"The effectiveness of short videos (Reels) on social media in raising awareness about climate change: A case study on Egyptian Gen-Z & millennial"

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Abstract
The main objective of this research is to identify "The effectiveness of short videos (Reels) on social media in raising awareness of climate change". This research uses a quantitative descriptive analysis methodology through a questionnaire to collect data, and it was conducted on (400) respondents from both Gen-Z and Millennial who are living in Egypt. The researcher depended on media dependency theory in the theoretical framework in addition to proposing a scale for measuring the richness of climate change reels on social media regarding Media Richness Theory. Results showed that the medium richness factors got the highest rank (89.4%) in terms of the richness factors in climate change reels, followed by the richness factors related to the presenter (84.2%). The results also revealed that exposure density to climate change reels on social media is positively related to raising awareness of climate change issues. And there is a correlation between the richness of climate change reels on social media and raising awareness of climate change issues.

Key words: short videos – reels - social media platforms - climate change - Gen-Z – millennial.

"فعالية الفيديوهات القصيرة (Reels) على وسائل التواصل الاجتماعي في رفع الوعي بتغير المناخ: دراسة حالة على جيلي الألفية وما بعد الألفية"

ملخص الدراسة:
يهدف هذا البحث إلي التعرف على "فعالية الفيديوهات القصيرة (الريلز) على وسائل التواصل الاجتماعي في رفع الوعي بتغير المناخ" وذلك بالتطبيق علي جيلي الألفية وما بعد الألفية. ويعتمد هذا البحث علي المنهج الوصفي الكمي من خلال تصميم استبيان لجمع البيانات، وتم تطبيق البحث علي (400) مبحوث من جيلي الألفية وما بعد الألفية الذين يعيشون في مصر. واعتمدت الباحثة على نظرية الاعتماد على وسائل الإعلام في الإطار النظري بالإضافة إلى اقتراح مقياس لقياس مدي ثراء الريلز عن تغير المناخ على وسائل التواصل الاجتماعي وذلك فيما يتعلق بنظرية ثراء وسائل الإعلام. وقد أظهرت النتائج أن عوامل ثراء الوسيلة حصلت على أعلى مرتبة (89.4٪) من حيث عوامل الثراء في الريلز عن تغير المناخ، تليها عوامل الثراء المتعلقة بمقدم الريلز (84.2٪). كما كشفت النتائج أيضًا أن كثافة التعرض للريلز عن تغير المناخ على وسائل التواصل الاجتماعي مرتبطة بشكل إيجابي برفع الوعي بقضايا تغير المناخ. وأوضحت النتائج أن هناك علاقة بين ثراء مقاطع الفيديو القصيرة حول تغير المناخ على وسائل التواصل الاجتماعي وزيادة الوعي بتلك القضية.

الكلمات المفتاحية: مقاطع الفيديو القصيرة – الريلز – منصات التواصل الاجتماعي – تغير المناخ – جيل ما بعد الألفية – جيل الألفية.

Introduction

Climate change remains a looming humanity issue because of how complicated and unintegrated the actions are. In 2015, when the world leaders collectively adopted the Paris Climate Accord, it seemed the world was together in fighting the inevitable enemy facing our next generation: climate catastrophe. But, five years later, it looks like we are far from rounding the corner of the "2°C" target. A lot of people might still see climate change as an existential problem that needs gradual actions rather than drastic approaches. However, the actions taken today should be effective to avoid the severe impact on the future generation. One of the main ways to greatly influence others is by utilizing social media. The influence of social media is immensely huge today when many are relying on the internet to learn, gather information, entertain, and socialize. With the raging pandemic, educating and encouraging people through social media would be even more critical for fighting climate change. Especially short videos (reels) on social media could have a significant effect in raising the awareness of climate change, due to its time limit and attractiveness, especially with Gen-Z, because they are using social media and short videos (Reels) a lot and they are considered the first generation to grow up with the internet as a part of daily life. In addition to millennials who are the most tech-savvy in the workplace today; they had to learn and adapt to new technologies as they arose, resulting in a broad range of digital abilities acquired through trial and error or formal training (Dimock, 2019).

So the main objective of this research is to identify "The effectiveness of short videos (Reels) on social media in raising the awareness of climate change": a case study on Gen Z & millennials.

Problem statement:

Social media is crucial in bringing critical societal issues—like climate change—to the public's attention. Reels are among the most important and often utilized types of content that are presented on social media. These reels are being viewed by large audiences, according to numerous surveys especially between Gen Z and millennials. Half of the time spent on Instagram is spent viewing reels, according to Meta data that Datareportal disclosed (Meta report by Datareportal, 2024, 1 November).

And according to Gallup's report, the results showed that 60% of young people surveyed use social media as their primary source of news and information, yet only 23% have a lot of trust in information on those platforms (climate-change-unicef-gallup, 2024, 15 October).

This indicates the great significance of social media in spreading news and information in addition to raising awareness of important issues such as climate change.

Because of the risks and repercussions if climate change is not addressed adequately, it is currently regarded as one of the most significant challenges. Rising temperatures, melting glaciers, the spread of illnesses and epidemics, and other effects that could result in higher death rates are just a few of the numerous negative effects of climate change.

As a result of the importance of climate change issues, the increasing usage rates of Reels on social media, and their impact on the public, the current study seeks to identify the effectiveness of Reels on social media in increasing awareness of climate change issues, taking into account the user's age group, either belonging to Generation Z or Millennials.

Research significance:

1- The importance of the **content provided on social media platforms, specially Reels**, because they have high viewing rates from the audience, especially the younger generation, due to their attractiveness, fast paced, and short duration.

2- The importance of **climate change issue**, as it is considered a very sensitive issue due to its consequences that we may be exposed to as a result of not paying attention to this issue. Climate change may lead to the spread of diseases and epidemics in the world, a significant rise in temperature on the globe, which leads to the melting of ice, and climate change also affects fish and animal wealth, agriculture, and cultural heritage, so we must take all procedures to adapt to climate change and mitigate the severity of these consequences by following the necessary instructions and taking all the precautions, in addition to raising the audiences' awareness about climate change.

3- The importance of studying **Gen Z & millennials** and identifying the extent of their interest and awareness in climate change issues. This is because the millennial generation is the first generation that grew up with the internet and has social awareness, and Gen Z is more capable of dealing with rapid technological development in addition to its extensive use of social media platforms.

4- **Proposing a media richness scale** to identify the most important richness factors in climate change reels from the respondents' point of view.

5- The results of the study can benefit media institutions as well as those responsible for environmental issues in urging them to rely on new techniques to increase awareness of climate change issues, including the use of reels and

depending on social media influencers to influence the public, especially the younger generation.

Research objectives:

The study aims to achieve the following:

1- Identifying how much Gen Z & millennials watch reels on social media.

2- How much Gen Z & millennials depend on reels on social media to get information about climate change.

3- Understanding the effects of watching climate change reels through social media on the study sample (Gen Z & millennials) awareness about this issue.

4- Revealing the richness factors in climate change reels which can affect audience usage and interest in those reels.

Literature review:

1- Short videos (Reels) usage on social media:

Numerous studies have studied short reels, their consumption rates, and their significance to the general public as a result of a rapid increase in their use on social media, particularly among young people. Among these studies that focused on the Reels on social media, **Kannan, S., & Anuradha, M. (2024)** study who tried to find out how the major news outlets could use 'Reels' on social media to reach out to their audiences using a mixed-methods approach: a survey using a structured online questionnaire and a focus group discussion among students. The results showed that broadcast news networks could reach a lot more people if they tried making news stories (called "vertical storytelling") in the form of short videos.

In addition to studying the use of reels on social media in news, there are other studies focused on the usage rates of these reels, like **Mohamed Bedir (2023)** who aimed to identify the extent to which the Egyptian public uses the Reels clips on social networking sites by revealing the intensity and motives of the Egyptian public's use of these clips, and the study relied on the questionnaire tool applied to (400) single Egyptian audience, and the results of the study indicated that the intensity of the Egyptian public's exposure to Reels clips on social media increased by 92% between always and sometimes. Facebook came at the forefront of social networking sites on which the Egyptian public watches the Reels clips. There is a statistically significant correlation between the intensity of exposure to Reels clips on social networking sites and the gratifications achieved from them.

