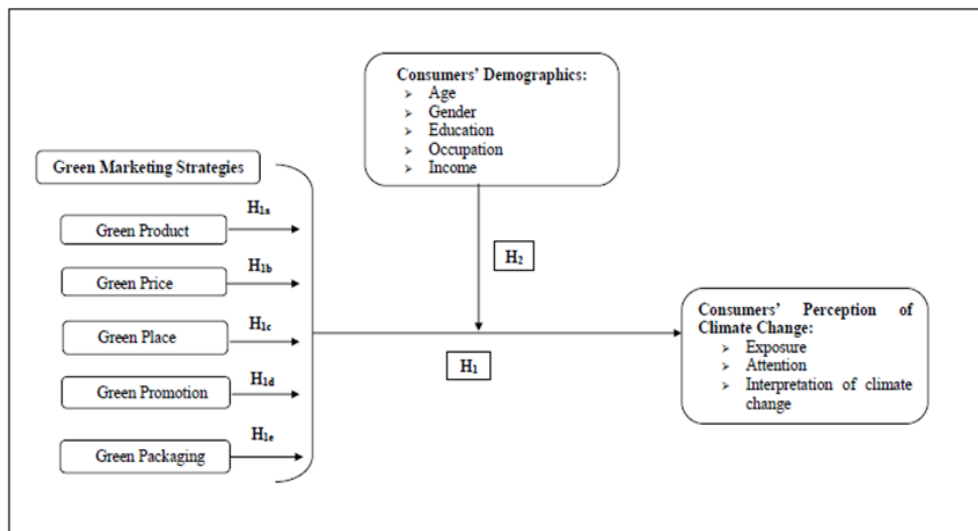
materials. While the rest of the 8 respondents found the marketing activities to have a limited effect on their perception.

Regarding question five of how fast food restaurants can participate in shaping consumers' perceptions of climate change, nine of the 20 respondents suggested using natural products' ingredients and paper packages, writing quotes that encourage protecting the environment, and announcing more about their green marketing activities. While the rest of the 11 respondents agreed on the importance of promoting green activities, Also, it was noticed that both female and male respondents of age groups starting at 40 years old and working in the private sector with an income level above 6,000 L.E. perceived climate change more than their counterparts of other demographic characteristics.

Research Framework

The following figure 1 shows the research framework:

Figure 1. Research Framework



Source: developed by the researcher

Research Problem

Climate change became a critical issue that threatened creatures' survival, especially after the climate disasters that the world witnessed recently, like forest fires, floods, hurricanes, and drought. However, Egyptian consumers still have a limited perception of climate-related risks and insufficient knowledge

about sustainable behaviors, although Egypt is one of many countries that face challenges in food, water, and energy supplies affected by the rising demand of the growing population. Since fast food restaurants and their marketing strategies have become familiar to most Egyptian consumers, the researcher claims that if these restaurants apply green marketing strategies (green product, green price, green place, green promotion, green packaging), it can affect Egyptians' perception of climate change in a step toward increasing their concern about protecting the environment. From this point, this research is conducted to check the validity of this claim and to fill the research gap of rarely applying that relationship to Egypt and in different sectors rather than fast food restaurants.

Research Questions

RQ1: Is there a significant and positive effect of green marketing strategies on consumers' perception of climate change?

RQ1.a: Does green product significantly and positively affect consumers' perception of climate change?

RQ1.b: Does green price significantly and positively affect consumers' perception of climate change?

RQ1.c: Does green place significantly and positively affect consumers' perception of climate change?

RQ1.d: Does green promotion significantly and positively affect consumers' perception of climate change?

RQ1.e: Does green packaging significantly and positively affect consumers' perception of climate change?

RQ2: Do consumers' demographics (age, gender, education, occupation, income) significantly and positively moderate the relationship between green marketing strategies and consumers' perception of climate change?

Research Methodology

The research methodology includes research design, research population and sampling, measurements and scaling of research variables, and statistical analysis.

Research Design

The researcher used a conclusive research approach included an exploratory study to check the validity of the problem, a descriptive research of consumers' demographic characteristics (the moderating variables), green marketing strategies (the independent variable), and consumers' perception of climate change (the dependent variable). Then, a causal research was used to study the relationship between the variables by testing the hypotheses. Regarding the research time horizon, a multiple cross-sectional design was used, as data was collected online from multiple groups of Egyptian consumers of fast food for a single time during 4 months.

Research Population

The research population is all consumers located in different districts of Egypt estimated by 104 462 545 based on gender and governorate (CAPMAS, March 2023).

Sample Size

Under the assumption of a normal distribution of population characteristics, the minimum sample size is determined based on the following formula (Abdel al2018 ,Abou Douma2019):

$$n_0 = \frac{z_{\alpha}^2 * p * (1 - p)}{e^2}$$

Where,

Z_{α} : the critical value of the normal distribution at $\alpha = 0.05$, and confidence level= 95%; $Z_{\alpha} = 1.96$

p : the percentage of achieving a certain phenomenon in the population, $p=0.5$ that gives the highest value of sample size

e : sample error, equals 0.05

By substitution in the above formula, $n_0=384.16$, so $n_0\approx 384$ observations, but after eliminating missing and mismatching answers, the number of correct questionnaires was 334 questionnaires.

Sample Type

As the researcher could not access the mean and variance of all consumers geographically dispersed in different districts of Egypt, a non-probability snowballing sample was used, as the questionnaire was prepared using Google Forms and shared with public pages and the researcher's friends on Facebook, WhatsApp, and Gmail, who in turn nominated and shared it with their Egyptian friends.

Sample Frame

The sample frame includes consumers who deal with fast food restaurants located in different districts of Egypt during the study period from March 2023 to July 2023.

Definitions, Measurements and Scaling of the Research Variables, and Questionnaire Design

Table 1, mentioned in Appendix 2 shows the definitions, measurements, and scaling of the research variables from which the questionnaire was designed.

Pretest

The questionnaire was first distributed to 30 consumers of fast food restaurants who showed their interest in the topic of climate change perception and were enthusiastic to fill in the questions. The respondents found the questions clear and consistent with the time they spent answering them, which did not exceed 15 minutes.

Results and Discussion

Results of Statistical Analysis

This section includes the results of descriptive statistics for the research variables, confirmatory factor analysis, normality tests, correlation tests, and testing hypotheses through multiple regression models:

Descriptive Statistics

This section aims to describe the respondents' demographic characteristics, followed by a discussion of the validity and reliability tests of the model's independent and dependent measurements, and finally an analysis of each statement headed by a variable in terms of mean, minimum, maximum, and standard deviation. The primary data for this research was collected via a self-completed questionnaire, where the total number of participants who have completed the questionnaire is 334 valid responses out of the total sample size of 384, resulting in a response rate of approximately 87% (86.97%).

Demographics Analysis

Table (2), figure (2), and figure (3) show the description of the demographic characteristics of questionnaire respondents in terms of frequency and percentage:

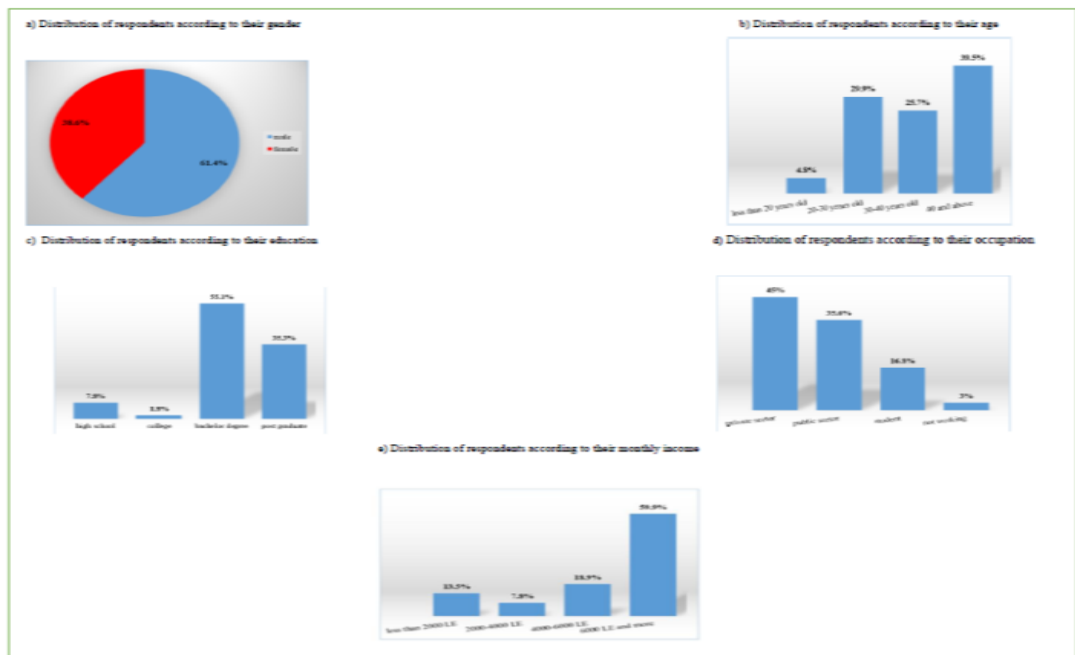
Table 2. Description of Demographic Characteristics of Questionnaire's Respondents

