
The Impact of Social Media Influence on Attitudes toward Sustainable Consumption “A Mediation Analysis of Climate Change Awareness”

An applied Study on Higher Education Students in Egypt

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Abstract:

The research proposes a new model for evaluating the impact of social media influence on climate change awareness and attitudes toward sustainable consumption, as well as the impact of climate change awareness on attitudes toward sustainable consumption, and how climate change awareness mediates the relationship between social media influence and attitudes toward sustainable consumption. 384 usable responses were gathered from higher education students in Egypt, using a convenience sampling approach. Cronbach's alpha, correlation analysis, regression analysis, and the process are used to analyze the data. Findings concluded that social media influence has a significant impact on climate change awareness and attitudes toward sustainable consumption. Further, climate change awareness has a significant impact on attitudes toward sustainable consumption, and it mediates the relationship between social media influence and attitudes toward sustainable

consumption. The study recommends policymakers in the higher education sector depend on the study model if they want to raise the climate change awareness of their university students and encourage their positive attitudes toward sustainable consumption. The research focuses on the students in higher education in Egypt.

Keywords: Social media influence, Climate change awareness, Attitudes toward sustainable consumption.

المخلص:

يقترح البحث نموذجًا جديدًا لتقييم اثر تائير وسائل التواصل الاجتماعي على الوعي بتغير المناخ والموقف تجاه الاستهلاك المستدام ، وكذلك اثر الوعي بتغير المناخ على الموقف تجاه الاستهلاك المستدام ، و اثر الوعي بتغير المناخ كمتغير وسيط في العلاقة بين تائير وسائل التواصل الاجتماعي والموقف تجاه الاستهلاك المستدام. تم جمع ٣٨٤ استقصاء قابلة للاستخدام من طلاب التعليم العالي في مصر، باستخدام طريقة أخذ العينات الملائمة. وتم استخدام ألفا كرونباخ وتحليل الارتباط وتحليل الانحدار والعملية. وخلصت النتائج إلى أن لتأثير وسائل التواصل الاجتماعي اثر كبير على الوعي بتغير المناخ والموقف تجاه الاستهلاك المستدام. علاوة على ذلك ، فإن الوعي بتغير المناخ له اثر كبير على الموقف تجاه الاستهلاك المستدام ، كما انه يتوسط العلاقة بين تأثير وسائل التواصل الاجتماعي و الموقف تجاه الاستهلاك المستدام. توصي الدراسة صانعي السياسات في قطاع التعليم العالي بالاعتماد على نموذج الدراسة لزيادة وعي الطلاب بالجامعات بتغير المناخ، وتشجيع مواقفهم الإيجابية تجاه الاستهلاك المستدام. كما يقتصر البحث على طلاب التعليم العالي في مصر.

الكلمات المفتاحية: تائير وسائل التواصل الاجتماعي ، الوعي بتغير المناخ ، الموقف تجاه الاستهلاك المستدام.

1. Introduction

Climate change is a main challenge that humankind faces today (United Nations Environment Programme, 2021). Climate change is related to the changes that happen in the climate over the years, due to human causes and natural. The current warming that has been increased since the middle of the 20th century is a result of economic activities (Edenhofer et al. 2014). All countries will be vulnerable to the consequences of climate change, especially Developing countries (Ajuang et al. 2016). Regarding Egypt, the impact of climate change will be reflected in economic sectors and the ecosystem, where the financial losses and health and social problems will appear clearly (Smith et al. 2013).

Climate change Awareness is crucial for both adapting climate change mitigation strategies and encouraging environmentally friendly practices, especially for youth, who will be able to educate others and embrace the activities that can reduce risk disasters (Barreda 2018). Indeed, climate change awareness is one of the most important drivers for environmentally friendly practices; someone can't adopt such practices if he or she hasn't had awareness of the consequences of the issue of climate change. In other words, climate change awareness is significant for adopting a sustainable lifestyle, by affecting people's attitudes toward sustainable consumption, and the degree of the adoption capacity depends on the degree of

awareness, where adoption capacity will increase when the awareness increases, (Ma et al., 2023).

Social media plays a significant role in raising awareness about climate change, it can inform the public about the aspects and issues related to climate change that cannot directly perceive (Hautea et al., 2021), which influences students' environmental-oriented attitudes, intentions, and behaviors, in addition, the students who had educational background with environmental studies are more likely to adopt sustainable consumption practices than those who didn't (Ma et al., 2023). Therefore, consumers who are aware of climate change are more likely to spend more money to buy environmentally friendly products (Ogbeide et al., 2015).

Therefore, the study aims to contribute to literature related to social media influence, climate change awareness, and sustainable consumption attitudes, by investigating the association between social media influence, climate change awareness, and sustainable consumption attitudes, as well as the role of climate change awareness as a mediator in the relationship between social media influence and sustainable consumption attitudes. In addition, the study will investigate the moderating role of educational background in the relationship between climate change awareness and sustainable consumption attitudes. The study will focus on the universities students in Egypt, who will be the decision-makers in the future and will face the

negative effects of climate change in the coming years. In Egypt, twenty-seven universities vary between public and private academies and universities (SCU 2021).

2 Literature review

2.1 Social Media Influence

The internet is an important information source about climate change, and social media can play a significant role in disseminating information about climate change and raising awareness about the consequences related to it. In Egypt, 72% of the population uses the Internet, and almost half of them are active users of social media platforms (NAOS 2022, The World Bank 2020). Social media platforms are perceived as trusted and effective online communication platforms that connect individuals. These platforms are widely used by customers, especially youth (Luo et al., 2020). Social media helped customers to become more sophisticated by adopting new strategies for searching, evaluating, selecting, and buying products (Sun and Wang, 2020).