Marzouk Ibrahim (2023) also aimed to identify the attitudes of the Egyptian public towards short videos of preachers (Reels, Shorts) through social networking sites. The study relied on the survey method. The researcher relied on a deliberate sample of 400 individuals who watched short videos of

preachers on social networking sites. The study reached that the study sample, are keen to follow short video of preachers, and the beneficial motives came at the forefront of the motives of the Egyptian public's exposure to short videos of preachers. The responses of the respondents on the scale of attitudes towards short videos of preachers on social networking sites were generally positive. There was a correlation between the intensity of public exposure to short videos of preachers and their attitude towards them.

Numerous studies have become interested in studying the prevalence of Reels on social media; however the research sample used in these studies has differed. **Helmy Salama (2023)** aimed to identify the extent of adolescents' exposure to (Reels) on social media, and also to identify the type of (Reels) preferred by the respondents. The study also relied on a survey approach, where a field study was conducted on a deliberate sample of 450 adolescents. The results indicated that the (Instagram) came as the most important applications through which the sample members watch (Reels). The most important motives for the respondents' exposure to reels were entertainment and spending free time. And there was a correlation between the rate of exposure of adolescents to (Reels) on Facebook and Instagram and the nature of their cognitive and behavioral aspect.

Regarding the effects of presenting content on social media platforms through modern and different formats such as short Reels**, Wolfe & Liang (2022)** analyzed the effects of posting format on an Instagram post's engagement. Posting formats, including pictures, videos, and Reels, are different ways of sharing content on Instagram. Prior research shows that short-form content has grown in recent years, spurring formats such as Instagram Reels. Quantitative data was collected through the content analysis method, which analyzed Instagram posts from small jewelry business accounts. Reels were found to receive the highest average engagement, allowing posts to gain more likes and comments than pictures and videos.

Sharma (2023) also focused on the effects of reels on social media and examined the phenomenon of social media reels and its impact on young adults. Reels, short video clips that can be edited with music and effects, have gained significant popularity on various social media platforms. The research explored the potential benefits and drawbacks of the reels trend on young adults' well-being, mental health, social interactions, and overall lifestyle. The research also aimed to provide insights into the implications of social media reels and offers suggestions for promoting a healthy relationship with this digital trend. The results showed that Tiktok became very popular in India, and using reels have increased among youngsters on Facebook and Instagram.

Tourism and the degree of the impact of employing Reels on that field are among the numerous areas of research on the effect of Reels through social media on the audience**. Prakasam, et. al (2024)** aimed to explore the extent to which social media reels on Tourism, specifically the impact on tourist destinations and experiences of tourists. The study focused on analyzing user engagement patterns, content preferences, and subsequent behavioral trends. Primary data which in total of 120 has been selected through a convenient sampling method and self-structured questionnaire has been applied for collecting data from the respondents. Results showed that Facebook is the most popular social media platform. The most common reason for using travel-related reels is to discover new and unknown places to visit. Among younger age groups (11 - 30 years), there are a higher proportion of respondents using reels to pass the time.

Also, there are some studies have focused on studying the importance of Reels as a promotional tool for brands, for example **Ahmed (2023)** who focused on the significance of social media reels and shorts in brand promotion and boosting growth creating a competitive edge. The study implied the qualitative case study approach for determining the effectiveness of reels and shorts in the corporate realm. The data was identified and collected based on "grounded theory" where the data was collected from observing and studying the use of reels and short of Netflix and analyzing the significance of the study at hand. By analyzing the patterns of Netflix's TikTok and Meta accounts posting, this article identifies that brands can boost both engagement and conversion by the use of reels and shorts as promotional tools. The research also outlines that brands can boost their promotion by two-fold co-existing their brand presence in both reels and shorts.

Social media has changed the way consumers make purchasing decisions. More specifically, it has engaged consumers through short-form videos or easily scrollable photos or text. The literature focused on how a singular emotional state, such as happiness, influences consumer behavior. In contrast, as a person scrolls through different videos on social media, they are exposed to a random variety of emotional valences in a short period of time. Thus **Hong (2022)** explored how the order and valence of emotions in videos impact consumers' willingness-to-pay (WTP) and perceptions of advertisements. 20 videos were selected from TikTok. 200 participants were recruited on Prolific, each participant viewed 5 randomly selected videos. Results indicated a significant increase in WTP and perception of product innovativeness when positive videos, as opposed to negative videos, are watched prior to the ad.

Knowing social media could impact consumers' future decisions within the agriculture industry; researchers recommended that the agriculture industry develop research to further explore the impacts of social media. Within the study of **Parker (2023)** semi-structured, video elicitation interviews were completed to collect data from a convenience sample that represents perspectives from Generation Z and Millennials. Using an inductive coding method, the researcher analyzed the data gathered. Findings allowed researchers to describe how consumers view credibility towards influencer's using food labels and their potential influence on purchasing decisions. This study found that consumers are actively using social media and influencers as an information source, and perceived credibility depends on many factors, such as knowledge, presentation, and information sources.

2- Climate change issues on social media :

Addressing the issue of climate change on social media is extremely important because social media has high usage rates among people, especially young people. So, there are a lot of studies which are conducted to focus on climate change issues on social media, and how social media can be more effective in raising the awareness of these issues. For example, **Sun et. al (2024)** aimed to delineate the portrayal of climate-related news and disasters on TikTok. The research was conducted on 50 TikTok accounts focused on climate related content. Employing social network analysis, PageRank, and Superedge Rank methodologies, this investigation evaluates how TikTok users address climate change and its impact on social media. Results revealed that among the four key entities —internet influencers, government, scientists, and producers— internet influencers exert the most substantial influence on climate change news dissemination on TikTok, while the government plays an influential role in climate disasters. Like other social media platforms, TikTok is a valuable arena for gauging public sentiment on critical health concerns like global warming. Social media plays a vital role as a communication channel for pertinent topics, including climate change. **Duan (2024)** investigated the content and comments of short and long-format videos on Instagram, TikTok, and YouTube to compare climate change discourse on these platforms. 80 videos and their respective 69,135 comments were collected and analyzed using content analysis, statistical analysis, data visualization, and social network analysis. The findings showed that videos in the short-format provide all sorts of content, while YouTube long videos only focus on educational and activism content. The short-format videos also show different stances towards climate change, such as a climate change denier stance, while YouTube long videos do not. For

comments, videos in the short-format had less engagement compared to YouTube long videos.

Regarding the impact of social media on climate change perceptions using perception indicators and based on geographical position (rural versus urban area). **Yenni & Calista (2023)** focused on providing insights into how social media platforms can shape understanding and guidance in making environmental campaigns in Jakarta and Bogor. Therefore, this study used a quantitative descriptive analysis methodology through a questionnaire to collect data. The survey was distributed for four days an acquired 400 Gen-Z participants between the ages of 15-23 living in either Jakarta or Bogor. The results of this study found that social media has a small impact on Indonesian Gen-Z climate change perception.

Casillas & Márquez (2023) aimed to investigate the most popular social network sites in Latin America and identify the influence of each one in raising climate change awareness and acceptance. The researchers conducted their study on a sample of 20,200 individuals in face-to-face interviews carried out by using the survey tool, and they carried out multivariate analyses using logistic regression models. The results showed the effect of social media consumption on climate change awareness by assessing the role of each of the most popular sites: YouTube, Facebook, Instagram, Twitter, LinkedIn, WhatsApp, Snapchat, and Tumblr. YouTube has the strongest and most robust positive and statistically significant effect on climate change awareness, followed by Instagram.

Social media has a great significance in raising awareness of important issues in society, including climate change, which has led many researchers to focus their research on studying the role of social media in raising awareness of climate change. **Abdelhamid (2022)** aimed to identify the amount of attention provided by various institutions to discuss and raise awareness of the risks of climate change, and to recognize the most important topics addressed by YouTube channels. The study sample consisted of (230) video clips, and the analytical study tool was the journalistic content and discourse analysis. The results of the study showed that videos of short duration of less than 5 minutes came in the first place with 48.7% in their handling of climate changes, and the dialogue template came in the first place with 24.3%, followed by the direct speech template.

Zeng (2022) also aimed to increase the understanding of Chinese public awareness of climate change, as well as explore the potential and limitations of social media for public engagement on climate change issues. It examined the Chinese public's discussion about climate change on social media Weibo

during the last six years through data mining and text analysis. The analyses included volume analysis, keyword extraction, topic modeling, and sentiment analysis. The results indicated that public awareness of climate change is growing in China. The sentiment analysis showed that the general sentiment toward climate change is becoming more positive over time. The discussion on climate change showed a top-down perspective, an optimistic economic perspective, and a preference for celebrity content.