Variable	Frequency	Percentage
Gender		
Female	129	38.6%
Male	205	61.4%
Age		
less than 20 years old	16	4.8%
20-30 years old	100	29.9%
30-40 years old	86	25.7%
40 and above	132	39.5%
Education		
high school	32	9.6%
bachelor degree	184	55.1%
post graduate	118	35.3%
Occupation		
private sector	149	44.6%
public sector	119	35.6%
student	56	16.8%
not working	10	3%
Income		
less than 2000 LE	45	13.5%
2000-4000 LE	26	7.8%
4000-6000 LE	63	18.9%
6000 LE and more	200	59.9%
Total number of respondents (N)= 334		

Source: The Researcher

The table and figures illustrate that the gender distribution among male respondents represents 61.4%, which is higher than their female counterparts, who represent only 38.6% of the respondents. Regarding respondents' age, 4.8% of the respondents are less than 20 years old, followed by 29.9% from 20 to 30 years old, 25.7% from 30 to 40 years old, and only 39.5% of the respondents age is 40 years old and above. When looking at education level, 9.6% of the respondents had a high school education, followed by 55.1% of the respondents with a bachelor degree, and 35.3% had postgraduate studies (e.g., master degree, diploma, etc.). Regarding occupation, 45% of the respondents work in the private sector, followed by 35.6% who work in the public sector. 16.8% of the respondents are still students, while 3% are unemployed. Finally, respondents' income is found to be: 13.5% of the respondents obtain monthly income less than 2000 LE, 7.8% gain monthly income ranges from 2000 to 4000 LE, 18.9% get monthly income ranges from 4000 to 6000 LE, and 59.9% of the respondents have monthly income 6000 LE and more.

Figure 2. Descriptive Statistics of respondents' gender, age, education, occupation, and monthly income



Source: The Researcher

Confirmatory Factor Analysis

In order to test the reliability and validity of the variables' measures, 8 indicators are created to combine a group of related statements (or factors) into one indicator. These indicators are composed by using the equal weights method; 5 of them are used to measure green marketing strategies (green product, green price, green place, green promotion, and green packaging), and 3 are used to measure consumers' perception of climate change (exposure to climate change, attention to climate change, interpretation of climate change). Each indicator is calculated by adding the scores of statements that are related to this indicator, and then the sum is divided by the number of related statements.

Confirmatory Factor Analysis sorts out the most meaningful and valuable constructs stated within the model utilized in this research. The internal consistency coefficient (Cronbach's alpha) reflects the reliability of a scale, as it captures the proportion of total variance that is common to all items that form the scale, which presumably corresponds to the underlying construct being measured. From table 3- in the appendix), values of Cronbach's alpha reflect good reliability of statements, as they are greater than 0.5 for both main indicators and sub-indicators; they range from 0.576 to 0.815. Also, the values of the average item correlation (ranging from 0.523 to 0.687) indicate the validity of the statements used in the questionnaire.

The results of the confirmatory factor analysis show that all statements are loaded in their constructs as suggested in the proposed model, as their loading is greater than 0.5. Also, average variance extracted (AVE) values indicate that the constructs can explain more than 50% of the statements, which indicates high internal validity.

Descriptive Statistics of Constructs and Statements

Green Marketing Strategies

Table 4 – see appendix (4) -provides detailed descriptive statistics for each statement of green marketing strategies. They include the minimum, maximum, mean, standard deviation, and coefficient of variation for each statement.

Green Product

The respondents tend to agree on the statements related to the green product, as the mean value is around 3.5166. The statement with the highest level of agreement (mean = 4.41) is "Green food products are good for health", while the one with the lowest level of agreement (mean = 2.8) is "The products of fast food restaurants result in minimum environmental damage". The homogeneous statement, with the lowest

coefficient of variance (COV = 16.69%), is "Green food products are good for health", while the non-homogeneous statement, with the highest coefficient of variance (COV = 44.25%), is "The products of the fast food restaurant result in minimum environmental damage".

Green Price

The respondents tend to be neutral regarding the statements about green prices, as the mean value is 3.44. The statement with the highest level of agreement (mean = 4.43) is "Green food product prices should be reasonable to motivate consumers to buy", while the one with the lowest level of agreement (mean = 3.05) is "The price of the green food product I buy is reasonable". The homogeneous statement with the lowest COV (14.94%) is "Green food product prices should be reasonable to motivate consumers to buy", while the non-homogeneous statement with the highest COV (33.51%) is "I can pay higher prices when part of the amount is donated to green activities".

Green Place

The respondents tend to agree on the statements related to the green place, as the mean value is 3.5891. The statement with the highest level of agreement (mean = 4.06) is "The restaurant provides delivery service", while the one with the lowest level of agreement (mean = 2.97) is "Green fast food restaurants are widely available in all places". The homogeneous statement, with the lowest COV (20.05%), is "I get the same food items and quantity I ordered", while the non-homogeneous statement, with the highest COV (39.93%), is "Green fast food restaurants are widely available in all places".

Green Promotion

The respondents tend to agree on the statements related to the green promotion, as the mean value is 3.7884. The statement with the highest level of agreement (mean = 4.12) is "Fast food restaurants must advertise their green marketing activities to consumers", while the one with the lowest level of agreement (mean = 3.61) is "Green advertisements inform me about the benefits of green products". The homogeneous statement, with the lowest COV (23.28%), is "Fast food restaurants must advertise their green marketing activities to consumers", while the non-homogeneous statement, with the highest COV (32.33%), is "Green advertisements inform me about the benefits of green products".

Green Packaging

The respondents tend to agree on the statements related to green packaging, as the mean value is 3.5898. The statement with the highest level of agreement (mean =

3.89) is "I prefer food products from restaurants that add environmentally friendly information to their packages", while the one with the lowest level of agreement (mean = 3.39) is "The restaurant serves food products in recyclable packages". The homogeneous statement with the lowest COV (24.76%) is "I prefer food products from restaurants that add environmentally friendly information to their packages", while the non-homogeneous statement with the highest COV (36.11%) is "The restaurant serves food products in recyclable packages".

Consumers' Perception of Climate Change

Table 5 provides- appendix (4)- detailed descriptive statistics for each statement of consumers' perception of climate change. They include the minimum, maximum, mean, standard deviation, and coefficient of variation for each statement.

Exposure to Climate Change

The respondents tend to agree on the statements related to their exposure to climate change, as the mean value is 3.982. The statement with the highest level of agreement (mean = 4.27) is "I heard about the climate change phenomenon from different communication channels (television, radio, social media, etc.)", while the one with the lowest level of agreement (mean = 3.7) is "I regularly check weather conditions before going anywhere". The homogeneous statement with the lowest COV (23.49%), "I heard about climate change phenomena from different communication channels (television, radio, social media, etc.)", while the non-homogeneous statement with the highest COV (31%), "I regularly check weather conditions before going anywhere".

Attention to Climate Change

The respondents tend to agree with the statements related to attention to climate change, as the mean value is 4.2687. The statement with the highest level of agreement (mean = 4.41) is "I observe weather temperature tends to be higher than before", while the one with the lowest level of agreement (mean = 4.16) is "I heard from climate specialists that sea level increased over the last century". The homogeneous statement with the lowest COV (14.42%) is "I observe weather temperature tends to be higher than before", while the non-homogeneous statement with the highest COV (20.48%) is "I observe changes in distribution of rain from area to area".

Interpretation to Climate Change

The respondents tend to agree with the statements related to the interpretation of climate change, as the mean value is 3.7325. The statement with the highest level of agreement (mean = 4.31) is "I understand that climate change will make changes in food product availability", while the one with the lowest level of

agreement (mean = 3.23) is "I find my needs for food products easily". The homogeneous statement with the lowest COV (19.95%) is "I understand that climate change will make people in different regions poorer than before", while the non-homogeneous statement with the highest COV (35.54%) is "I find my needs for food products easily".