People encounter information, messages, and news on social media platforms serendipitously or as a result of their activity on these platforms (Goyanes and Demeter, 2020). The influence of social media platforms occurs through the dynamics related to information, social connectivity, self-expression, and

the mediators of artificial intelligence. The public becomes well-informed audiences, because of the exposure to media content on these platforms (Gómez & Gómez, 2023). Exposure as a term refers to the act of seeing, reading, and hearing media messages that can happen individually or in a group. Indeed, exposure to social media content can affect the effective and cognitive domains of the public (Syrdal and Briggs, 2018),

In addition, these platforms encourage the public to express their opinion and create content. Moreover, Social media platforms encourage active users in the form of groups, companies, or any other stakeholders to create and share their comments and posts related to public and private issues (Bruns, 2009), which can generate extemporaneous that have different behavioral effects. Profound behavioral changes greatly impact real life, and lifestyle changes would be the result (Prilyantinasari and Mulyana, 2020). Therefore, Social media plays a significant role in influencing the intentions and attitudes of customers to engage in environmentally friendly practices and behavior (Sapl̄acan and M'arton, 2019). Consequently, the study will illustrate the potential role of social media influence as a primary driver for arising climate change awareness, which could influence the public's attitude toward sustainable consumption.

2.2 Climate Change Awareness

The rapid growth in the economy is the reason behind the ecological environment imbalance as well as the over-consumption of natural resources. Ozone depletion, water, and air pollution, and global warming are the primary environmental concerns (Afrifa et al., 2020). Therefore, there is a need for quick greenhouse gas emissions reduction (Bauer et al., 2022), to prevent global warming from rising over 1.5° Celsius. Overpopulation and overconsumption are major causes of environmental and ecological issues (Chen and Hung, 2016). Furthermore, organizations have a greater effect on climate change; they are responsible for water and air pollution when releasing carbon dioxide and toxic substances into them (Farrukh et al., 2022).

Climate change awareness is the perceived concern about the threats that natural ecosystems and human society will face because of climate change (Kim & Hall, 2020). Climate change awareness is not only related to the negative effects of environmental issues but also possible corrective actions and mitigation strategies (Saari et al., 2021). Indeed, climate change awareness influences risk perception (Kim et al., 2014), and people will appropriately judge environmental risks when they have a sufficient understanding of environmental issues (Balžekienė and Telešienė, 2017), and their environmental concerns will be the result of this understanding (Marquart-Pyatt, 2018).

Climate change is a global phenomenon, and the consequences of it have received acceptance in public opinion and gained scientific consensus (Poushter & Huang, 2019). Climate change will affect human health and all aspects of the economy. Indeed, climate change is one of the most important challenges that the world will face in the coming years, international efforts alone will not be able to face this challenge (Ghanem, 2023). The mitigating of climate change requires adopting more sustainable green practices. Manufacturers must adopt strategies that concentrate on environmental preservation, recycling, and waste management (Jabbour et al., 2015). In addition, many governments worldwide have developed strategies, policies, and legal frameworks to protect the environment (Basloom et al., 2022).

Furthermore, climate change is a result of unsustainable consumption of products and services (Davidson et al., 2015). Customers can play a major role in mitigating climate change by participating in sustainable behavior, where most environmental problems occurred as a result of their lifestyles that are characterized by the excessive use of resources such as water, energy, and food (Vita, 2019). Therefore, consumption practices are considered the most significant culprits, where buyers create demand for products and services (Agrawal et al., 2023). Mitigating climate change demands radical changes in the way of human lifestyle and production (Kang et al. 2020), in addition,

creating awareness among youth will lead to radical changes in their attitude and behavior, and they will involve in activities that can save the environment such as rationalizing energy and water consumption, gardening, and recycling. Moreover, they can play a significant role in raising the awareness of people around them, especially in rural. Indeed, the participation of youth is crucial to saving the environment. Therefore, Climate change awareness will help youth to develop positive attitudes toward the environment (Ghanem, 2023).

2.3 Sustainable Consumption Attitudes

Agrawal et al., (2023) mentioned that although Globalization had a positive effect on the economic growth of nations, it had affected the environment negatively. It was the reason behind the increase in demand for goods and services, which encouraged manufacturers to increase their capacities and use heavily natural resources, which affected the environment negatively (Zhang et al., 2020). In addition, the electronic waste of advanced technology has become another important challenge; therefore, sustainability becomes one of the main concerns for mankind and governments worldwide (Kalia et al., 2022a). Mitigating climate change requires individuals and organizations to adopt sustainable consumption practices that are related to purchasing products and consuming them in an environmentally

friendly way. Such practices are a critical component for achieving sustainable development (Nekmahmud et al., 2022).

Sustainable consumption aims to reduce the harmful impacts on health and the environment and encourage an environmentally friendly lifestyle (Nekmahmud et al., 2022). It might be challenging for many customers to consume sustainably, where consuming contradict sustainability because consumption means to use something up or destroy it, therefore, consumption should go beyond the traditional concept and need a new perspective, which is called sustainable consumption. Sustainable consumption happens when there is a reduction in the consumption of overall resources, and when the consumption levels and patterns are changed (Calvo, 2019). In other words, sustainable consumption focuses on purchasing and using goods that are produced more efficiently, as well as environmentally friendly consumption practices that satisfy the need of present and future generations (Cummins et al., 2014).