Parry, et. Al. (2022) study aimed to explore the interface between climate change and social media reporting for young people. A two-stage iterative approach to recruitment and data collection included an initial qualitative stage (N = 28). The second stage (N = 23) included further open-ended questions and 10 Likert-Scale questions. Overall, 51 young people 16–25-years-old opted to take part. Descriptive statistics and an inductive data-driven content analysis are reported. Results showed that 95% of the participants reported that they had the personal skills to cope with climate change reporting on social media. Most participants stated that coverage on the climate increased climate change anxiety, but not their overall mental health difficulties. A four-stage experiential process of observing social media's reporting of climate change, feeling emotionally affected by the reporting, critically apprising the content and feeling motivated to engage in climate change activism emerged from the content analysis.

Khashmon (2021) study aimed to identify the contribution of social networking sites to spreading environmental awareness "Facebook is a model", The study also aimed at how to use this site "Facebook" to serve the environment and develop environmental awareness among community members in order to achieve environmental culture and awareness, and a random sample was selected from the research community, which is represented by students of the Faculty of Humanities and Social Sciences at the University of Muhammad Siddik bin Yahya Jijel. It was estimated at: 70 individuals. The results indicated that, social networking sites contribute to spreading environmental awareness, Facebook is one of the most used social networking sites among the respondents, and most of the respondents use Facebook to know the social conditions and the current environment and their problems.

Bogaga (2019) study aimed to shed light on the role that Facebook can play in spreading environmental awareness within the community and achieving sustainable development and the impact of Facebook on the environmental behaviors of its users. The study was conducted on doctoral students at the Institute of Library Science and Documentation in Constantine, the number of

respondents was (25) doctoral students. The results indicated that Social networking sites are among the most important methods and means of environmental awareness, especially Facebook. Facebook actively contributes to environmental awareness and sustainable development.

Helmy (2023) aimed to identify the role of social networking sites in shaping the awareness of Egyptian youth and their attitudes towards issues of environmental crimes and climate change. The study was applied to a sample of 400 Egyptian youth. The results showed that, there is a statistically significant correlation between the respondents' awareness of environmental crimes and climate change and their attitude toward the role of social networking sites in raising awareness of climate change, and there is a statistically significant correlation between the degree of confidence in the contents presented about environmental crimes and climate change on social networking sites and the trend toward their role in raising awareness of climate change.

On the other hand, there are some researchers who have been interested in studying the impact of videos presented by influencers through social media on the audience, as these influencers have a great influence on the audience, especially the younger generations**. Deb, et al. (2023)** aimed to identify the role of the Influencers in raising environmental awareness on social media, and study the effectiveness of influencers for climate communication on social media. In February 2021, Black Pink, a popular pop band, was announced as official advocates for COP26, which was followed by tweets on Twitter. The researchers analyzed the spread of tweets and the duration of effects over a period of four weeks following the announcement. They found that on the day of the event there were1518 primary tweets which were liked and re-tweeted 2600 times which reduced to 62 primary tweets and 209 re-tweets and likes four weeks after the event. They also found that the influencer engaged a community that might not have been otherwise engaged, specifically fans of Black Pink, but this was short lived. The findings suggest that influencers are potentially important to raise awareness, but efforts are needed to sustain engagement.

Ayesha, et al (2023) explored the role of social media campaigns in creating awareness about smog and encouraging sustainable behaviors. The survey method has been used to collect data from 150 university students. The findings of the study reveal that social media can be best harnessed to cope with smog or other climate-related issues through a well-structured and target-oriented strategy of climate communication.

Manar & Mostafa (2023) aimed to investigate the role of social media in educating and informing Egyptians about climate change. Specifically, it seeks to explore the relationship between social media consumption and climate change literacy. To achieve its objectives, the quantitative study used the survey tool to assess the relationship between the use of social media and the nature of climate change literacy formation. The sample consisted of 102 respondents who participated in the survey of this study. The study findings confirmed that the Egyptian audience fully depends on social media as a main source of climate change-related information, and social media has a significant impact on raising awareness and knowledge of climate change issues, as well as shaping Egyptian users' perception of it.

Al- sherif (2022) aimed to reveal the relationship between the Egyptian public's seeking of information about climate changes from social networking sites and the strategies used in that, and the extent of their awareness of the seriousness of these changes.The researcher relied on the information seeking theory and an electronic survey was applied as a tool for collecting data from a sample of the Egyptian public, in the age group of 18 years and over, the number of forms was 400. The most important results showed that social networking sites are the first source for respondents to seek information about climate changes, and the reasons came for their speed in disseminating information and the weakness of traditional media in covering news related to climate changes.

Radwan Abdelmageed (2023) aimed to identify the extent of social media contribution to Egyptian youth's awareness of climate change, and the study adopted Based on the survey methodology, the two questionnaire tools were used for a sample of 420 Egyptian youth, and the content analysis of 282 publications per page on the official page of the Egyptian Ministry of Environment. The study reached that the page used multimedia to present the content or publication in an integrated manner; to be clearer and more comprehensive, the page relied on images, as it came in first place.

Reviewing literature makes it obvious that the public, particularly the younger generation, like watching reels at high rates, and numerous studies have shown that reels have a major influence on the public across all domains. Regarding research on the topic of climate change on social media, the majority of studies have shown that social media greatly raises awareness of climate change issues globally, and some have shown that social media influencers are crucial in raising awareness of significant societal issues, such as climate change. The researcher benefited from the literatures, as a scale was designed to measure the richness of climate change reels from the respondents' point of view.

Theoretical Background:

While public interest in climate has always been prevalent, the recent surge in scientific evidence regarding climate change has elevated it to a significant societal concern. This heightened attention is reflected in various indicators, such as its prominence in Gallup's rankings, online search trends, and the prevalence of climate discussions across social media platforms, all underscoring a growing apprehension about the adverse effects of climate change. To construct a discourse on climate change, society values reliable information sources. The literature shows that "prestige newspapers," news aggregators or organizations, and opinion leaders, which can include celebrities, are the most trusted sources of information regarding environmental topics. Nevertheless, social networks serve as a platform for exchanging and disseminating opinions, ideas, and dialogues. Transnational decision-making and worldwide discussion are essential for climate change management. As a result, social media platforms like Facebook, TikTok, and Instagram have emerged as a necessary avenue for citizens to engage with researchers and policymakers (Sun, 2024: P1).

Social media has played an increasingly crucial role in communicating climate change issues. Climate activists have used Twitter and Facebook to reach large audiences over a relatively short span of time. Social media platforms offer individuals agency to voice political views and reach large audiences across the globe, which can have the potential to influence political. Strategies used on social media for effective climate change communication, along with social media user behavior, have been extensively studied. Social media activity on climate change often occurs in bursts, is thematic, and has rapid decay. For instance, social media user interest, though high for widely covered events, such as COP12, quickly faded after the event. The use of celebrities and influencers is fast becoming a popular strategy to communicate about climate change (Deb et al, 2023: P2, 3). Greta Thunberg, a young climate activist, has captivated the attention of the entire world. She merely raises awareness about the critical issues of climate change and climate crisis, but she also inspires her audience to take action through her social media platforms, mainly Twitter. Although social media usage can be very useful in raising awareness, social media is also famously used for promoting behavioral change on environmental values. Ever since her school strike went viral and became a worldwide phenomenon, an estimated 1.6 million students from over 120 countries joined the school strike for the climate. Due to her rapid popularity and her ability to influence, people called it the "Greta effect" (Calista & Yenni, 2023, P.3).

Gone are the days of passive, hour-long TV marathons. Today's audiences have shorter attention spans and crave bite-sized content. Platforms like Facebook,

TikTok, YouTube Shorts, and Instagram Reels have exploded in popularity, offering quick, engaging videos on various topics. This trend is particularly famous among younger generations, who are accustomed to consuming information in rapid bursts.

Over 4.95 billion people worldwide use social media, Facebook is still the most popular social media platform, with over 3 billion monthly active users. Facebook boasts over 3 billion monthly active users (MAUs), solidifying its position as the most popular social network worldwide. This translates to roughly one in four people on Earth having a Facebook account (Panseih Gharib, 2024, 15 November). This is consistent with the study's findings, which show that Facebook is among the most widely used social media sites for Gen Z and millennials for watching reels.