Table 5. Descriptive Statistics of the Consumers' Perception to Climate Change

Statement	Sample Size	Minimum	Maximum	Mean	Standard Deviation	COV
Exposure to Climate Change	334	1	5	3.982	0.9732	24.44%
I heard about climate change phenomenon from different communication channels (Television, radio, social media...etc.)	334	1	5	4.27	1.003	23.49%
I regularly check weather conditions before going anywhere	334	1	5	3.7	1.147	31%
Attention to Climate Change	334	2.25	5	4.2687	0.61163	14.33%
I heard from climate specialists that sea level increased over the last century	334	2	5	4.16	0.824	19.81%
I observe weather temperature tends to be higher than before	334	2	5	4.41	0.636	14.42%
I notice changes in rainfall comparing to previous winter season	334	2	5	4.31	0.714	16.57%
I observe changes in distribution of rain from area to another	334	1	5	4.19	0.858	20.48%
Interpretation to Climate Change	334	2.67	5	3.7325	0.57197	15.32%
I find changes in the available quantities of food products	334	2	5	4.15	0.915	22.05%
I find my needs of food products easily	334	1	5	3.23	1.148	35.54%
I get food products of the quantity I want	334	1	5	3.24	1.127	34.78%
Food products are available along the whole year	334	1	5	3.31	1.061	32.05%
I understand that climate change will make people in different regions poorer than before	334	2	5	4.16	0.83	19.95%
I understand that climate change will make changes in food products availability	334	1	5	4.31	0.939	21.79%

Source: The Researcher

Inferential Data Analysis

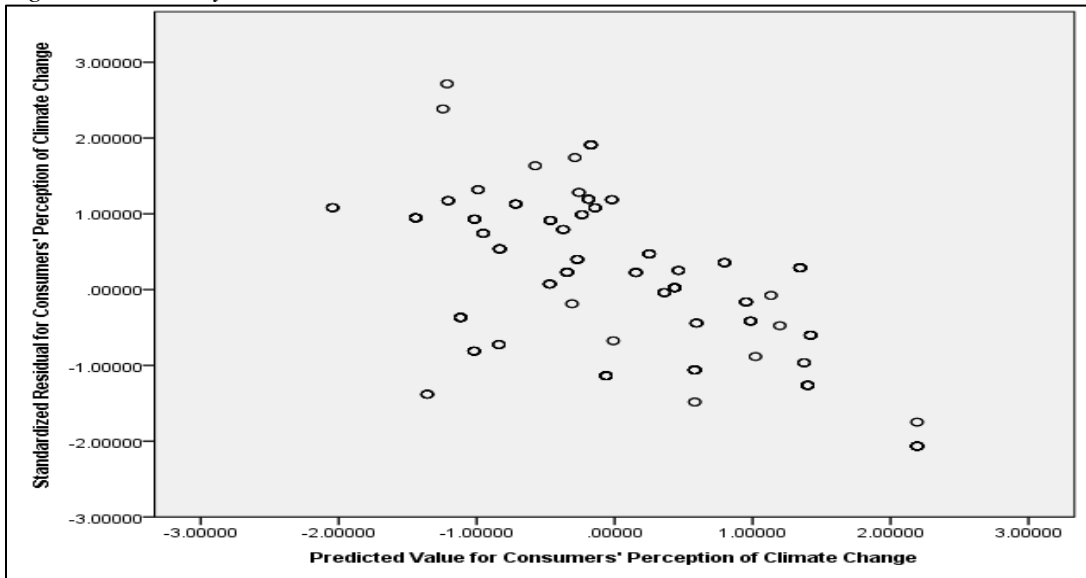
The Normality Test's results, shown in the following table (6) and figure (3), revealed that all research variables are not normally distributed, as the significance value (p-value) of those variables is below 0.05. But because the valid sample size collected is above 50 responses (334 responses), it is capable of running parametric tests, especially in multivariate research.

Table 6. Normality Test

	Kolmogorov Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Independent Variables						
Green Product	0.109	334	0.000	0.974	334	0.000
Green Price	0.12	334	0.000	0.959	334	0.000
Green Place	0.148	334	0.000	0.964	334	0.000
Green Promotion	0.169	334	0.000	0.938	334	0.000
Green Packing	0.132	334	0.000	0.951	334	0.000
Dependent Variables						
Consumers' Perception of Climate Change	0.128	334	0.000	0.96	334	0.000
Exposure to Climate Change Phenomenon	0.226	334	0.000	0.848	334	0.000
Attention to Climate Change Phenomenon	0.136	334	0.000	0.911	334	0.000
Interpretation to Climate Change Phenomenon	0.124	334	0.000	0.937	334	0.000

Source: The Researcher

Figure 3. Linearity Plot



Source: The Researcher

Correlation Test

The following table (7) illustrates the values of Pearson's correlation coefficient for the research variables, and from these values, the researcher can conclude that at significance level 0.05:

There is a positive and moderate relationship between green products and each of the following: green price, green place, green promotion, green packaging, and consumers' perception of climate change, as the coefficients range from 0.516 to 0.676.

There is a positive and moderate relationship between green price and each of green promotion and green packaging, as the coefficients are 0.603 and 0.572, respectively. While there is a positive and weak relationship between green prices and consumers' perception of climate change, the coefficient is 0.429.

A positive and moderate relationship is found between green places and green packaging, as the coefficient is 0.581. While there is a positive, weak relationship between green place and each of green price, green promotion, and consumers' perception of climate change, the coefficients range from 0.395 to 0.581.

There is a positive and moderate relationship between green promotion, green packaging, and consumers' perception of climate change, as the coefficients are 0.552 and 0.637, respectively.

Green packaging is positively and weakly correlated with consumers' perception of climate change, as the coefficient is 0.415.

Table 7. Pearson's Correlation Coefficient for the Research Variables

	Green Product	Green Price	Green Place	Green Promotion	Green Packaging	Consumer' Perception of Climate Change
Green Product	1	0.676**	0.612**	0.516**	0.644**	0.530**
Green Price	0.676**	1	0.430**	0.603**	0.572**	0.429**
Green Place	0.612**	0.430**	1	0.437**	0.581**	0.395**
Green Promotion	0.516**	0.603**	0.437**	1	0.552**	0.637**
Green Packaging	0.644**	0.572**	0.581**	0.552**	1	0.415**
Consumers' Perception of Climate Change	0.530**	0.429**	0.395**	0.637**	0.415**	1

** Correlation is significant at the 0.05 level (2-tailed).

Source: The Researcher

Testing Hypotheses

- **Testing H₁:** *There is a significant and positive effect of green marketing strategies on consumers' perception of climate change.*

To test H₁, a model of five independent variables (green product, green price, green place, green promotion, and green packaging) and one dependent variable (consumers' perception of climate change) was used. The following table (8) illustrates that the variations in the green marketing strategies (independent variables) explain about 98% of the variations in consumers' perception of climate change (adjusted R² = 0.983).

Table 8. First Model Summary

Model	R	R-Square	Adjusted R-Square
1	0.992	0.983	0.983

Source: The Researcher

The following table (9) illustrates the analysis of variance (ANOVA), which shows that the model is significant, as the significance of the F-test is less than 0.05.

Table 9. ANOVA Table of the First Model

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	5347.977	5	1069.595	3872.214	0.000
Residuals	90.877	329	0.276		
Total	5438.854	334			

Source: The Researcher

The following table (10) shows the coefficients of the multiple regression model between green marketing strategies and consumers' perception of climate change. These coefficients illustrate that, with other variables held constant, consumers' perception of climate change will increase by 0.342 when the value of green products increases by one unit, so **H_{1a} is accepted**. The green price doesn't affect consumers' perception of climate change (Sig. = 0.187 > 0.05), so **H_{1b} is rejected**. Also, consumers' perception of climate change will increase by 0.259 when the value of green places increases by one unit, so **H_{1c} is accepted**.

Moreover, consumers' perception of climate change will increase by 0.461 when the value of green promotion increases by one unit, so **H_{1d} is accepted**. Finally, the green packaging doesn't affect the consumers' perception of climate change (Sig. = 0.236 > 0.05), so **H_{1e} is rejected**. From the previous results, it is concluded that **H₁ is partially accepted**.

Table 10. Coefficients of the Multiple Regression Model between Green Marketing Strategies and Consumers' Perception of Climate Change

Model	Unstandardized	t	Sig.
	Coefficient		
Beta			
Green Product	0.342	5.217	0.000
Green Price	0.081	1.321	0.187
Green Place	0.259	4.992	0.000
Green Promotion	0.461	10.156	0.000
Green Packaging	-0.059	-1.187	0.236

Source: The Researcher

- **Testing H₂:** Consumers' demographics (age, gender, education, occupation, income) significantly and positively moderate the relationship between green marketing strategies and consumers' perception of climate change.

To test H₂, a model of five independent variables (green product, green price, green place, green promotion, and green packaging), five moderator variables (gender, age, education, occupation, and monthly income), and one dependent variable (consumers' perception of climate change) were used. The following table (11) illustrates that the variations in green marketing strategies and consumers' demographics explain about 99% of the variations in consumers' perception of climate change (adjusted R² = 0.995).

Table 11. Second Model Summary

Model	R	R-Square	Adjusted R-Square
1	0.998	0.996	0.995

Source: The Researcher

The following table (12) of ANOVA illustrates that the model is significant, as the significance of the F-test is less than 0.05.

Table 12. ANOVA Table of the Second Model

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	5416.48	36	150.46	2003.918	0.000
Residuals	22.374	298	0.0751		
Total	5438.854	334			

Source: The Researcher

The following table (13) shows the coefficients of the regression model between green marketing strategies and consumers' perception of climate change, given the moderating effect of consumers' demographics. These coefficients illustrate that, with other variables held constant, consumers' perception of climate change will increase by 1.83 when the value of green products increases by one unit. The consumers' perception of climate change will decrease by 0.632 when the value of the green price increases by one unit. Also, consumers' perception of climate change will decrease by 0.926 when the value of green places increases by one unit. While green promotion doesn't affect consumers' perception of climate change (Sig. = 0.947 > 0.05), Moreover, consumers' perception of climate change will increase by 0.746 when the value of green packaging increases by one unit.