The attitude toward sustainable consumption refers to the beliefs, interests, and intentions of someone's behavior regarding the activities and the issues that are related to the environment (Othman et al., 2013), it is the attitude that is positive and favorable toward the environment, and the individuals with such attitudes tend to feel the moral responsibility to preserve the environment, through correcting the negative effects resulting

from the human interaction with it (Zakaria et al., 2019). The ecological activities of individuals can be predicted by their attitudes toward sustainable consumption (Barr, 2007). Recycling is considered an important ecological activity that can protect the environment; it is the most suitable solution to the ecological and economic aspects of waste management (Coelho & de Brito, 2013). Indeed, perceptions are followed by attitudes, they are not separated. Nonetheless, previous literature indicated that although youth are aware of the significance of preserving the environment, as well as have a more favorable attitude to the environment than the elderly, they have a moderate level in adopting sustainable consumption practices (Thomson, 2008; Abdul Latiff et al., 2012).

2.4 The Association Between Social Media Influence and Climate Change Awareness

Although the impact of the use of the internet on climate change awareness has been investigated more in previous studies (Ma et al., 2022; Taddicken, 2013), the impact of social media influence on climate change awareness and public attitude still needs more investigation (Tuitjer & Dirksmeier, 2021), because of the novelty of social media platforms such as YouTube, Facebook, and Instagram (Gómez & Gómez, 2023). Scholars started to study this phenomenon heavily after the contributions of the study conducted by Good (2006), which empirically

proved that exposure to content related to the environment has a significant effect on environmental concerns.

Moreover, the study by Anderson (2017), investigated the impact of social media on the public's knowledge, opinion, and behavior, the study proved that social media can play a significant role in raising climate change awareness, which can promote the environmentally-friendly behavior through the information sharing on social media. Moreover, the available news on social media decreases climate change doubt (Diehl et al., 2019). Further, the study by Ghanem (2023) revealed that social media platforms can be used in conducting seminars and campaigns related to climate change, which would help in raising the public's awareness related to climate change.

Indeed, social media platforms have a unique effect on influencing public opinion-related issues. Reviews of literature illustrated that the issue of climate change is widely available on social media (Pearce et al., 2019). Social Media provides a virtual environment for people to connect and communicate with each other (Shao and Pan, 2019), and it becomes the main information source for people (Mladenović et al., 2020). Therefore, Social media plays a meaningful role in increasing climate change awareness by dissecting the information related to it, which helps in shaping the public's opinion related to climate change (Gómez & Gómez, 2023), and Social media influence can make people more

conscious about climate change issues, (Agrawal et al., 2023). Thus, the following hypothesis can be suggested:

H1: Social media influence has a significant impact on climate change awareness.

2.5 The Association between Climate Change Awareness and Attitudes toward Sustainable Consumption

Due to the increasing pace of climate change, individuals must change their behavior to become sustainable. This will lead to better living and health conditions for present and future generations (IPCC, 2018). People must consume products in a way that allows the natural ecosystem to regenerate process or recycle (Rees, 2020). To achieve this, there is a need to change the culture of consumption and move towards a circular economy (Saari et al., 2021). Although sustainable consumption behavior theories have been developed since the eighties, additional research will be needed to determine the underlying constructs. For instance, there is a need to investigate the predictive power of climate change awareness in affecting sustainable consumption behavior. Consumption behavior refers to individuals' behaviors that reduce the harmful impact on the environment, and it is associated with pro-environmental behavior (Dhandra, 2019), which is affected by the awareness of environmental issues that are relative to the information that someone has about climate

change, ecological effects of production and consumption, and the current environmental state (Tam and Chan, 2018).

Climate change awareness can play an essential role in changing individuals' unsustainable consumption behavior, where people who are aware of climate change issues tend to show more positive attitudes toward the environment, and are more likely to adopt sustainable consumption behaviors (Saari et al., 2021). When people realize the importance of the environment and the harm they cause to it, they will adopt actions that can protect their environment; increasing awareness will be reflected in the public's willingness to behave more sustainably. They may prefer green products and involve in recycling activities. Indeed, climate change awareness can affect the green practices of people (Agrawal et al., 2023).

Climate change awareness has a significant and direct impact on people's attitudes and intentions toward adopting environmentally friendly practices (Saari et al., 2021), and has an indirect effect on people's environmental behavior, but it could be a good predictor of their environmental intentions and behavior. It can result in behavioral change by affecting their intentions to adopt conservation practices (Gkargkavouzi et al., 2019). In other words, climate change awareness doesn't directly affect sustainable consumption behavior but it acts as a modifier of sustainable consumption attitudes (Dimitrova et al., 2022), climate change

awareness is the main driver of the sustainable consumption attitude, which is a significant antecedent of sustainable consumption intention and behavior (Zakaria et al., 2019).

Based on the above discussion, the study posits that climate change awareness significantly impacts individuals' attitudes toward sustainable consumption. Hence, the following hypothesis is suggested:

H2: Climate change awareness has a significant impact on attitudes toward sustainable consumption.

2.6 The Association Between Social Media Influence and Attitudes toward Sustainable Consumption

Sustainability is a process that contains six stages, it goes through awareness, then understanding, then application, then progress, then value creation, and ends with behavioral change (Nordman et al., 2017). Social media can play a critical role in raising awareness related to sustainability (Hautea et al., 2021), which could be the first step in shaping sustainable behavior intention (Emanuel and Adams, 2011).