According to Deloitte Global 2024 Gen Z and Millennial Survey, the results showed that the environmental sustainability remains a top concern for Gen Zs and millennials, with 62% of Gen Zs and 59% of millennials reporting feeling anxious or worried about climate change. Both generations actively take measures to limit their environmental impact. They want governments to push businesses to take more climate action, and businesses to help consumers make more sustainable choices (Deloitte, 2023, 15 November).

Climate change causes

Climate change occurs as a result of an **imbalance between incoming and outgoing radiation in the atmosphere**. The **increase in heat-trapping greenhouse gases** (e .g., carbon dioxide, methane, and nitrous oxide) in the atmosphere raises Earth's mean surface temperature. The levels of greenhouse gases are higher now than at any time in the last 800,000 years. As temperature increases, more water evaporates from the oceans and other water sources into the atmosphere, causing further increase of the temperature (Heshmati, 2020, P.2).

The rise in global temperature as a result of climate change is increasing the frequency, severity and unpredictability of events such as heatwaves, floods, droughts and tropical cyclones, and is causing associated sea level rise and glacial and ice sheet retreat. Impacts are already being felt, with lives, livelihoods, health, cultural sites and ways of life lost or damaged due to climate events. Effective mitigation of greenhouse gas emissions can help to diminish climate hazards, while measures designed to help societies adapt to the consequences, combined with effective governance and improved socioeconomic development, can reduce exposure and vulnerability to those hazards (Byrnes & Surminski, 2019, P.1).

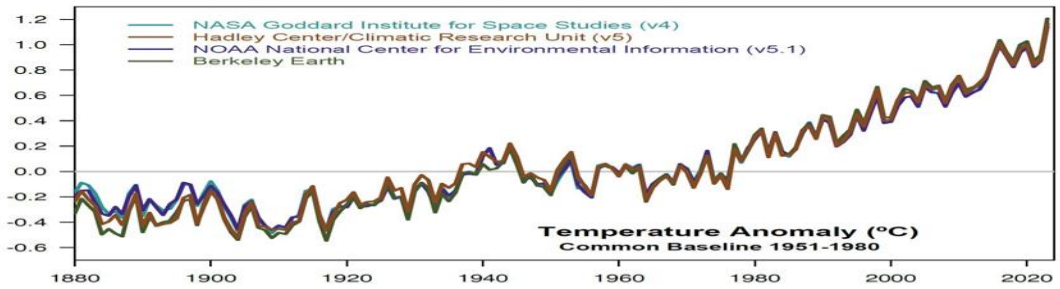


Figure 1

NASA's Goddard Institute for Space Studies

According to NASA, temperature data showing rapid warming in the past few decades, the latest data going up through 2023. Earth's average surface temperature in 2023 was the warmest on record since recordkeeping began in 1880, continuing a long-term trend of rising global temperatures. On top of that, the 10 most recent years have been the hottest (NASA's Goddard Institute, 2024, 1 November).

Atmospheric carbon dioxide comes from two primary sources, natural and anthropogenic (human-induced). **Natural sources** of carbon dioxide include most animals which exhale carbon dioxide as a waste product. **Anthropogenic sources** of carbon dioxide have been primarily driven by human activities since the early 20th century (industrial revolution), mainly fossil fuel burning (e.g., burning coal, oil, and natural gas), but also agricultural emissions and deforestation (Heshmati, 2020, P.2).

Climate change consequences:

Arga Jafino (2020) found that **health impacts** are the dominant channel in most scenarios, pushing the largest number of people into **extreme poverty**. Impacts through **increased food prices** are the most uncertain ones (i.e., widest range of distribution), and could have an effect on poverty even bigger than health impacts in the most pessimistic cases. Under the high climate change impact scenarios, this study also found that climate-driven **increase in prevalence of diseases** on average leads to 44 million people falling into extreme poverty. (Arga Jafino et al, 2020, P. 9).

Climate change causes a cascade of side effects for the physical environment of the planet Earth and the living organisms on the globe. All the changes in the physical planet Earth's environment affect the life of plants, animals, and humans. Coral reefs, forests, and coastal human communities are particularly vulnerable to climate change. Some of the effects of climate change may be through the enhancement of the susceptibility to chemical pollution. Although most impacts of climate change are likely to be adverse, some health benefits

may result in some regions. For example, warmer winters may reduce the number of temperature-related health events and death. (Heshmati, 2020, P. 2)

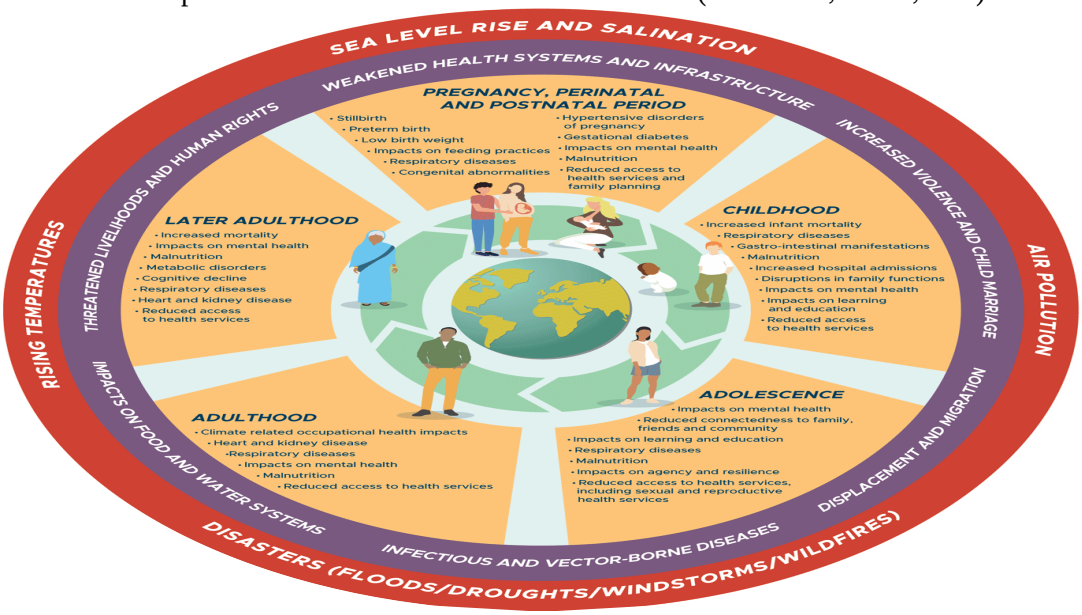


Figure 2

Impacts of climate change across life stages

Climate change can affect also the **cultural heritage**. The impact of climate change on cultural heritage is determined not only by the physical parameters of climate change but also by the type of heritage involved: tangible or intangible. Tangible cultural heritage can be movable (e.g. artefacts) or immovable (e.g. buildings). Intangible cultural heritage – traditions and local knowledge – is also at risk from climate change. As this very knowledge can help protect tangible cultural heritage, preserving it is all the more important. Pre-existing vulnerabilities deriving from physical, social and cultural features increase the potential for cultural heritage to be adversely affected by climate change. Additionally, responses to climate change can themselves constitute a hazard when badly conceived or implemented. Such circumstances can lead to damage or, in extreme cases, loss of tangible heritage. Climate change-related displacements of populations and disbanding of communities can lead to loss of intangible heritage, with detrimental knock-on effects for tangible heritage (Pasikowska-Schnass, 2024, P.2).

Climate change adaptive and preventive strategies:

Emerging strategies to **anticipate**, **mitigate**, and **adapt**, including improving equity**:** From the health perspective, there are opportunities for health co-

benefits from major mitigation strategies.There are many examples of positive strategies that benefit health and reduce greenhouse gas emissions. For instance, when we use active transport (walking or bicycling), burning calories instead of carbon, we do not burn fossil fuels and address obesity, especially among children. When we have access to food that is fresh, local and lower on the food chain, (such as plant-based foods) we support local farms and the local economy, improve nutritional quality, and lower the risk of chronic diseases (Etzel RA, et al, 2024, P.4).

Development and deployment of low-carbon energy technologies, policies to reduce fossil fuel burning, forest preservation, and reforestation should be promoted. Carbon sequestration, by capturing and storing atmospheric carbon dioxide, can decrease the amount of carbon dioxide in the atmosphere and reduce climate change. More energy-efficient homes and vehicles using alternative energies from sun, wind, and waves are needed (Heshmati, 2020, P.15).