Also, the value of consumers' perception of climate change for females is greater than that for males by about 2.347. There is an insignificant difference in the mean of the consumers' perception of climate change for the participants who are less than 30 years old and those who are 30 years old or older (Sig. = 0.643>0.05). Moreover, there is an insignificant difference in the mean of consumers' perception of climate change between the participants who are undergraduates and those who are postgraduates (Sig. = 0.901>0.05). Regarding consumers' occupation, there is an insignificant difference in the mean of consumers' perception of climate change for participants who are working either in the public or private sector and those who are either students or not working (Sig. = 0.417>0.05). Also, there is an insignificant difference in the mean of consumers' perception of climate change between participants who gained less than 6,000 EGP and those who gained 6,000 EGP or more (Sig. = 0.377 > 0.05).

Interaction terms are added to express the moderating effect of demographics by multiplying each demographic characteristic by each of the green marketing strategies, and the results are as follows: Regarding the moderating effect of gender, consumers' perception of climate change will decrease by 0.323 when the value of the green product increases by one unit for females (Sig. = 0.001<0.05). While the consumers' perception of climate will not be affected by the value of each of the green price (Sig. = 0.078>0.05), green promotion (Sig. = 0.344>0.05), and green packaging (Sig. = 0.108>0.05), whether the participant is male or female, On the contrary, consumers' perception of climate change will decrease by 0.476 when the value of the green place increases by one unit for females (Sig. = 0.000<0.05).

When studying the moderating effect of age, consumers' perception of climate change will decrease by 0.865 when the value of green products increases by one unit for those participants who are less than 30 years old (Sig. = 0.002<0.05). Also, consumers' perception of climate change will increase by 0.695 when the value of the green price increases by one unit for those respondents who are less than 30 years old (Sig. = 0.018<0.05). Moreover, the consumers' perception of climate change will increase by 1.083 when the value of the green place increases by one unit for those participants who are less than 30 years old (Sig. = 0.000<0.05) and decrease by 0.724

when the value of the green packaging increases by one unit for those participants who are less than 30 years old (Sig. = 0.010<0.05). While the consumers' perception of climate change will not be affected by the value of green promotion, whether the respondents are less than or more than 30 years old (Sig. = 0.474>0.05),

When studying the moderating effect of education level, the consumers' perception of climate change will increase by 0.422 when the value of green place increases by one unit for undergraduates (Sig. = 0.012<0.05) and decrease by 0.678 when the value of green packaging increases by one unit for undergraduates (Sig. = 0.000<0.05). On the contrary, consumers' perception of climate change will not be affected by each of the green products (Sig. = 0.488>0.05), green prices (Sig. = 0.356>0.05), and green promotions (Sig. = 0.680>0.05), whether the respondents are undergraduate or postgraduate.

Moreover, the moderating effect of occupation is explained as follows: the consumers' perception of climate change will decrease by 0.748 when the value of green products increases by one unit for those who are working in either the public or private sector (Sig. = 0.000<0.05) and increase by 0.668 when the value of green promotion increases by one unit for those who are working in either the public or private sector (Sig. = 0.000<0.05). While the consumers' perception of climate change will not be affected by either the green price (Sig. = 0.201>0.05) or the green place (Sig. = 0.436>0.05), whether the respondents are working in a specified sector or not,

Regarding the moderating effect of income, on one hand, the consumers' perception of climate change will decrease by 1.051 when the value of green products increases by one unit for the respondents who gain less than 6,000 EGP monthly (Sig. = 0.001<0.05) and increase by 0.467 when the value of green places increases by one unit for those who gain less than 6,000 EGP monthly (Sig. = 0.001<0.05). On the other hand, the consumers' perception of climate change will not be affected by each of the green price (Sig. = 0.129>0.05), green promotion (Sig. = 0.102>0.05), and green packaging (Sig. = 0.254>0.05), whether the respondents gain less than 6000 EGP or 6000 EGP and more.

From the above results, it is concluded that: 1) gender has a significant and positive moderating effect on the relationship between each green product and green place and consumers' perception of climate change. 2) Age has a significant and positive moderating effect on the relationship between each green product, green price, and green place and consumers' perception of climate change. While age has a significant and negative moderating effect on the relationship between green packaging and consumers' perception of climate change, 3) Education level has a significant and positive moderating effect on the relationship between green places and consumers' perception of climate change. While education level has a significant and negative moderating effect on the relationship between green packaging and consumers' perception of climate change, 4) Occupation has a significant and negative moderating effect on the relationship between green products and consumers' perception of climate change, but it also has a significant and positive

moderating effect on the relationship between green promotion and consumers' perception of climate change. 5) Income has a significant and positive effect on the relationship between green products and green places and consumers' perception of climate change. So, **H2 is partially accepted**.

Table 13- see appendix (4) shows the coefficients of the multiple regression model between green marketing strategies and consumers' perceptions of climate change, given the moderating effect of consumers' demographics:

Interpretation of Results

From the descriptive statistics of the research variables, it is concluded that male respondents shaped the higher percentage of participation in filling out the questionnaire relative to females, which indicates their high visiting rate to fast food restaurants compared to females. Regarding age, respondents aged 40 and older showed high participation in the questionnaire due to their concern about climate change and environmental issues. Bachelor degree holders were more interested in filling out the online questionnaire as they found it easy and quick. Moreover, those who work in the private sector and earn 6,000 L.E. or more per month participated more than their counterparts, due to their ability and affordability to pay the prices of fast food meals.

Also, descriptive statistics of the green product's measures showed that the respondents were highly varied on the result of fast food products in terms of minimum environmental damage, as the majority of them do not know or even think about that when dealing with the fast food restaurant. While the respondents' answers were highly varied regarding how the price of fast food products is reasonable, indicating that some of them perceive it as reasonable while others find it unreasonable and expensive, when measuring green places, it was found that the respondents were highly varied about the availability of green fast food restaurants in all places, indicating the lack of these restaurants and the necessity of intensifying their existence.

Regarding the descriptive statistics of green promotion's measures, the statement "Green advertisements inform me about the benefits of green products" had the highest variance, expressing the insufficiency of this kind of advertisement and the need to increase it. Moreover, the statement "The restaurant serves food products in recyclable packages" had the highest variation in respondents' answers, indicating that some restaurants still serve their food in unrecyclable packages.

When looking at the descriptive statistics of the statements that measure consumers' perception of climate change, it was found that respondents were highly varied about their regular check of weather conditions before going anywhere, reflecting a lack of concern about changes in weather conditions. While respondents' answers were highly varied about their observation of changes in rain distribution

from area to area, reflecting that the majority of them do not pay attention to this issue, Finally, the statement "I find my needs for food products easily" had the highest variation among the respondents, indicating their inability to interpret the effect of climate change on food availability.

When conducting confirmatory analysis, it showed that the measures of each of the green marketing strategies and consumers' perception of climate change are reliable and valid, as they are good for expressing these variables and can be used many times with different measurement conditions. Moreover, the results of the correlation test showed that each of the green product, green price, green place, green promotion, and green packaging are moderately and positively related to consumers' perception of climate change, especially green promotion, which has the highest coefficient, indicating that green promotion has the strongest effect on consumers' perception of climate change compared to other green marketing strategies. This sheds light on intensifying green promotion in order to shape consumers' perception of climate change.

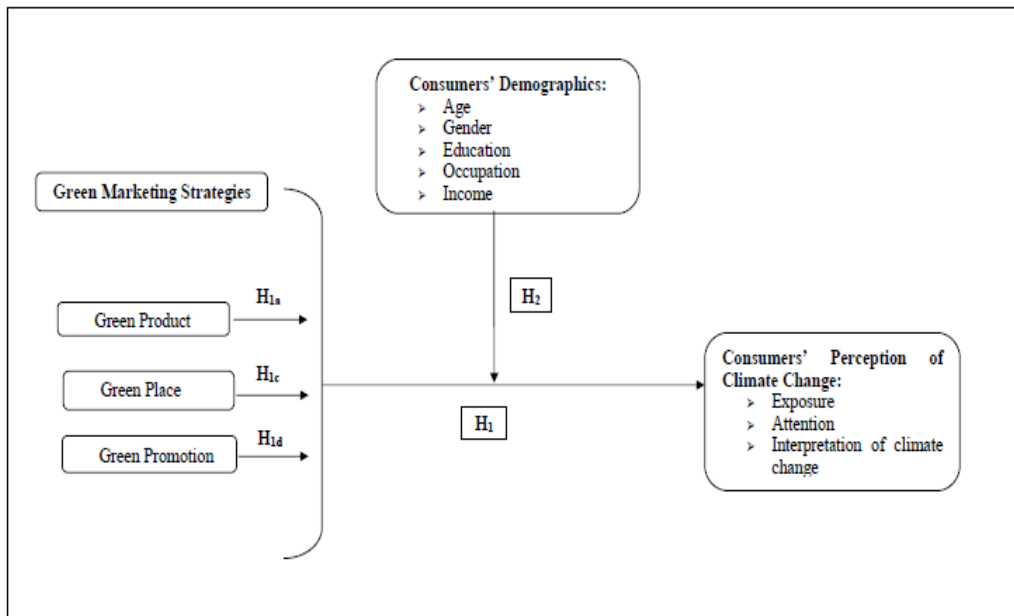
Regarding testing hypotheses, **H1**, which stated that there is a significant and positive effect of green marketing strategies on consumers' perception of climate change, is **partially accepted**. This indicates that consumers can easily expose and get attention to green products if they find them in convenient places and through attractive promotion activities showing the benefits of these products. The results are consistent with what was mentioned by Mukonza & Swarts (2020), Dewi (2021), García-Salirrosas & Rondon-Eusebio (2022), Kaur et al. (2022), Machová et al. (2022), and Mogaji et al. (2022), who found a positive relationship between green products, green places, green promotion, and consumers' perceptions of climate change. While the results of the research are different from what was mentioned by Dewi (2021), Park et al. (2021), Sedky & Abdelraheem (2021), Anggraeni et al. (2022), Mahadevappa & Sinha (2022), Mogaji et al. (2022), and Sodom & Mohammad (2022), who proved the significance of the relationship between each of green price and green packaging and consumers' perception of climate change.