Consumer decision-making is a process, in which consumers pass through 5 stages, it starts with being aware, then appealing, then asking, then acting, and finally advocating. In the context of social media, the decision that appears personal

decision is the decision that is affected by the influence of others (Kartajaya et al., 2016), regarding consumption decisions, social media could facilitate this process when providing consumers with the required knowledge, skills, and attitudes (Wang et al., 2012). For instance, the influence of peers on social media can influence others' sustainable consumption behavior intention, and encourage them to engage in activities related to sustainability (Salciuviene et al., 2022).

The information on social media can influence consumer decision-making at cognitive, affective, attitudinal, and behavioral levels, and this influence becomes higher at the attitudinal level, where individuals can get information easily and for free, then they can share it (Segovia-Villarrealet al., 2022), therefore, when they get and share information about sustainable consumption, the green consumption could be enhanced (Simeone and Scarpato, 2020). On social media, opinion leaders disseminate knowledge and information, which drive their followers to adopt new behaviors, for instance, the followers of sustainability advocates usually embrace a green lifestyle (Chwialkowska, 2019).

Indeed, social media platforms can play an influential role in advocating sustainability by offering an effective environment for influencing behavior (Yilmaz and Youngreen, 2016). Therefore, it is possible for an entire generation to adopt a

favorable attitude toward sustainable consumption. In other words, the available information about sustainability on social media platforms has a significant effect on raising awareness, which can affect the public's attitude towards green lifestyle and sustainability, in addition, social media platforms allow individuals to interact and engage with sustainability knowledge in the form of liking, commenting, and sharing content related to sustainability, which represents different behaviors ranging from temporary involvement to deep involvement in proactive advocacy. Therefore, Social media can significantly encourage environmentally friendly behaviors that lead to sustainable lifestyles and encourage youth to engage in activities that advocate sustainability (Confetto et al., 2023). Hence, the following hypothesis is developed:

H3: Social media influence has a significant impact on attitudes toward sustainable consumption.

In summary, social media can play a significant role in informal education; it can provide students with the information needed about climate change and environmental issues, which could help in increasing climate change awareness and promoting attitudes toward sustainable consumption practices among students, who would be the decision-makers in the future.

2.7 The Moderating Role of Educational Background

Educational level is a primary predictor of climate change awareness, where higher educated people are more concerned with the issue of climate change (Nauges et al., 2021). In addition, environmental education can play a significant role in helping people in raising climate change awareness, and a favorable attitude toward the environment and leads to desired consumption behavior (Huang et al., 2014; Taufique et al., 2016).

The study by Ma et al., (2023) has found that climate change awareness and environmental attitudes of young people affect their pro-environmental intentions positively, which affects the adoption of sustainable practices, and that relationship becomes more strongly significant when youth whose education contained environmental courses than those who didn't have. Therefore, climate change awareness can be improved by environmental education, which can shape the eco-friendly lifestyle of youth, who will play a major influence on the future of the environment, thus, it is necessary to make sustainability issues a part of their education.

In addition, the study by Ghanem (2023) revealed that climate change awareness can be raised by integrating studies related to climate change into educational curricula. In addition, the capabilities of young people can play a significant role in

raising public awareness about climate change. Thus, creating climate change awareness requires that the school and higher education curriculum should include environmental studies to increase the level of awareness (Onuoha et al. 2021).

Therefore, understanding the attitudes and behaviors of students toward climate change and their responses to environmental issues are the main concerns of environmental scientists (Chuvieco et al., 2018; Dagiliut et al., 2018). The study by Wachholz et al., (2014) revealed that although students are acknowledged their worries about environmental issues, they ignorant of the causes and effects of climate change. In addition, they are not aware of the behavioral factors that form their attitudes and lead them to adopt sustainable practices. This situation represents the gap between young people's awareness of climate change and their actual attitudes toward sustainable consumption practices. Therefore, the study on hand aims to investigate the moderating role of educational background (with or without environmental studies) in the relationship between climate change awareness and attitude toward sustainable consumption. Thus, the following hypothesis is proposed:

H4: educational background (with and without environmental studies) plays a moderating role in the relationship between climate change awareness and attitudes toward sustainable consumption.

2.8 Research Gap

The literature that tested social media influence, climate change awareness, and attitudes toward sustainable consumption together is very scarce. Moreover, the impact of social media influence on climate change awareness and attitudes toward sustainable consumption still needs more investigation (Tuitjer & Dirksmeier, 2021). In addition, the argument on whether climate change awareness can mediate the relationship between social media influence and attitudes toward sustainable consumption, as well as the moderating role of educational background with and without environmental studies on the relationship between climate change awareness and attitudes toward sustainable consumption hasn't been examined yet, which reflects an empirical gap in previous literature. Accordingly, the study on hand aimed to bridge this gap and deliver an inclusive overview of the relationship between the study variables, as well as the mediating role of climate change awareness in the relationship between social media influence and the attitudes toward sustainable consumption of universities students in Egypt, and the moderating role of educational background with and without environmental studies on the relationship between climate change awareness and attitudes toward sustainable consumption, which makes this study is distinguished in the objectives and the field of study than others.

2.9 Research Problem

The study aims to answer the following question: do social media influence and climate change awareness influence sustainable consumption behavior? And how does climate change awareness mediate the relationship between social media influence and sustainable consumption behavior? And how does educational background moderate the relationship between climate change awareness and attitudes toward sustainable consumption?

2.10 Research Questions

- Does Social media influence have a significant impact on climate change awareness?
- Does climate change awareness have a significant impact on attitudes toward sustainable consumption?
- Does Social media influence have a significant impact on attitudes toward sustainable consumption?
- How can educational background (with and without environmental studies) play a moderating role in the relationship between climate change awareness and attitudes toward sustainable consumption?