Climate action must include people of all ages. Mitigation, resilience-building and adaptation necessitate societal transformation, and such a transformation will require reassessing our values. It is important to reflect deeply on what societal and political values we embrace. We can invoke sustainable lifestyles and move away from intense competition, achievement, individualism, and domination of nature. These have fuelled the climate crisis. To succeed, we will need to include embrace co-design with people from all life stages. Each of us has a role to play in helping transform our world, and we should not linger on the sidelines but wholeheartedly join the efforts to mitigate and adapt to this existential crisis. Only then will this and future generations be able to fully embrace the human right to a clean, healthy and sustainable environment (Etzel RA, et al, 2024, P. 5).

Figure 3

The framework for climate adaptation (Special report, 2024, 17 October)

Theoretical Framework:

1- Media richness theory

Media richness theory was introduced in 1984 by Richard L. Daft and Robert H. Lengel. It is used primarily to describe and evaluate communication mediums within organization in terms of their effectiveness. **The goal** of media richness theory is to provide managers a means of describing and later explaining communication challenges facing organizations, such as a lack of information required to perform a task at an expected level of performance uncertainty, or mixed or conflicting interpretations about a particular task. Since it was first introduced, media richness theory has been a widely studied communication theory. Other communication scholars have tested the theory in order to improve it, and more recently media richness theory has been adapted to include new media communication mediums, such as improved video and online conferencing. Although media richness theory relates to media use, rather than media choice, the empirical studies of the theory have often studied what medium a manager would choose to communicate over, and not the effects of media use (Bergin, 2020, 1 September).

The theory states that the more visual cues and hints are provided in addition to non-visual information such as text or voice, the richer the medium becomes. Social cues delivered through gestures and facial expressions are the carriers of important explanatory or amplifying messages. The **two main assumptions** of the theory declare that (Mammadov, 2022, p. 55):

1) People want to overcome equivocality and uncertainty

2) Certain types of media serve this goal better than others.

Daft and Lengel describe the hierarchy of media richness using four criteria, representing **four levels of media richness, from high to low:**

1) Availability of instant feedback.
2) Capacity of the medium to transmit multiple cues (body language, voice tone, inflection).
3) Use of natural language.
4) Personal focus of the medium.

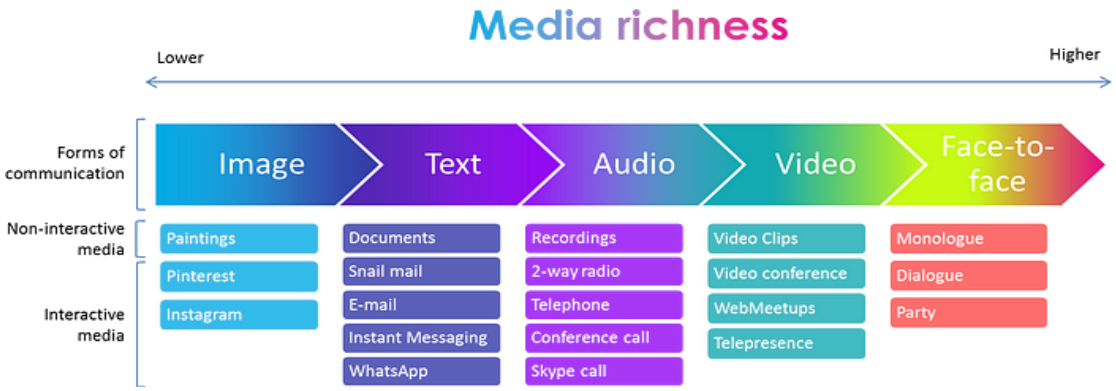


Figure 4
Media Richness

The researcher designed a scale to measure the richness factors in climate change reels on social media platforms, according to the levels and standards set by Daft and Lengel. **This scale consisted of (proposed by the researcher):**

1- **Medium richness**: Short, Engaging, and Accessible.

- **Quick Feedback**: Immediate interaction via likes, comments, and shares.
- **Fast-Paced:** Short videos (15–60 seconds) keep attention focused.
- **Easy Access:** Users can watch climate change-related content anytime, anywhere.
- **Low Cost**: Producing and sharing Reels is cost-effective, making it accessible to all creators.

2- **Content Richness**: Accurate, Informative, and Engaging.

- **Accurate Information**: High-quality research and trusted sources.
- **Multimedia Integration:** Combines images, text, graphics, and video for comprehensive understanding.
- **Sufficient Time for Learning**: Even in short reels, content can dive deep into climate change facts.
- **Depth in Information**: Key data points, explanations, and calls to action.

3- **Presenter richness**: Relatable, Concise, and Attractive Delivery.

- **Quick and Concise**: Presenters get straight to the point, making the information attractive.
- **Natural Language**: Using everyday speech makes climate change easier to understand for the general audience.
- **Celebrity/Influencer Presence**: Well-known figures give credibility and catch attention to important issues.
- **Engaging Presentation**: Fun, creative, and interesting delivery styles increase viewer retention.

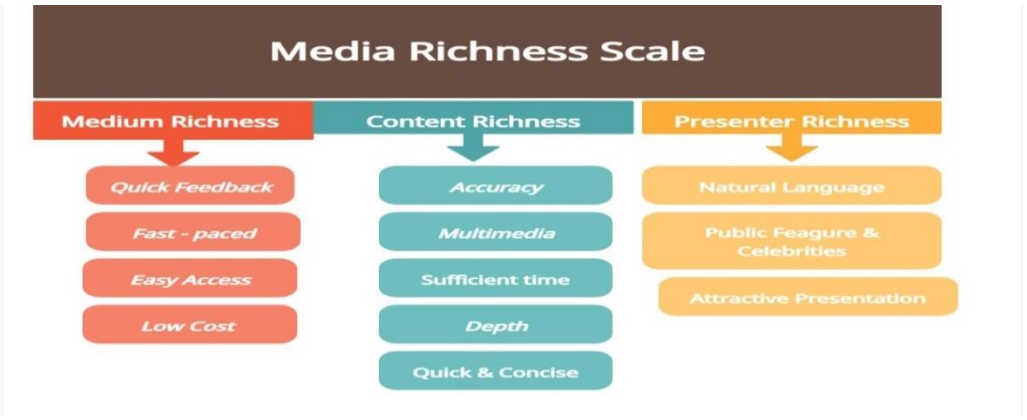


Figure 5

Media Richness Scale (proposed by the researcher)

2- Media System Dependency Theory (MSD)

Defleur & Rokeach (1975) presented a vision of the power of the media in influencing the audience through its dependency on the content presented in the media.

MSD theory proposes the relationships between the media system and political, social, and cultural systems on the macro level and between the media and individuals on the micro level. The term **"dependency"** refers to "a relationship where the satisfaction of needs or the attainment of goals by one party is contingent upon the resources of another party". In this connection, individuals may develop dependency relations with the media if they find the resources provided by the media helpful in accomplishing various goals. MSD **proposes that** people have three main goals when using media: understanding, orientation, and play. The informational media use is the instance of how people achieve the understanding goal: they use media to understand the world around and make decisions accordingly (Zhang & Zhong, 2020, p3).

Forms of media dependency:

There are many forms through which individuals depend on the media to satisfy their informational needs, which are as follows (L.Defleur, 1982, P.243):

1) The need to understand the social world.

2) The need to act more seriously and effectively in the world at all levels of dealing with others.

3) The need for entertainment, amusement, and escape from daily problems and pressures.

Hypothesis of the media dependency theory:

• Media dependency theory assumes that the more an individual relies on the media to obtain information and satisfy his needs through it, the greater the role that the media plays in the individual's life, and thus the greater the influence of the media on that individual (J.Baran & K. Davis, 2009, P.324).

• The greater the social change, instability and conflict in society, the greater the reliance on the media, and the greater the opportunities for change in the behaviors and beliefs of the public (W. Littlejohn, 2002, P. 325).

Media dependency effects:

Many scientists identified the effects of media dependency like (L.Defleur, 1982, PP.242-249, J.Baran & K. Davis, 2009, PP. 330-334, and W. Littlejohn, 2002, PP. 327-330).

1- Cognitive Effects:

The cognitive effects are independent of the effects on overt and explicit behavior, but both are clearly linked to each other, and this part refers to: revealing the feeling of ambiguity, forming attitudes, arranging priorities, expanding beliefs and values.

2- Affective Effects:

Affective effects are associated with a set of terms such as: feelings, emotions, and affective effects such as: feeling fear and anxiety, feeling love, and so on.