Also, **H2** stated that consumers' demographics (age, gender, education, occupation, and income) significantly and positively moderate the relationship between green marketing strategies and consumers' perception of climate change; this was **partially accepted**. This indicates that females' perception of climate change is affected by green products and green places more than males, as they have more concern about climate change and environmental issues, and the majority of them prefer restaurants that apply environmentally friendly activities. Moreover, consumers who are less than 30 years old are starting to care more about climate change than those who are older, as they can interpret the importance of climate change and have the ability to get green products and pay for them. While consumers who are less than 30 years old are keener on green products, green prices, and green places than green packaging,

Regarding the effect of education level, it is found that the more available are green restaurants, the more is the perception of climate change of consumers' who are still undergraduates compared to their graduates' counterparts, as they prefer to find green restaurants around them for not paying more of transportation fees, and they are keener on green places than green packaging. Also, the results implied that green promotion is necessary to show the benefits of green products to shape the perception of consumers, who are working in the public and private sectors, of climate change and encourage them to buy that product. Finally, it is found that the more available are green products in convenience restaurants for consumers' who get less than 6,000 L.E. monthly, the less effort and cost they will incur, and the more is their perception of climate change as well. These results are consistent with those mentioned by Sedky & Abdelraheem (2021), Kaur et al. (2022), Nam et al. (2022), and Ruiu et al. (2022), who proved that consumers' perceptions of climate change are affected by their demographic characteristics, such as age, gender, education, occupation, and income.

The following research framework could be concluded from the results of testing hypotheses:

Figure 4. Concluded Research Framework



Source: The Researcher

Recommendations

The researcher recommends fast food restaurants to:

- Apply environmentally friendly rules to the existing branches, in addition to opening new ones in different districts to make it convenient for more consumers to visit.
- Use green ingredients in its fast food products, such as organic or natural components that are safe for consumers' health and the environment.
- Provide meals with different pricing schemes to suit consumers with low levels of income.
- Intensify the use of recyclable packages with green logos to draw consumers' attention to the importance of protecting the environment and avoiding climate change,
- Offer discounts and merits to employees of different private and public companies to encourage them to buy green products,
- Design advertisements in two versions, one directed to females and another directed to males, explaining the importance of going green to avoid climate change consequences.
- Display in-store short and entertainment videos explaining the importance of having green products for better health and the environment,
- Coordinate with environment specialists to organize visits to schools, universities, and social clubs to increase consumers' perception of climate change.

Research Limitations and Future Research

This research has some limitations that the researcher is going to overcome in future research. These limitations are:

1. The correct responses were only 334 out of the total sample size, which is 384 observations, resulting in a response rate of approximately 87%, indicating that 13% of the respondents did not perceive climate change accurately and were not interested in filling out the questionnaire. So, it is recommended for further research to conduct offline questionnaires or face-to-face interviews to be able to get more opinions from the respondents.
2. The results of this research cannot be generalized, as a non-probability snowballing sample was used due to the difficulty of getting access to the mean and variance of all consumers geographically dispersed in Egypt *or*

the consumers' database available to fast food restaurants. So, it is recommended for future researchers to get access to these databases and use a probability sample with results that can be generalized.

3. This research focused on studying the moderating effect of only five demographic characteristics, which are gender, age, education, occupation, and income. This is because they were commonly used in previous studies, like Ahmad et al. (2021), Abraham et al. (2022), Al Maliki et al. (2022), Machová et al. (2022), and Bresciani et al. (2023). So. It is recommended for future research to include other demographic characteristics such as marital status and family size.
4. The research focused on studying the effects of only five elements of marketing strategies: product, price, place, promotion, and packaging. This is because, to the best of the researcher's knowledge, they were commonly found in previous studies of green marketing, such as Dewi (2021), Karimi & Nassery (2022), and García-Salirrosas & Rondon-Eusebio (2022). However, other studies, like Ho et al. (2022), Joha et al. (2022), and Suryana & Anggiani (2023), stated that marketing mix strategies are comprised of seven elements: product, price, place, promotion, people, physical evidence, and process. So, it is recommended for future research to study the effect of employees who provide the product, physical evidence, and processes on consumers' perception of climate change.
5. The research focused on the role of green marketing strategies in fast food restaurants because they are most familiar to consumers while changing consumers' perceptions is affected by various factors such as their beliefs, values, interests, knowledge, and culture (Batat, 2022; Koswatta et al., 2023; Wang, 2023). So, it is recommended for future research to study those factors.

References

English References

- Abraham, John Simon E., Floreto, Sophia Justine L., Pagkalinawan, Margaux Isabella B., Antonio E. & Etrata Jr. (2022). Consumer Perception on Influencer Marketing Efforts of Brands in the Beauty and Cosmetics Industry. *International Journal of Social and Management Studies (IJOSMAS)*, 3(2), 105–118.
- Ahmad, Riaz, Ahmad, MunawarJaved, Farhan, Muhammad, Arshad, Muhammad Ali, & Ali, Ehtisham (2021). The relationship within green marketing strategies and market performance of Pakistan SMEs. *Elementary Education Online*, 19(3), 1886–1895.
- Al-Maliki, Laheab A., Al-Mamoori, Sohaib K., Jasim, Ihsan A., El-Tawel, Khaled, Al-Ansari, Nadhir, & Comair, Fadi G. (2022). Perception of climate change effects on water resources: Iraqi undergraduates as a case study. *Arabian Journal of Geosciences*, 15(503), 1–13.
- Amoako, George Kofi, Dzogbenuku, Robert Kwame, & Doe, Joshua. (2022). Green marketing and the SDGs: emerging market perspective. *Marketing Intelligence & Planning*, 40(3), 310–327.
- Anggraeni, Reni, Aqsa, Muhammad, & Risal, M. (2022). Green Marketing and Consumer Attitude to Repurchasing Interest. *Journal Mantik*, 5(4), 2291–2297.
- Batat, W. (2022). Consumers' perceptions of food ethics in luxury dining. *Journal of Services Marketing*, 36(5), 754–766. doi:10.1108/JSM-01-2021-0010
- Bauer, F., Nielsen, T. D., Nilsson, L. J., Palm, E., Ericsson, K., Frane, A., & Cullen, J. (2022). Plastics and climate change—Breaking carbon lock-ins through three mitigation pathways. *One Earth*, 5(April 15), 361–376.
- Bestari, Dinda Kayani Putri, & Butarbutar, DJ Anderson. (2021). Implementation of Green Marketing Strategies and Green Purchase Behavior as Efforts to Strengthen the Competitiveness of MSMEs in Indonesia. *Budapest International Research and Critics Institute*, 4(1), 243–254.
- Bresciani, Stefano, Ur Rehman, Shafique, Alam, Gazi Mahabubul, Ashfaq, Khurram, & Usman, Muhammad. (2023). Environmental MCS package, perceived environmental uncertainty and green performance: in green dynamic

capabilities and investment in environmental management perspectives. *Review of International Business and Strategy*, 33(1), 105–126.

Central Agency for Public Mobilization and Statistics CAPMAS, (March 2023), Egypt in Figures, Population, 4-5, retrieved from:https://www.capmas.gov.eg/Pages/StaticPages.aspx?page_id=5035.

Corrochano, Diego, Ferrari, Enzo, López-Luengo, María Antonia, & Ortega-Quevedo, Vanessa. (2022). Educational Gardens and Climate Change Education: An Analysis of Spanish Preservice Teachers' Perception. *Education Sciences*, 12(275), 1–18.

Czarniecka-Skubina, Ewa, Stasiak, Dariusz M., Latoch, Agnieszka, Owczarek, Tomasz, & Hamulka, Jadwiga. (2022). Consumers' Perception and Preference for the Consumption of Wild Game Meat among Adults in Poland. *Foods*, 11(830), 1–19.