2.11 Research Objectives

- To investigate if Social media influence has a significant impact on climate change awareness.
- To investigate if climate change awareness has a significant impact on attitudes toward sustainable consumption.
- To investigate if Social media influence has a significant impact on attitudes toward sustainable consumption.
- To find out if educational background (with and without environmental studies) plays a moderating role in the relationship between climate change awareness and attitudes toward sustainable consumption.

2.12 Research Hypotheses

- H1: Social media influence has a significant impact on climate change awareness.
- H2: Climate change awareness has a significant impact on attitudes toward sustainable consumption.
- H3: Social media influence has a significant impact on attitudes toward sustainable consumption.
- H4: educational background (with and without environmental studies) plays a moderating role in the relationship between climate change awareness and attitudes toward sustainable consumption.

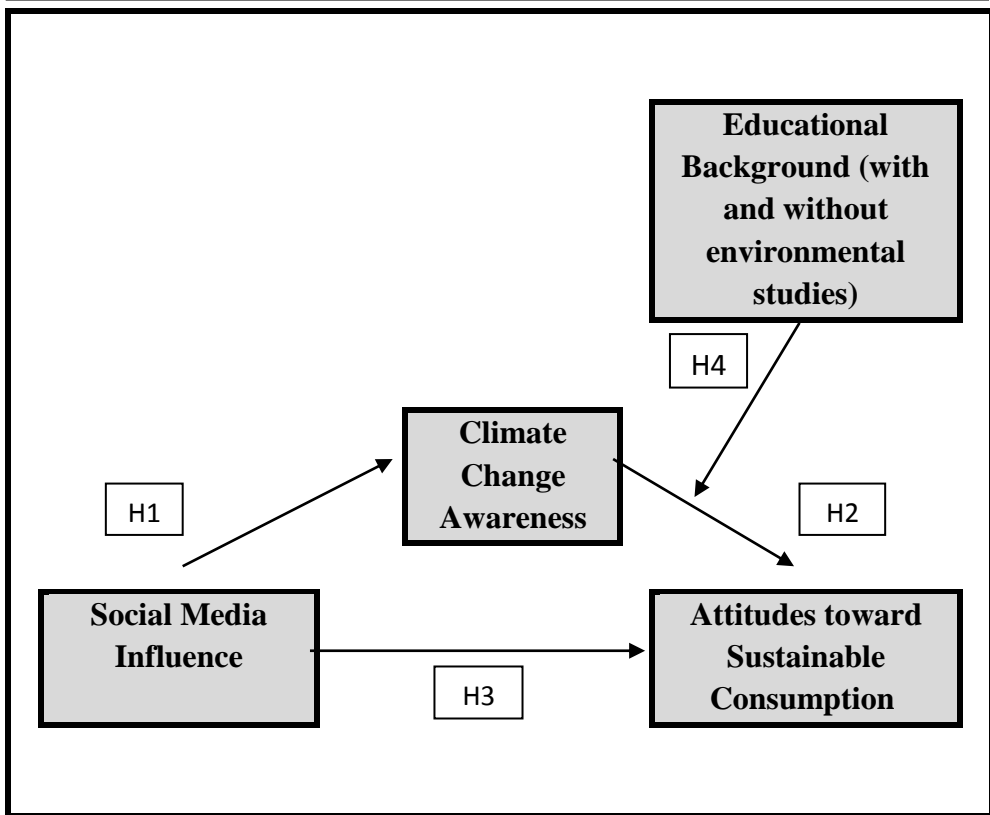


Figure 1: The Conceptual Framework of the Research

3 Methods

the research objectives can be achieved by employing descriptive research as a research format using the quantitative research method, the secondary data was collected from websites, books, and journals, while the primary data was collected by The online questionnaire form that was distributed randomly on

social media platforms; WhatsApp, Linked In, and Facebook to students in the higher education universities in Egypt, A total of 384 responses were collected in 30 days using a convenience sampling approach., several literature reviews were used in developing the questionnaire. In the list, Social media influence was represented by 6 items, which were developed by (Gómez & Gómez, 2023), and represented as items 1 to 6 respectively, climate change awareness was represented by 6 items, which were developed by (Ma et al., 2023), and represented as items 7 to 12 respectively, and attitudes toward sustainable consumption was represented by 6 items, which developed from (Ayar & Gürbüz, 2021), and represented as items 13 to 18 respectively, The questionnaire items were presented on a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The demographic characteristics in terms of age, gender, and educational background with or without environmental studies were also included in the questionnaire. The data was analyzed by Cronbach's alpha, correlation analysis, regression analysis, and the process that is a path analysis modeling tool for SPSS and SAS using the Statistical Package for the Social Science (IBM SPSS v22).

4 Results

4.1 Demographic Profile

Regarding the descriptive analysis, there are more females (62%) than males (38%) in the sample, moreover, the majority of the participants (81%) are young adults, between the ages of 17 and 24 years old. In addition, the educational background of the majority of the participants (72%) included environmental studies. These percentages indicate that the vast majority of the participants use smart phones commonly, and use social media heavily, and have adequate awareness of climate change.

4.2 Reliability Analysis

Cronbach's alpha is used to ensure that the measures used are reliable by assessing the internal consistency of each construct.

Table 1: Reliability Test for Constructs

| <i>Constructs</i> | <i>Cronbach's alpha</i> | <i>N. of Items</i> |
|--|-------------------------|--------------------|
| Social media influence | 0.744 | 6 |
| Climate change awareness | 0.836 | 6 |
| Attitudes toward sustainable consumption | 0.763 | 6 |

In Table 1, the reliability coefficients of climate change awareness, attitudes toward sustainable consumption, and social media influence are high (0.836), (0.763), and (0.744) respectively. Therefore, the survey is reliable enough, where the values of Cronbach's alpha are higher than 0.7 (Pallant, 2001).