3- Behavioral Effects:

Changes in behaviors, attitudes and beliefs are very important effects of the media, and behavioral effects can be summarized in effectiveness in doing a certain action (activation), and ineffectiveness or avoiding doing a certain action (deactivation).

The researcher got benefit from this theory in identifying the research hypothesis and climate change reels effects on the study sample.

Research Questions:

RQ1: How often do participants watch climate change reels on social media?

RQ2: Which social media platforms the participants typically use in viewing climate change reels?

RQ3: What is the specific content of climate change reels the participants prefer to watch?
RQ4: What are the reasons for depending on climate change reels to obtain information about this issue?
RQ5: What are the effects of watching climate change reels?
RQ6: How the participants interact with climate change reels on social media?
RQ7: How participants feel towards the climate change reels on social media?
RQ8: What are the richness factors in climate change reels on social media?

Research Hypothesis:

The study seeks to test the following hypotheses:

H1: There is a statistically significant correlation between the study sample exposure density to climate change Reels on social media and raising awareness of climate change issues.

H2: There is a statistically significant correlation between the richness of climate change Reels on social media and raising awareness of climate change issues.

H3: There is a statistically significant correlation between motives for watching climate change Reels on social media and raising awareness of climate change issues.

H4: There is a statistically significant correlation between the study sample dependency on the reels to obtain information about climate change and raising awareness of climate change issues.

H5: There is a statistically significant correlation between the richness of climate change reels on social media and the study sample interaction with these reels.

H6: There are statistically significant differences between the study sample according to demographic characteristics (gender - age - education - socio-economic level), and raising their awareness of climate change by watching climate change reels on social media.

Variables and Measurements:

The study tested the effect of three of determinants (independent variables): (exposure density - richness of climate change reels - dependency on climate change reels) on two dependent variables, which are (raising awareness about climate change issues - interaction with climate change reels). In addition, the effect of moderator variables, which are the demographic variables (age group "Gen Z & millennials" – gender – educational level – socio economic level), were tested.

Table 1
Research Variables

Independent Variables	Moderator Variables	Dependent Variables
- Exposure density of climate change reels on social media. - Richness of climate change reels. - Dependency on climate change reels to obtain information about climate change	**Demographic Variables**: (age "Gen Z & millennials" – gender – educational level – socio economic level)	- Raising awareness about climate change issues - Audiences' interaction with climate change reels on social media

The measurements of specific previous studies were used in developing and designing the study's scales, in addition to developing special items according to the requirements of the topic of the study. For example, the study benefited from Marzouk Ibrahim (2023), Duan (2024), Yenni & Calista (2023), Khashmon (2021) and Helmy (2023) in designing the scales of the research.

3 point scales were designed for each variable ranging between Agree (3), Neutral (2), Disagree (1), and their validity and reliability were tested before the final application, as follows:

Dependency on climate change reels: was assessed through 8 statements. The sum of responses ranged between 8 and 24. Responses falling within the range of 8-14 were categorized as indicative of low dependency, those between 15-18 signified moderate, and responses ranging from 19-24 were considered indicative of high dependency.

Motives for watching climate change reels: was assessed through 14 statements, 4 statements for utilitarian motives, 3 statements for ritual motives, 4 statements for the motives related to the characteristics of the medium, and 3 statements for Social interaction motives. The sum of responses ranged between 14 and 42. Responses falling within the range of 14-23 were categorized as indicative of low motives, those between 24-33 signified moderate, and responses ranging from 34-42 were considered indicative of high motives.

Raising awareness of climate change issues: was assessed through 13 statements, 4 statements for cognitive effects, 4 statements for affective effects, and 5 statements for behavioral effects. The sum of responses ranged between 13 and 39. Responses falling within the range of 13-20 were categorized as indicative of low awareness, those between 21-27 signified moderate, and responses ranging from 28-39 were considered indicative of high awareness.

Audiences' attitudes of watching climate change reels: was assessed through 8 statements. The sum of responses ranged between 8 and 24. Responses falling within the range of 8-14 were categorized as indicative of low (negative attitudes), those between 15-18 signified moderate, and responses ranging from 19-24 were considered indicative of high (positive attitudes).

Richness factors in climate change reels: was assessed through 12 statements, 4 statements for each richness factor (medium – content – presenter). The sum of responses ranged between 12 and 36. Responses falling within the range of 12-20 were categorized as indicative of low richness, those between 21-27 signified moderate, and responses ranging from 28-36 were considered indicative of high richness.

Exposure density: was assessed through 4 questions. The sum of responses ranged between 4 and 15. Responses falling within the range of 4-7 were categorized as indicative of low exposure, those between 8-11 signified moderate, and responses ranging from 12-15 were considered indicative of high exposure.

Socio-economic level: was assessed through 5 questions. The sum of responses ranged between 6 and 14. Responses falling within the range of 6-8 were categorized as indicative of low socio – economic level, those between 9-11 signified moderate, and responses ranging from 12-14 were considered indicative of high socio – economic level.

Operational Definitions:

Short videos (Reels): Reels and short videos are a type of visual material popular on social media platforms like Facebook, Instagram, TikTok, and YouTube, and they usually last less than a minute, and their content varies between religious, sport, medical, educational, environment, funny and comics.

Social media platforms: mean all the platforms that include reels or short videos like Facebook, Instagram, TikTok, and YouTube.

Climate change awareness: it can be defined as perceived concerns over threats to human society and natural ecosystems resulting from climate change (Gómez‐Casillas & Gómez Márquez, 2023, P.3).

Climate change issues: climate change is a serious threat to humankind. It refers to the change in climate patterns due to greenhouse gas emissions (Zeng, 2022, P.1). Recent research indicates that it has serious effects on human society, including more frequent extreme temperatures, flooding, threats to food security, ice melting at the poles, spread of diseases, and reduced economic growth. Furthermore, climate change could have a negative impact on the individual's physical and mental health.

Users: were divided in the study according to their age group:

a- Generation Z: refers to individuals born between the late 1990s and the early 2010s. This generation has grown up entirely in the digital age, with smartphones, social media, and the internet being integral parts of their lives from an early age. Gen Z is recognized as digital natives, effortlessly navigating

technology and actively using it as a means of self-expression and social connection. They are often characterized as diverse, politically engaged, entrepreneurial, and socially conscious. (Wandhe, et al, 2024, Dimock, 2019).

b- Millennials: they are generally defined as those born between the early 1980s and the mid-1990s, coming of age during the turn of the millennium. This generation witnessed significant technological advancements, such as the rise of the internet and the widespread adoption of mobile phones. Millennials are often characterized as optimistic, open-minded, and highly adaptable. They have embraced digital platforms, social media, and online communication, leading to a significant shift in the way information is consumed, shared, and social interactions are conducted. (Wandhe, et al, 2024, Dimock, 2019)

Methodology:

This quantitative study, which employed the survey method, focused on Millennials and Gen Z, who are between the ages of (15 – 42). These two age groups were chosen because they are the ones that adapt to new technological developments the fastest, particularly Generation Z, often known as the Internet generation and the first generation of really digital natives. In addition to the millennial age who is trying to develop themselves in using advanced technology, they are also open-minded, highly adaptable, and more responsible toward their society, they also use internet and social media to search for information about the different issues around the world to be more aware of what is happening in the world.

Research Sample:

The study sample is applied on (400) respondents who use social media and live in Egypt. An online questionnaire was filled out between September 15, 2024 and October 5, 2024, and distributed electronically on different student groups in middle and high school, in addition to groups of university students, graduates, employees in various entities in Egypt.

The following table shows the characteristics of the sample distributed according to age group: **a)** Millennials, whose year of birth falls between 1981 to 1995 and who will be between 28 to 42 years old, **b)** and Generation Z, whose year of birth falls between 1996 to 2012 and their ages range approximately from 11 to 27 years old.

Table 2

Sample characteristics

Demographics \ Generation		Z		Millennial		Total	
		F	%	F	%	F	%
Gender	Male	78	30.7%	45	30.8%	123	30.8%
	Female	176	69.3%	101	69.2%	277	69.3%
	Total	**254**	**100.0%**	**146**	**100.0%**	**400**	**100.0%**

Educational level	Student	217	85.4%	7	4.8%	224	56.0%
	Graduate	37	14.6%	139	95.2%	176	44.0%
	Total	**254**	**100.0%**	**146**	**100.0%**	**400**	**100.0%**
socio-economic level	Low	32	12.6%	14	9.6%	46	11.5%
	Medium	162	63.8%	88	60.3%	250	62.5%
	High	60	23.6%	44	30.1%	104	26.0%
	Total	**254**	**100.0%**	**146**	**100.0%**	**400**	**100.0%**

Data collection tool:

The data was collected using an online questionnaire and was designed consisting of three main sections. **The first section** consisted of questions related to identifying the respondents' uses of climate change reels, their reasons of dependency, and motivations. **The second** consisted of scales to measure the effects of watching climate change reels, interaction with these reels, respondents' attitudes of watching climate change reels, and the richness factors in these reels and in **the third** and last section came the demographic questions.