Davidson, Debra J., & Kecinski, Maik. (2022). Emotional pathways to climate change responses. *WIREs Climate Change*, 13(751), 1–19.

Dewi, Hayuning Purnama. (2021). Determination of Green Marketing Strategies Through Marketing Communication in the Business World in the Society 5.0 Era. *Advances in Economics, Business and Management Research*, 180, 181–187.

Elasri, Hanane, Larabi, Abdelkader, & Faouzi, Mohamed. (2022). Assessment of Future Climate Trend Based on Multi-RCMs Models and Its Impact on Groundwater Recharge of the Mediterranean Coastal Aquifer of Ghis-Nekkor (Morocco). In W. L. Filho & E. Manolas (Eds.), *Climate Change in the Mediterranean and Middle Eastern Region* (pp. 3–527). essay, Springer.

Ellis, Sean F., Kecinski, Maik, Messer, Kent D., & Lipchin, Clive. (2022). Consumer perception after long-term use of alternative irrigation water: A field experiment in Israel. *Applied Economics Perspective Policy*, (44), 1003–1020.

Ettinger, Laurel, Falkeisen, Anika, Knowles, Sophie, Gorman, Mackenzie, Barker, Sophie, Moss, Rachael, & McSweeney, Matthew B. (2022). Consumer Perception and Acceptability of Plant-Based Alternatives to Chicken. *Foods*, 11(2271), 1–12.

- García-Salirrosas, Elizabeth Emperatriz, & Rondon-Eusebio, Rafael Fernando. (2022). Green Marketing Practices Related to Key Variables of Consumer Purchasing Behavior. *Sustainability*, 14(8499), 1–19.
- Gelderman, Cees J., Schijns, Jos, Lambrechts, Wim, & Vijgen, Simon. (2021). Green marketing as an environmental practice: The impact on green satisfaction and green loyalty in a business-to-business context. *Business Strategy and the Environment*, 30, 2061–2076.
- Han, P., Tong, Z., Sun, Y., & Chen, X. (2022). Impact of Climate Change Beliefs on Youths' Engagement in Energy-Conservation Behavior: The Mediating Mechanism of Environmental Concerns. *International Journal of Environmental Research and Public Health*, 19(7222), 1–16.
- Ho, Chaang-Iuan, Liu, Yaoyu, & Chen, Ming-Chih. (2022). Factors Influencing Watching and Purchase Intentions on Live Streaming Platforms: From a 7Ps Marketing Mix Perspective. *Information*, 13(239), 1–19.
- Joha, Anis, Hassan, Sallaudin, Shamsudin, Mohd. Farid, & Hasim, Muhammad Asyraf. (2022). Purchasing Behavior among Small Medium Enterprise (SME) customer during Covid-19 Pandemic using 7Ps approach. *Journal of Positive School Psychology*, 6(3), 529–539.
- Karimi, Asal, & Nassery, Salim Masood. (2022). A Study of Applying Green Marketing Strategies and its Influence in Company Standing. *International Journal in Management and Social Science*, 10(8), 18–31.
- Kaur, Balween, Gangwar, Veer P., & Dash, Ganesh. (2022). Green Marketing Strategies, Environmental Attitude, and Green Buying Intention: A Multi-Group Analysis in an Emerging Economy Context. *Sustainability*, 14(6107), 1–16.
- Khashan, M. A., Elstouhy, M. M., Aziz, M. A., Alasker, T. H., & Ghonim, M. A. (2023). Mediating customer engagement in the relationship between fast-food restaurants' innovativeness and brand evangelism during COVID-19: evidence from emergent markets. *International Journal of Contemporary Hospitality Management*, 35(10), 1–22.
- Kordy, D. (2023). A Comparative Study on the Impact of Company & Market Controlled Variables on Egyptians' Intentions Towards Green Consumption.

Koswatta, T. J., Wingenbach, G., Leggette, H. R., & Murphrey, T. P. (2023). Factors affecting public perception of scientific information about organic foods. *British Food Journal*, 125(2), 587–607. doi:10.1108/BFJ-08-2021-0874

Labib, M. N., Moustafa, L. M., Elsherie, T. A. E.-F., & Abdelaal, F. M. (2023). Food Waste Management as a Business Entrepreneurship Tool in Fast Food Restaurants in Matrouh Governorate. *Journal of Tourism, Hotels and Heritage*, 6(2), 55–72.

Machová, Renáta, Ambrus, Rebeka, Bakó, Ferenc, Zsigmond, Tibor. (2022). The Impact of Green Marketing on Consumer Behavior in the Market of Palm Oil Products. *Sustainability*, 14(1364), 1–25.

Mahadevappa, Bhargavi, & Sinha, Ritika. (2022). Influence of Green Marketing Strategies on Consumer Behavior Towards the Environment on Green Consumer Durable Products. *Central European Management Journal*, 30(3), 3189–3203.

Mahmoud, A. H., Mohamed, N. M., & El-wardany, S. A. (2021). Knowledge and Attitudes of Students toward Fast Food in Assiut University. *Assiut Scientific Nursing Journal*, 9(24), 66–75.

Mogaji, Emmanuel, Adeola, Ogechi, Adisa, Isaiah, Hinson, Robert E., Mukonza, Chipso, & Kirgiz, Ayça Can. (2022). Green Marketing in Emerging Economies: Communication and Brand Perspective: An Introduction. In *Green Marketing in Emerging Economies: A Communications Perspective* (pp. 1–275). essay, Springer.

Moutouama, Fidèle T., Tapa-Yotto, Ghislain T., Agboton, Cyriaque, Gbaguidi, Brice, Sekabira, Haruna, & Tamò, Manuele. (2022). Farmers' Perception of Climate Change and Climate-Smart Agriculture in Northern Benin, West Africa. *Agronomy*, 12(1348), 1–15.

Mukonza, Chipso, & Swarts, Ilze. (2020). The influence of green marketing strategies on business performance and corporate image in the retail sector. *Business Strategy and the Environment*, 29, 838–845.

Nam, L. P., Que, N. D., Song, N. V., Mai, T. T. H., Phuong, N. T. M., Huong, N. T. X., Tiep, N. C., & Uan, T. B. (2022). Rice Farmers' Perception and

Determinants of Climate Change Adaptation Measures: A Case Study in Vietnam. *Agriculture Biology Forum*, 24(1), 13–29.

Park, Eunhye, Kwon, Junehee, & Kim, Sung-Bum. (2021). Green Marketing Strategies on Online Platforms: A Mixed Approach of Experiment Design and Topic Modeling. *Sustainability*, 13(4494), 1–17.

Piguet, Etienne. (2022). Linking climate change, environmental degradation, and migration: An update after 10 years. *Climate Change*, 13(746).

Rahman, Saleem Ur, & Nguyen-Viet, Bang. (2022). Towards sustainable development: Coupling green marketing strategies and consumer perception in addressing greenwashing. *Business Strategy and the Environment*, 1–14.
<https://doi.org/https://doi.org/10.1002/bse.3256>

Ruiu, Gabriele, Ruiu, Maria Laura, & Ragnedda, Massimo. (2022). How the COVID-19 Pandemic Impacted the Perception of Climate Change in the UK. *American Behavioral Scientist*, 0(0), 1–26.

Sadom, Nur Zulaikha Mohamed, Quoquab, Farzana, & Mohammad, Jihad. (2022). In search of frugality in the Malaysian hotel industry: the role of green marketing strategies and government initiatives. *Consumer Behavior in Tourism and Hospitality*, 17(3), 264–281.

Sapiains, Rodolfo, Azócar, Gabriela, Moraga, Pilar, Valenzuela, Catalina, Aldunce, Paulina, Cornejo, Camilo, Rojas, Maisa, Pulgar, Antonio, Medina, Loreto, & Bozkurt, Deniz. (2022). Are Citizens Ready for Active Climate Engagement or Stuck in a Game of Blame? Local Perception of Climate Action and Citizen Participation in Chilean Patagonia. *Sustainability*, 14(12034), 1–21.

Sayed, M. S. (2023). The Impact of Sensory Marketing on Managing a Sustainable Fast-Food Business in Egypt. *International Journal of Tourism, Archaeology, and Hospitality*, 3(1), 161–174.

Sedky, Dalia, & AbdelRaheem, Mohamed Abdallah. (2022). Studying green marketing in emerging economies. *Business Strategy and Development*, 5, 59–68.

Shaheen, Y. (2023). *The Egyptian Private-Climate Nexus: Private Sector Perceptions on the Green Transition* (Master Thesis). AUC Knowledge Fountain, Cairo, Egypt. <https://fount.aucegypt.edu/etds/2154>.

Suryana, M., & Anggiani, S. (2023). The Role of Marketing Mix (7 P's) Towards Repurchase Intention of Alibaba's Fried Banana in Bandung City. *Journal of Management, Business, and Social Sciences*, 1(1), 67–75. <http://journal.ubl.ac.id/index.php/mabuss/article/view/19>

Vilkaite-Vaitone, Neringa, Skackauskiene, Ilona, & Díaz-Meneses, Gonzalo. (2022). Measuring Green Marketing: Scale Development and Validation. *Energies*, 15(718), 1–17.