4.3 Correlation Analysis

Table 2: The Pearson Correlations between Constructs

| | Social media influence | Climate change awareness | Attitudes toward sustainable consumption |
|--|------------------------|--------------------------|--|
| Social media influence | | | |
| Sig. (2-tailed) | | | |
| Climate change awareness | 0.818** | | |
| Sig. (2-tailed) | 0.000 | | |
| Attitudes toward sustainable consumption | 0.874** | 0.799** | |
| Sig. (2-tailed) | 0.000 | 0.000 | |

The results in **Table 2** indicated that there is a positive correlation between all the variables, and the relationship between these constructs is significant at the 0.01 level of significance in the model.

4.4 Regression Analysis

4.4.1 Testing the First Hypothesis H1

H1: Social media influence has a significant impact on climate change awareness.

The simple regression model was developed between climate change awareness as a dependent variable and Social media influence as an independent variable for testing the validity of the first hypothesis (H1).

Table 3: Analysis of Variance between Social Media influence and Climate Change Awareness

| Dependent Variable | Model | Sum of Squares | DF | Mean Square | F | Sig. |
|--------------------------|------------|----------------|------------|---------------|--------------|--------------------------|
| Climate change awareness | Regression | 201.97 | 1 | 201.97 | 774.9 | 0.000^a |
| | Residual | 99.56 | 382 | 0.261 | | |
| | Total | 301.54 | 383 | | | |

The results in **Table 3** indicated that there is a significant relationship between Social media influence and climate change awareness at the significant level of 0.000, and this relation is positive due to the positive value in the model, and the value of (F calculated = 774.9), which is greater than (F tabulated = 3.021).

Table 4: Analysis of Simple Regression between Social Media Influence and Climate Change Awareness

| Model | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|------------------------|-----------------------------|--------------|---------------------------|--------------|--------------|
| | B | Std. Error | Beta | | |
| (Constant) | 0.267 | 0.124 | | 2.16 | 0.031 |
| Social media influence | 0.954 | 0.034 | 0.818 | 27.83 | 0.000 |

The results in **Table 4** proved the significance of the coefficient of Social media influence at the significant level of 0.000, and it is also confirmed by the value of (T calculated = 45.66), which is greater than (T tabulated = 1.967). In addition, the coefficient of determination R-Sq equals 0.67, which means

the effect of Social media influence is 67 % in the variation of climate change awareness.

4.4.2 Testing the Second Hypothesis H2

H2: Climate change awareness has a significant impact on attitudes toward sustainable consumption.

the simple regression model was developed between the attitudes toward sustainable consumption as a dependent variable and climate change awareness as an independent variable for testing the the validity of second hypothesis (H2).

Table 5: Analysis of Variance between Climate change awareness and Attitudes toward sustainable consumption

| Dependent Variable | Model | Sum of Squares | df | Mean Square | F | Sig. |
|--|------------|----------------|-----|-------------|-------|-------------------|
| Attitudes toward sustainable consumption | Regression | 158.9 | 1 | 158.9 | 673.4 | .000 ^a |
| | Residual | 90.134 | 382 | 0.236 | | |
| | Total | 249.03 | 383 | | | |

The results in **Table 5** indicated that there is a significant relationship between climate change awareness and attitudes toward sustainable consumption at the significant level of 0.000, and this relation is positive due to the positive value in the model, and the value of (F calculated = 673.4) which is greater than (F tabulated = 3.021).

In addition, the significance of the coefficient of climate change awareness ($\beta = 0.799$) was proved at the significant level of 0.000, and it is also confirmed by the value of (T calculated = 25.95), which is greater than (T tabulated = 1.967). In addition, the coefficient of determination R-Sq equals 0.638, which means the effect of climate change awareness is 63.8 % in the variation of attitudes toward sustainable consumption.

4.4.3 Testing the Third Hypothesis H3

H3: Social media influence has a significant impact on attitudes toward sustainable consumption.

the simple regression model was developed between attitudes toward sustainable consumption as a dependent variable and Social media influence as an independent variable for testing the validity of the third hypothesis (H3).

Table 6: Analysis of Variance between Social media influence and Attitudes toward sustainable consumption

| Dependent Variable | Model | Sum of Squares | df | Mean Square | F | P-value |
|--|------------|----------------|-----|-------------|--------|-------------------|
| Attitudes toward sustainable consumption | Regression | 190.04 | 1 | 190.04 | 1230.7 | .000 ^a |
| | Residual | 58.98 | 382 | 0.154 | | |
| | Total | 249.03 | 383 | | | |

The results in **Table 6** indicated that there is a significant relationship between Social media influence and attitudes toward sustainable consumption at the significant level of 0.000, and this

relation is positive due to the positive value in the model, and the value of (F calculated = 1230) which is greater than (F tabulated = 3.021).

In addition, the significance of the coefficient of Social media influence ($\beta = 0.874$) was proved at the significant level of 0.000, and it is also confirmed by the value of (T calculated = 35.08), which is greater than (T tabulated = 1.967). in addition, the coefficient of determination R-Sq equals 0.763, which means the effect of Social media influence is 76.3 % in the variation of attitudes toward sustainable consumption.

4.4.4 Testing the Fourth Hypothesis H4

H4: educational background (with and without environmental studies) plays a moderating role in the relationship between climate change awareness and attitudes toward sustainable consumption.