Validity and reliability:

The researcher presented the questionnaire form to a group of refereeing professors* specialized in the field of media, in order to express their opinions on the form and the adequacy of the questions to achieve the objectives of the study. Then the researcher made the amendments approved by the refereeing professors and then formulated the form in its final form.

For assessing reliability, Cronbach's alpha was applied to measure internal consistency, and all of its values are higher than 0.7 which considered good.

Table 3

Validity and reliability values

Variables	Alpha	P
All the questionnaire	0.884	0.940

* **Refereeing Professors:**

Dr. Adel Fahmy, Professor at the faculty of mass communication – Cairo University.
Dr. Ashraf Galal, Professor at the faculty of mass communication – Cairo University.
Dr. Fatma Shaaban, Professor at the faculty of mass communication – Al Shorouk Academy.
Dr. Hazem El-Banna, Professor of Radio and Television, Faculty of Specific Education– Al-Mansoura University.
Dr. Miral Moustafa, Professor at the faculty of mass communication – MTI University.
Dr. Mohamed El-Morsy, Professor at the faculty of mass communication – Cairo University.
Dr. Waleed Fathalla, Professor at the faculty of mass communication – Cairo University.

Dependency reasons		0.658	0.811
Motives for watching climate change reels	Utilitarian motives	0.791	0.889
	Ritual motives		
	Motives related to the characteristics of the medium		
	Social interaction motives		
Raising awareness of climate change issues	Cognitive effects	0.585	0.765
	Affective effects		
	Behavioral effects		
Attitudes of watching climate change reels		0.532	0.729
Richness of climate change reels	Medium richness	0.827	0.909
	Content Richness		
	Presenter richness		

Statistical Data Processing:

Following the completion of data collection, the gathered information underwent coding and entry into a computer system. Subsequently, the dataset was processed and analyzed using the "Statistical Package for the Social Sciences" program (SPSS). Various statistical procedures were employed, including calculating frequencies and percentages, determining averages and standard deviations, in addition to using Chi-Square, Contingency Coefficient, and Pearson Correlation, and assessing the relative importance (RI) of Likert scale items by computing their arithmetic mean. Additionally, an Independent-Samples T-Test was conducted to examine the statistical significance of differences between two arithmetic means of independent groups in relation to a variable of distance or ratio. One-way ANOVA test and PostHoc (LSD) were used, and to calculate the reliability of the questionnaire and scales, Cronbach's alpha test was used, and self-consistency coefficient was calculated.

Findings:

The study findings will be divided into the general findings of users' dependency on social media reels about climate change to obtain information about climate change and those of testing hypothesis as follows:

(A) The general findings:

1- The exposure density to climate change Reels on social media.

- watching reels about climate change on social media:

Table 4

Watching (Reels) about climate change on social media

Generation / watching Reels	Z		Millennial		Total	
	F	%	F	%	F	%
Rarely	56	22.0%	47	32.2%	103	25.8%
Sometimes	145	57.1%	77	52.7%	222	55.5%

Always	53	20.9%	22	15.1%	75	18.8%
Total	**254**	**100.0%**	**146**	**100.0%**	**400**	**100.0%**

From the table, respondents watch reels about climate change on social media "sometimes" at the highest rate (55.5%).

- **The number of days for watching Reels about climate change per week:**

The majority of respondents watch the reels about climate change on social media "one day only" per week with (53.8%).

- **The hours of watching reels about climate change on social media per day:**

The majority of respondents watch reels about climate change "Less than an hour" per day with (78.3%); also the hours of watching reels about climate change on social media per day have increased among millennials compared to gen Z. This indicates that this type of content attracts the attention of millennials more than gen Z, and millennials are curious to know more about climate change issues.

- The number of reels about climate change viewed per day:

The majority of respondents watch "less than 3 reels" about climate change per day with (69.8%); also the number of reels about climate change viewed per day has increased among millennials compared to gen Z. This indicates that millennials are interested in watching reels about climate change on social media more than gen Z, because they are the older generation and realize how dangerous climate change is in the long term.

- **Exposure density scale:**

Table 5

Exposure density scale

Generation / Exposure density	Z		Millennial		Total	
	F	%	F	%	F	%
Low	178	70.1%	117	80.1%	295	73.8%
Medium	65	25.6%	26	17.8%	91	22.8%
High	11	4.3%	3	2.1%	14	3.5%
Total	**254**	**100.0%**	**146**	**100.0%**	**400**	**100.0%**

The data presented shows that the majority of respondents (73.8%) have "Low" rates of exposure density, followed by respondents who have "Medium" rates of exposure density (22.8%), which can be interpreted that both generations prefer the light and comic reels more than the serious topics like climate change reels.

- **social media platforms used for watching reels about climate change:**

Table 6

Social media platforms used for watching reels about climate change

Position / Social media	1		2		3		4		5		M	RI
	F	%	F	%	F	%	F	%	F	%		
Facebook	221	55.3%	70	17.5%	59	14.8%	24	6.0%	26	6.5%	4.09	81.8%
Instagram	61	15.3%	157	39.3%	89	22.3%	65	16.3%	28	7.0%	3.40	67.9%
Tiktok	56	14.0%	79	19.8%	129	32.3%	96	24.0%	40	10.0%	3.04	60.8%
Youtube	30	7.5%	74	18.5%	101	25.3%	159	39.8%	36	9.0%	2.76	55.2%
Snapchat	32	8.0%	20	5.0%	22	5.5%	56	14.0%	270	67.5%	1.72	34.4%

Data shows that the highest percentage (81.8%) in social media platforms used for watching reels about climate change is "Facebook", followed by "Instagram" at the second place (67.9%), this indicates to the popularity of Facebook between both generations. This result agreed with what was announced by statista website about the most popular social network worldwide as of April 2024, by number of monthly active users, Facebook came at the first place with more than three billion monthly active users (Social media & user generated content, 2024, 10 November).

- **The reels contents which are the most preferred:**

The results showed that the majority of respondents prefer watching reels about "Funny and comic videos" (65.8%), then followed by "Religious content" (53.3%).

- **The most interesting climate change issues:**

Table 7

The most interesting climate change issues

Generation / Climate change issues	Z		Millennial		Total	
	F	%	F	%	F	%
Environmental pollution	112	44.1%	80	54.8%	192	48.0%
Global warming	92	36.2%	57	39.0%	149	37.3%
Spread of epidemic diseases	163	64.2%	93	63.7%	256	64.0%
High weather temperature	150	59.1%	87	59.6%	237	59.3%
severe weather fluctuations	117	46.1%	78	53.4%	195	48.8%
agricultural land clearing	25	9.8%	11	7.5%	36	9.0%
The negative effects on livestock	39	15.4%	13	8.9%	52	13.0%
Ice melting at the poles	53	20.9%	26	17.8%	79	19.8%
Other	2	0.8%	4	2.7%	6	1.5%
Total	**254**	**100%**	**146**	**100%**	**400**	**100%**

As shown in the table, the "Spread of epidemic diseases" was the most interesting climate change issue for study sample respondents (64.0%), followed by " High weather temperature" (59.3%). This indicates that both

generations are interested in the issues which are related to their personal life and may affect their lives. Regarding the new research from the Walton Family Foundation and Gallup's report, "Climate Spotlight: Gen Z on Water Issues," showed that water issues are often a unifying concern for Generation Z and impact young people's vision of their future. Across both political parties, a majority of voting-age Gen Zs worry about water pollution and the health of fish and oceans (Climate Spotlight, 2024, 2 November).

2- The dependency on reels on social media to obtain information about climate change and the motives for watching these Reels.