Wang, J., Nguyen, N., Jiang, X., Nguyen, H., & Saleem, M. (2023). Consumers' perceived value and use intention of cashless payment in the physical distancing context: evidence from an Asian emerging market. *Asia Pacific Journal of Marketing and Logistics*, 35(6), 1513–1531. doi:10.1108/APJML-05-2022-0408

Woo, Eun-Jung. (2021). The Relationship between Green Marketing and Firm Reputation: Evidence from Content Analysis. *Journal of Asian Finance, Economics and Business*, 8(4), 455–463.

Zhang, Youtang, & Berhe, Hagos Mesfin. (2022). The Impact of Green Investment and Green Marketing on Business Performance: The Mediation Role of Corporate Social Responsibility in Ethiopia's Chinese Textile Companies. *Sustainability*, 14(3883), 1–24.

Arabic References

أبو دومة، حيدر جميل الله محمد (2019). استخدام أسلوب تحليل الإنحدار اللوجيستي والتحليل التمييزي للعوامل المؤثرة على الإصابة بأمراض القلب: دراسة مقارنة مركز جراحة القلب وزراعة الكلى بمستشفى أحمد قاسم بالخرطوم بحري 2017. رسالة دكتوراة الفلسفة في الإحصاء. كلية الدراسات العليا، جامعة السودان للعلوم والتكنولوجيا.

عبد العال، مدحت، وعبد العليم، ممدوح. 2018. التحليل الإحصائي باستخدام SPSS 25. كلية التجارة. جامعة عين شمس. جمهورية مصر العربية.

Appendix 1

Questions Asked in the Exploratory Study

1. How do you perceive climate change?
2. What do you know about green marketing?
3. How do you find the marketing activities of fast food restaurants in terms of using eco-friendly ingredients, recyclable materials, saving resources and energy, and decreasing emissions?
4. Based on your answer to question 3, explain to what extent those activities made you more concerned about climate change.
5. In your opinion, how can fast food restaurants participate in shaping consumers' perceptions of climate change?

Appendix 2

Table 1. Measurements and Scaling of the Research Variables

Variable	Definition	Measurement and Scaling	Statements	Source
Independent Variable: Green Marketing strategies	Green marketing strategies comprises a set of marketing tools and elements that allows a firm to serve the target market and achieve organizational goals that are eco-friendly (Mukonza & Swarts, 2020; Kaur, et al., 2022)	Green Product: 9 statements of 5-point Likert scale (strongly agree, agree, natural, disagree, strongly disagree) are used to measure green products that are environmentally friendly and have limited adverse effects on the environment (Mogaji, et al., 2022)	The food products I buy must be beneficial to the environment	Kaur, et al., (2022)
			Green food products are good for health	
			Green food products are solutions to climate change problems	Vilkaite-Vaitone, et al., (2022)
			The fast food restaurant provides environmentally friendly products	
			The products of the fast food restaurant meet the requirements of environmentally regulations	
The products of the fast food restaurant are easy to recycle				
			The products of the fast food restaurant result in minimum environment damage	

The products of fast food restaurant consume the least amount of resources and energy

The ingredients of food products must be environmentally friendly Woo (2021)

Green Price: 4 statements are used to measure the primum price imposed for green products to reflect the usage of substitutes for chemical materials, and high cost of environmental restrictions (Kaur, et al., 2022)

I can pay higher prices when part of the amount is donated to green activities Vilkaite-Vaitone, et al., (2022)

Green food product prices should be reasonable to motivate consumers to buy Kaur, et al., (2022)

The price of the green food product I buy is reasonable Gelderman, et al (2020)

The price of green food products I buy is fair

Table 1 (cont'd)

Variable	Definition	Measurement and Scaling	Statements	Source
Independent Variable: Green Marketing strategies	Green marketing strategies comprises a set of marketing tools and elements that allows a firm to serve the target market and achieve organizational goals that are eco-friendly (Mukonza & Swarts, 2020; Kaur, et al., 2022)	Green Place: 4 statements are used to measure the strategies adopted by marketers to make green products available at the right time, in the correct quantity, and at the right place (Mukonza & Swarts, 2020; Kaur, et al., 2022)	Green fast food restaurants are widely available in all places.	Kaur, et al., (2022)
			The restaurant provides delivery service	The researcher
			I receive the food order in a proper time	
			I get the same food items and quantity I ordered	
		Green Promotion: 3 statements are used to measure green promotional strategies that addressing the interaction between product and environment, promoting an eco-friendly lifestyle, and creating a company image of environmental responsibility (Rahman & Nguyen-Viet, 2022)	I tend to pay attention to advertising messages about the environment.	Kaur, et al., (2022)

	Green advertisements inform me about the benefits of green products	Kaur, et al., (2022)
	Fast food restaurants must advertise their green marketing activities to consumers	Amoako, et al. (2020)
Green Packaging: 3 statements are used to measure the symbols, logos, color codes, or other indicators used to identify the green products (Sedky & Abdelraheem, 2021)	The restaurant serves food products in recyclable packages	Amoako, et al. (2020)
	The restaurant uses green symbols or logos on its packages	Kaur, et al., (2022); Sedky & Abdelraheem (2021)
	I prefer food products from restaurants that add environmentally friendly information to their packages	

Table 1 (cont'd)

Variable	Definition	Measurement and Scaling	Statements	Source
Dependent Variable: Consumers' Perception of climate change	Consumers' concern about climate and environmental crises (like flooding, extreme Storms, forest fire, rise in sea level, and rivers dry up) (Davidson & Kecinski, 2021; Ellis, et al., 2021; Piguet, 2021)	Exposure to climate change phenomenon 2 statements are used	I heard about climate change phenomenon from different communication channels (Television, radio, social media...etc.)	Moutouama et al. (2022)
			I regularly check weather conditions before going anywhere	The researcher
		Attention to climate change phenomenon: 4 statements of are used to measure change in weather temperature, rainfall, rain distribution, rise in sea level (Elasri, et al. 2022; Moutouama et al. 2022)	I heard from climate specialists that sea level increased over the last century	(Elasri, et al. 2022)
			I observe weather temperature tends to be higher than before	
		I notice changes in rainfall comparing to previous winter season	Moutouama et al. (2022)	
		I observe changes in distribution of rain from area to another		
Interpretation of climate change phenomenon: 6 statements are used to measure consumers' interpretation of food security fluctuations (food availability, access, utilization,	I find changes in the available quantities of food products			
	I find my needs of food products easily	The researcher		

and stability), and poverty (Moutouama et al. 2022). I get food products of the quantity I want

Food products are available along the whole year

I understand that climate change will make people in different regions poorer than before

Table 1 (cont'd)

Variable	Definition	Measurement and Scaling	Statements	Source
Dependent Variable: Consumers' Perception of climate change	Consumers' concern about climate and environmental crises (like flooding, extreme Storms, forest fire, rise in sea level, and rivers dry up) (Davidson & Kecinski, 2021; Ellis, et al., 2021; Piguat, 2021)	Interpretation of climate change phenomenon: 6 statements are used to measure consumers' interpretation of food security fluctuations (food availability, access, utilization, and stability), and poverty (Moutouama et al. 2022). Ratio scale is used to measure age groups	I understand that climate change will make changes in food products availability <ul style="list-style-type: none"> ▪ Less than 20 years old ▪ 20-30 years old ▪ 30-40 years old ▪ 40 and above ▪ Male ▪ Female 	The researcher
Moderating Variable: Consumers' Demographics	It includes consumers' age, gender, education, occupation, and income level (Al-Maliki et al., 2022; Ettinger, et al., 2022; Corrochano, et al., 2022; Czarniecka-Skubina, 2022; Sapiains, et al. 2022)	Nominal scale is used to measure gender Ordinal scale is used to measure education level Nominal scale is used to measure occupation	<ul style="list-style-type: none"> ▪ High school ▪ Bachelor degree ▪ Post graduate (Master, PHD...) ▪ others ▪ Private sector ▪ Public sector ▪ Student ▪ Not working 	The researcher

Ratio scale is used to measure
income level

- Less than 2000 L.E.
- 2000-4000 L.E.
- 4000-6000 L.E.
- 6000 L.E. and more

a dichotomous question was
used in the beginning of the
questionnaire to filter the
respondents who deal with fast
food restaurants

Source: developed by the resracher

Appendix 3

Research Questionnaire (English)

Dear Sirs,

The researcher is studying to what extent green (environmentally friendly) marketing strategies done by fast food restaurants are affecting your concern about climate change risks. So, your participation in filling in this questionnaire is appreciated and important for conducting this research.

Note: These data are used only for academic purpose

Thanks in advance

The researcher

1. Are you visiting or ordering food from fast food restaurants?

Yes

No

If your answer is **No**, thanks for your time and no need to complete the questionnaire.