Estimating the direct and indirect effects of mediation and moderation models was done by using the process which is a path analysis modeling tool for SPSS and SAS (Andrew, 2013), where slopes and/or regions of significance are used to find out interactions in moderated mediation models as well as the conditional indirect effects with single or multiple mediators or moderators.

Table 7: Moderating Effect of Educational Background on Climate Change Awareness and Attitudes toward Sustainable Consumption

| Model Summary | | | | | | |
|--|---------|-------|---------|-------|--------|-------|
| R | R-Sq | MSE | F | DF1 | DF2 | P |
| 0.816 | 0.66 | 0.265 | 252.115 | 3 | 380 | 0.000 |
| Model | | | | | | |
| | Coeff | SE | T | P | LLCI | ULCI |
| Constant | -0.55 | 0.364 | -1.527 | 0.158 | -1.270 | 0.160 |
| Climate Change Awareness | 1.056 | 0.101 | 10.49 | 0.00 | 0.858 | 1.254 |
| Educational Background | 0.85 | 0.260 | 3.28 | 0.001 | 0.344 | 1.367 |
| Int_1 | -0.159 | 0.07 | -2.27 | 0.023 | -0.297 | -0.22 |
| R-square Increase due to Interaction (s) | | | | | | |
| Educational Background | R2-Chng | F | DF1 | DF2 | P | |
| Int_1 | 0.005 | 5.187 | 1 | 380 | 0.023 | |

The results in **Table 7** indicated that the p-value is statistically significant. In addition, (zero) is not lying between the lower limit confidence interval (LLCI = 0.344) and the upper limit confidence interval (ULCI = 1.367) in the model table, which have negative signs. Further, the value of R²- Change is equal (0.66) due to the interaction effect of the moderator which is the educational background, and the p-value is statistically significant. Hence, the hypothesis “educational background (with and without environmental studies) plays a moderating role in the

relationship between climate change awareness and attitudes toward sustainable consumption” is supported (Andrew, 2013).

4.5 Structural Equation Model Analysis

Testing research hypotheses as well as the structural model that describes the role of climate change awareness in the relationship between Social media influence and consumer attitudes toward sustainable consumption, and the interrelationships between them, structural equation modeling (SEM) is used to determine if the data fit the hypothesized model and to confirm the structural relationship in the structural model by using the AMOS v22 program.

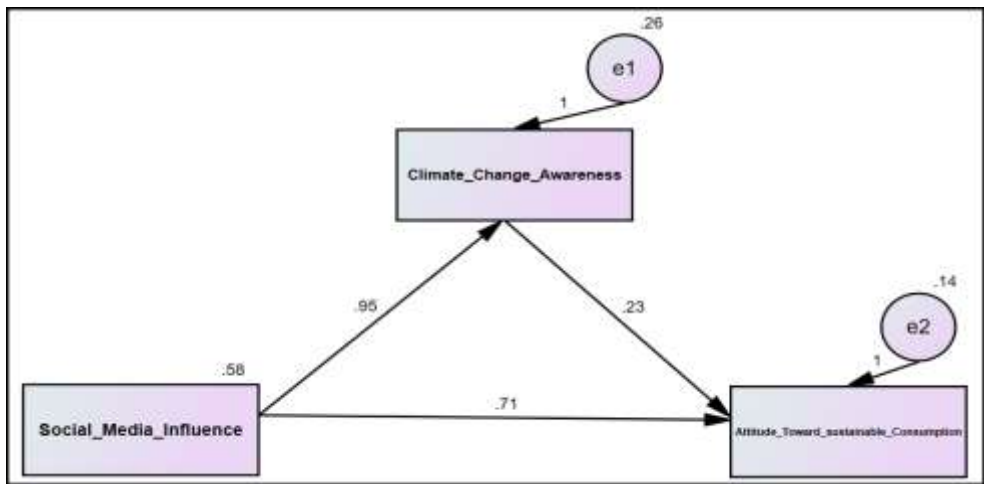


Figure 2: the Path Diagram for Social media influence, climate change awareness, and attitudes toward sustainable consumption

In Figure 2, a hypothesis is supported if the parameter estimate is significant and has the predicted sign (e.g., positive affect).

Table 8: Results of Structural Model Assessment

| H | | | Estimate | S.E. | C.R | P | results | |
|----|--|-----|--------------------------|--------------|--------------|---------------|------------|-----------|
| H1 | Climate change awareness | <-- | Social media influence | 0.954 | .034 | 27.87 | *** | supported |
| H2 | Attitudes toward sustainable consumption | <-- | Climate change awareness | 0.231 | 0.038 | 6.15 | *** | supported |
| H3 | Attitudes toward sustainable consumption | <-- | Social media influence | 0.705 | 0.044 | 16.126 | *** | supported |

In Table 8, the result of the parameter estimates that represent the research hypotheses proves that all signs of associations between the constructs are in congruence with the hypothesized relationship, which supports the validity of the constructs composing the model, and all hypotheses are supported.

4.5.1 Mediation

The SEM tool was utilized to obtain the unbiased estimation of the mediating effect of latent variables, and the potential indirect effects that are identified by their direction of effects, magnitude, and their level of significance (Koufteros, 2009). In the research model, there is a possible full indirect

effect (full mediation) between Social media influence and attitudes toward sustainable consumption: Social media influence → Climate change awareness → Attitudes toward sustainable consumption, where the relationship between Social media influence and attitudes toward sustainable consumption is possibly fully mediated by climate change awareness.