If your answer is **Yes**, please move to next questions:

2. Please determine your level of agreement on the following statements; from (1) strongly disagree to (5) strongly agree:

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
	(1)	(2)	(3)	(4)	(5)
1. The food products I buy must be beneficial to the environment					
2.Green food products are good for health					
3. Green food products are solutions to climate change problems					
4. The fast food restaurants provide environmentally friendly products					
5.The products of the fast food restaurants meet the requirements of environmentally regulations					

6.The products of the fast food restaurants are easy to recycle					
7.The products of the fast food restaurants have the least environmental damage					
8.The products of fast food restaurants consume the least amount of resources and energy					
9.The ingredients of food products must be environmentally friendly					
10. I can accept higher prices when part of the amount is donated to green activities					
11.Green food product prices should be acceptable to motivate consumers to buy					
12.The price of the green food product I buy is reasonable					
13. The price of green food products I buy is fair					
14. Green fast food restaurants are widely available in all places.					
15. The restaurants provide delivery service					

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
	(1)	(2)	(3)	(4)	(5)
16. I receive the food order in a proper time					
17. I get the same food items and quantity I ordered					
18. I tend to pay attention to advertising messages about the environment.					
19. Green advertisements inform me about the benefits of green food products					
20. Fast food restaurants must advertise their green marketing activities to consumers					

21. The restaurants serve food products in recyclable packages					
22. The restaurants use green symbols or logos on its packages					
23. I prefer food products from restaurants that add environmentally friendly information to their packages					
24. I heard about climate change phenomenon from different communication channels (Television, radio, social media...etc.)					
25. I regularly check weather conditions before going anywhere					
26. I heard from climate specialists that sea level increased over the last years					
27. I observe weather temperature tends to be higher than before					
28. I notice changes in rainfall comparing to previous winter season					
29. I observe changes in distribution of rain from area to another					
30. I find changes in the available quantities of food products					
31. I find my needs of food products easily					
32. I get food products of the quantity I want					
33. Food products are available along the whole year					
34. I understand that climate change will make people in different regions poorer than before					
35. I understand that climate change will make changes in food products availability					

3. Age:

- Less than 20 years old
- 20-30 years old
- 30-40 years old
- 40 and above

4. Gender:

- Male

Female

5. Education:

High school

Bachelor degree

Post graduate (Master, PHD...)

Others

6. Occupation:

Private sector

Public sector

Student

Not working

7. Income:

Less than 2000 L.E.

2000-4000 L.E.

4000-6000 L.E.

6000 L.E. and more

Thanks for your time

Appendix 4

Table 3. Reliability, Validity, and Confirmatory Factor Analyses of the Variables' Measures

Constructs		Number of Statements		Cronbach's Alpha		Average Item Correlation		AVE	Item	Loading	
Green Marketing Strategies	Green Product	23	9	0.907	0.813	0.697	0.626	55.8%	GProduct1	0.599	
									GProduct2	0.580	
									GProduct3	0.531	
									GProduct4	0.638	
									GProduct5	0.796	
									GProduct6	0.771	
									GProduct7	0.630	
									GProduct8	0.756	
									GProduct9	0.617	
	Green Price	4	0.654	0.621	GPrice1	0.809					
					GPrice2	0.568					
					GPrice3	0.903					
	Green Place	4	0.685	0.652	GPrice4	0.850					
					GPlace1	0.649					
					GPlace2	0.656					
					GPlace3	0.780					
Green Promotion	3	0.654	0.687	GPlace4	0.847						
				GPromotion1	0.912						
Green Packaging	3	0.668	0.601	GPromotion2	0.763						
				GPromotion3	0.614						
				GPacking1	0.922						
Consumers' Perception of Climate Change	Exposure to Climate Change	12	2	0.781	0.773	0.629	0.630	68.2%	GPacking2	0.691	
									GPacking3	0.692	
	Attention to Climate Change		4		0.815				0.523	Exposure1	0.904
										Exposure2	0.904
										Attention1	0.796
										Attention2	0.809
	Interpretation to Climate Change		6		0.576				0.685	Attention3	0.912
										Attention4	0.719
										Interpretation1	0.620
										Interpretation2	0.833
									Interpretation3	0.885	
									Interpretation4	0.876	
									Interpretation5	0.603	
									Interpretation6	0.628	

Source: The Researcher

AVE: is a measure of the amount of variance that is captured by a construct in relation to the amount of variance due to measurement error.

Table 4. Descriptive Statistics of the Green Marketing Strategies

Statement	Sample Size	Minimum	Maximum	Mean	Standard Deviation	COV
Green Product	334	1.89	5	3.5166	0.70357	20.01%
The food products I buy must be beneficial to the environment	334	1	5	3.93	0.995	25.32%
Green food products are good for health	334	1	5	4.41	0.736	16.69%
Green food products are solutions to climate change problems	334	1	5	4.22	0.789	18.70%
The fast food restaurant provides environmentally friendly products	334	1	5	3.3	1.342	40.67%
The products of the fast food restaurant meet the requirements of environmentally regulations	334	1	5	2.87	1.182	41.18%
The products of the fast food restaurant are easy to recycle, disassemble, decompose and reuse	334	1	5	3.05	1.212	39.74%
The products of the fast food restaurant result in minimum environment damage	334	1	5	2.8	1.239	44.25%
The products of fast food restaurant consume the least amount of resources and energy	334	1	5	2.92	1.291	44.21%
The ingredients of food products must be environmentally friendly	334	1	5	4.16	1.041	25.02%
Green Price	334	2	5	3.4416	0.68084	19.78%
I can pay higher prices when part of the amount is donated to green activities	334	1	5	3.16	1.059	33.51%
Green food product prices should be reasonable to motivate consumers to buy	334	2	5	4.43	0.662	14.94%
The price of the green food product I buy is reasonable	334	1	5	3.05	1.056	34.62%
The price of green food products I buy is fair	334	1	5	3.12	1.051	33.69%
Green Place	334	1.75	5	3.5891	0.88506	19.09%
Green fast food restaurants are widely available in all places	334	1	5	2.97	1.186	39.93%
The restaurant provides delivery service	334	1	5	4.06	0.975	24.01%
I receive the food order in a proper time	334	2	5	3.53	0.844	23.91%
I get the same food items and quantity I ordered	334	2	5	3.8	0.762	20.05%
Green Promotion	334	1.67	5	3.7884	0.83377	22.01%
I tend to pay attention to advertising messages about the environment	334	1	5	3.64	1.116	30.66%
Green advertisements inform me about the benefits of green products	334	1	5	3.61	1.167	32.33%
Fast food restaurants must advertise their green marketing activities to consumers	334	1	5	4.12	0.959	23.28%
Green Packaging	334	1.67	5	3.5898	0.83653	23.30%
The restaurant serves food products in recyclable packages	334	1	5	3.39	1.224	36.11%
The restaurant uses green symbols or logos on its packages	334	1	5	3.49	1.033	29.60%
I prefer food products from restaurants that add environmentally friendly information to their packages	334	1	5	3.89	0.963	24.76%

Source: The Researcher

COV= (standard deviation/ mean) *100

Table 13. Coefficients of the Multiple Regression Model between Green Marketing Strategies and Consumers' Perception of Climate Change given the moderating effect of consumers' demographics

Model	Unstandardized Coefficient	t	Sig.
	Beta		
Constant	0.908	1.366	0.173
Green Product	1.83	5.892	0.000
Green Price	-0.632	-2.095	0.037
Green Place	-0.926	-4.006	0.000
Green Promotion	0.022	0.067	0.947
Green Packaging	0.746	2.825	0.005
Gender (=female)	2.347	5.818	0.000
Age (<30 years old)	-0.376	-0.464	0.643
Education (=undergraduate)	0.051	0.125	0.901
Occupation (=sectors)	0.666	0.813	0.417
Monthly Income (<6000 EGP)	0.722	0.885	0.377
Green product*Gender	-0.323	-3.245	0.001
Green Price*Gender	0.193	1.768	0.078
Green Place*Gender	-0.476	-5.045	0.000
Green Promotion*Gender	-0.067	-0.948	0.344
Green Packaging*Gender	0.127	1.613	0.108
Green product*Age	-0.865	-3.131	0.002
Green Price*Age	0.695	2.382	0.018
Green Place*Age	1.083	4.641	0.000
Green Promotion*Age	-0.221	-0.718	0.474
Green Packaging*Age	-0.724	-2.601	0.010
Green product*Education	-0.102	-0.695	0.488
Green Price*Education	0.214	0.924	0.356
Green Place*Education	0.422	2.532	0.012
Green Promotion*Education	0.076	0.413	0.680
Green Packaging*Education	-0.678	-4.367	0.000
Green product*Occupation	-0.748	-3.721	0.000
Green Price*Occupation	-0.277	-1.282	0.201
Green Place*Occupation	0.126	0.781	0.436
Green Promotion*Occupation	0.668	5.44	0.000
Green Packaging*Occupation	-0.092	-0.622	0.534
Green product*Income	-1.051	-3.465	0.001
Green Price*Income	0.168	1.522	0.129
Green Place*Income	0.467	3.21	0.001
Green Promotion*Income	0.293	1.64	0.102
Green Packaging*Income	-0.2	-1.143	0.254

Source: The Researcher