Table 9: The Results of Direct, Indirect (Mediating), and Total Effects.

| Relationship | Direct effect | | Indirect effect (mediating) | | Total effect | |
|---|---------------|--------------|--------------------------------|--------------|--------------|-------------|
| | Value | P-value | Value | P-value | Value | P-value |
| Social media influence → Attitudes toward sustainable consumption | 0.705 | 0.000 | 0.220 | 0.000 | 0.926 | .000 |

Table 9 displays the results of the standardized indirect effects (two-tailed significance), which shows that the path Social media influence → Attitudes toward sustainable consumption, the indirect effect of Social media influence on attitudes toward sustainable consumption is 0.22, and the two-tailed significance (P-value= 0.000) is significant at the 95 % level of confidence, which means that there is a full mediation effect, where climate change awareness mediates the relationship between Social media influence and attitudes toward sustainable consumption. Therefore, the null hypothesis (H0: there is no indirect path between Social media influence and attitudes toward sustainable consumption) is rejected. The mediation

effect through a single mediator, also climate change awareness has a net-mediated effect between Social media influence and attitudes toward sustainable consumption. In summary, climate change awareness is an effective mediator.

5 Discussion and Conclusion

The research tested social media influence (as an independent variable), climate change awareness (as a mediating variable), and attitudes toward sustainable consumption (as a dependent variable). In addition, the study investigated the moderating effect of educational background with and without environmental studies on the relationship between climate change awareness and sustainable consumption attitudes of students in the higher education sector in Egypt. The study findings concluded that Social media influence and climate change awareness have a significant impact on sustainable consumption behavior, in addition, attitudes toward sustainable consumption are affected by social media influence with the mediation role of climate change awareness, moreover, educational background moderates the relationship between climate change awareness and attitudes toward sustainable consumption. Thus, the study makes three main contributions. The first, the findings provide evidence for the relevance of social media in raising customers' climate change awareness, which affects their attitudes toward sustainable consumption. The

second, the research has important implications for policymakers in the higher education sector, who want university students to be more aware of climate change consequences, especially on sustainable development. The third, the resulting model can be used as a base model in future research on the development of customers' sustainable consumption behavior.

Main Findings:

The following advantages have been associated with the structured model that is valid for use:

- A. The reliability of all model constructs as measured by Cronbach's alpha has higher degree rates (0.744 to 0.836).
- B. There is a significant positive correlation between all variables, and all constructs showed a significant relationship at the 0.01 level
- C. The model possesses a remarkable capacity to accurately forecast and elucidate climate change awareness through Social media influence, and this was proved by the validity of the first hypothesis (H1) through the value of (R-Sq = 0.67) in the model. In addition, the relationship between Social media influence and climate change awareness is positive, and the impact of Social media influence is (67%) in the variation of climate change awareness. These results are supported by (Gómez & Gómez, 2023; Ghanem, 2023).
- D. The model possesses a remarkable capacity to accurately forecast and elucidate attitudes toward sustainable consumption through

- climate change awareness, and this was proved by the validity of the second hypothesis (H2) through the value of (R-Sq = 0.638) in the model. In addition, the relationship between climate change awareness and attitudes toward sustainable consumption is positive, and the impact of climate change awareness is (63.8%) in the variation of attitudes toward sustainable consumption. These results are consistent with those of (Saari et al., 2021; Dimitrova et al., 2022).
- E. The model possesses a remarkable capacity to accurately forecast and elucidate attitudes toward sustainable consumption through Social media influence, and this was proved by the validity of the third hypothesis (H3) through the value of (R-Sq = 0.763) in the model. In addition, the relationship between Social media influence and attitudes toward sustainable consumption is positive, and the impact of Social media influence is (76.3%) in the variation of attitudes toward sustainable consumption. These results are in agreement with those of (Segovia-Villarreal et al., 2022; Confetto et al., 2023).
- F. The analysis of the structural equation model revealed that the parameter estimate was significant and had the predicted sign (e.g., positive affect), which means the three hypotheses were supported (H1, H2, and H3).
- G. Educational background (with/without environmental studies) moderates the relationship between climate change awareness

and sustainable consumption attitudes in the model, which is proved by testing the fourth hypothesis H4. The result is in line with the findings of (Ma et al., 2023; Ghanem, 2023).

Recommendations:

- In the model, the effect of social media influence is (67.4%) in the variation of climate change awareness, in addition, the effect of climate change awareness is (63.8%) in the variation of attitudes toward sustainable consumption, and the effect of Social media influence is (76.3%) in the variation of attitudes toward sustainable consumption, these percentages could be increased by searching for other dimensions that have not been investigated in the current study and searching for the reasons that make the values higher is suggested.
- Future research can verify and expand the current research findings by gathering longitudinal data from other countries using other sampling techniques.
- It is also suggested that educational background in environmental studies is vital in providing students with the appropriate knowledge and awareness related to climate change problems and solutions, which could play a significant role in shaping their attitudes toward sustainable consumption. Therefore, Environmental education should be included in each discipline for increasing climate change awareness and promoting sustainable consumption intentions of young people.

- The current research focuses on sustainable consumption attitudes; future research should study the effective policies that encourage sustainable consumption behavior in Egypt.
- There is a need for effective climate change awareness campaigns to raise awareness, which could help in changing the public's attitudes toward the environment, and encourage their sustainable consumption behavior.

Study Limitations:

The study on hand has several limitations. The data were collected from higher education students in Egypt, and researchers might extend the research by collecting data from other sectors and other countries. In addition, the study focuses on educational background as a moderator variable; future research should study the moderating role of culture. Further, the study used a convenience sampling approach, which could affect the generalizability of the study findings.

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