- Dependency on reels on social media to obtain information about climate change:

Table 8

Dependency on reels on social media to obtain information about climate change

Generation / Dependency on climate change reels	Z		Millennial		Total	
	F	%	F	%	F	%
Lowly depended	63	24.8%	57	39.0%	120	30.0%
Moderately depended	141	55.5%	67	45.9%	208	52.0%
Highly depended	50	19.7%	22	15.1%	72	18.0%
Total	**254**	**100.0%**	**146**	**100.0%**	**400**	**100.0%**

As shown in the table, respondents are "Moderately depended" on social media to obtain information about climate change (52.0%), then followed by respondents who are "Lowly depended" on social media to obtain information about climate change (30.0%). The results also showed that there is a positive correlation between the study sample, which indicates that the older generation (millennials) depend on reels on social media to obtain information about climate change more than the younger generation (Gen Z); this can be interpreted that millennials came of age during an era of major technological shifts, especially those associated with the rise of the internet, and they were the target consumers for social media and streaming entertainment, in addition to that they have a sense of responsibility toward their society and are fully aware of global challenges such as climate change, social justice and human rights.

- <u>The reasons for depending on reels on social media to obtain information about climate change:</u>

Table 9

Respondents' position on the statements that measure reasons for depending on reels

Position / Statements	Agree		Neutral		Disagree		M	Std. Deviation	R1
	F	%	F	%	F	%			

Because it is a reliable source.	93	23.3%	255	63.8%	52	13.0%	2.10	0.59	70.1%
Providing and disseminating everything related to climate change quickly and immediately	257	64.3%	122	30.5%	21	5.3%	2.59	0.59	86.3%
For the accuracy and depth of information provided on climate change.	93	23.3%	231	57.8%	76	19.0%	2.04	0.65	68.1%
Because it uses multimedia to display content such as video and live images.	279	69.8%	100	25.0%	21	5.3%	2.65	0.58	88.2%
Because it uses experts and specialists to present all aspects related to climate change.	141	35.3%	192	48.0%	67	16.8%	2.19	0.70	72.8%
Simplicity of presentation and ease of language used to present the issue of climate change	295	73.8%	90	22.5%	15	3.8%	2.70	0.53	90.0%
Because of its short duration	290	72.5%	88	22.0%	22	5.5%	2.67	0.58	89.0%
Because of its reliance on celebrities to provide content about climate change.	109	27.3%	176	44.0%	115	28.8%	1.99	0.75	66.2%

The data shows, the most sentence that got the highest rank (90.0%) is "Simplicity of presentation and ease of language used to present the issue of climate change", and this indicates that the respondents search first for the simplicity in the reels before any other factors because if the reels are complicated, the users won't be able to use or understand them. At the second place (89.0%) the respondents referred to "Because of its short duration", which indicates that the most important reasons that make the respondents use reels are simplicity and short duration, which can be interpreted that the respondents always prefer easy and quick content, and this is related to the nature of the current generation.

- **Climate change reels dependency scale:**

Table 10

Climate change reels dependency scale

Generation / Dependency on reels	Z		Millennial		Total	
	F	%	F	%	F	%
Low	7	2.8%	5	3.4%	12	3.0%
Medium	93	36.6%	56	38.4%	149	37.3%
High	154	60.6%	85	58.2%	239	59.8%
Total	**254**	**100.0%**	**146**	**100.0%**	**400**	**100.0%**

The largest percentage of participants (59.8%) has "High" rates of dependency on reels on social media to obtain information about climate change, and then followed by participants who have "Medium" rates (37.3%). This result

indicates that the climate change reels are one of the most important sources of information about climate change for both generations (Gen Z & Millennials).

- **Motives for watching reels about climate change on social media:**

Table 11

Motives for watching reels about climate change

Statements \ Position		Agree		Neutral		Disagree		M	Std. Deviation	R1
		F	%	F	%	F	%			
Utilitarian motives	For getting new information about climate change	302	75.5%	85	21.3%	13	3.3%	2.72	0.52	90.8%
	Feeling of the risks that we may be exposed to due to climate change	266	66.5%	116	29.0%	18	4.5%	2.62	0.57	87.3%
	To follow the events about the environment and climate change around the world	266	66.5%	117	29.3%	17	4.3%	2.62	0.57	87.4%
	Related to my work or study	89	22.3%	157	39.3%	154	38.5%	1.84	0.76	61.3%
Ritual motives	For fun and entertainment	100	25.0%	166	41.5%	134	33.5%	1.92	0.76	63.8%
	For spending my free time	110	27.5%	160	40.0%	130	32.5%	1.95	0.77	65.0%
	Became a habit	100	25.0%	163	40.8%	137	34.3%	1.91	0.77	63.6%
Motives related to the characteristics of the medium	Information is presented quickly, directly, and in attractive way	286	71.5%	103	25.8%	11	2.8%	2.69	0.52	89.6%
	I can watch them more than once and at any time	220	55.0%	128	32.0%	52	13.0%	2.42	0.71	80.7%
	Allow me to choose the content that suits me.	228	57.0%	139	34.8%	33	8.3%	2.49	0.64	82.9%
	I prefer using new technologies	251	62.8%	124	31.0%	25	6.3%	2.57	0.61	85.5%
Social interaction motives	To express my opinion and give my feedback	171	42.8%	155	38.8%	74	18.5%	2.24	0.75	74.8%
	to share Reels with my family & friends	192	48.0%	137	34.3%	71	17.8%	2.30	0.75	76.8%
	For the social interaction about Reels content	196	49.0%	148	37.0%	56	14.0%	2.35	0.71	78.3%

Data shows that the highest item in percentage (90.8%) in motives for watching reels about climate change is "For getting new information about climate change", which prove that the majority of the study sample are using climate change reels for getting information about climate change, this indicates that

climate change reels are one of the most important sources of information about climate change for the respondents.

- **The motives scale:**

Table 12
Motives scale

motives for watching climate change reels	M	R1	Minimum	Maximum	Alpha	p
Total motives	32.63	77.7%	14	42	0.791	0.889
Utilitarian motives	9.80	81.7%	4	12	0.45	0.671
Ritual motives	5.77	64.1%	3	9	0.731	0.855
Motives related to the characteristics of the medium	10.16	84.7%	4	12	0.722	0.850
Social interaction motives	6.90	76.6%	3	9	0.804	0.897

As shown in the table, the motives related to the characteristics of the medium come at the first place (84.7%) in terms of the motives for watching climate change reels, followed by the utilitarian motives (81.7%). As a result, it can be observed that the majority of respondents' motives for watching climate change reels were related to the medium's features. This suggests that the most significant factors influencing respondents' decision to watch climate change reels on social media platforms are the medium's features and capabilities, including its attractiveness, use of multimedia, short duration, and interactivity.

- **The satisfaction with the content provided in the climate change reels on social media:**

Table 13
Satisfaction with the content provided in the climate change Reels

Generation / Content satisfaction	Z		Millennial		Total	
	F	%	F	%	F	%
Unsatisfied	18	7.1%	15	10.3%	33	8.3%
Neutral	136	53.5%	98	67.1%	234	58.5%
Satisfied	100	39.4%	33	22.6%	133	33.3%
Total	**254**	**100.0%**	**146**	**100.0%**	**400**	**100.0%**

The data presented shows that the largest percentage of respondents (58.5%) are "Neutral" regarding the satisfaction with the content provided in the climate change reels, then followed by the participants who are "satisfied" (33.3%) with the content provided in the climate change reels. The results also show that there is a positive correlation between the age and the satisfaction with the content provided in the climate change reels; which indicates that the older generation (millennial) is more satisfied with the content provided in the climate change reels than the younger generation (Gen Z). This can be interpreted that millennials, the older generation, are more concerned about climate change and believe that reels offer thorough and visually appealing

information about it, which is enough to increase their awareness and knowledge of the problem.

3- The effects of watching reels about climate change on social media.

Table 14

Effects of watching reels

Statements \ Position		Agree		Neutral		Disagree		M	R1
		F	%	F	%	F	%		
Cognitive effects	I get information from climate change Reels that enable me to discuss climate change with those around me.	241	60.3%	126	31.5%	33	8.3%	2.52	84.0%
	Climate change Reels Provide me with information about what is climate change, the causes of it, and the precautions	258	64.5%	125	31.3%	17	4.3%	2.60	86.8%
	Climate change Reels Provide me with important information about the risks of climate change.	262	65.5%	114	28.5%	24	6.0%	2.60	86.5%
	I learned about the state's efforts to reduce the severity of climate change and confront it	184	46.0%	158	39.5%	58	14.5%	2.32	77.2%
Affective effects	I have been worried and stressed about the climate change risks.	182	45.5%	163	40.8%	55	13.8%	2.32	77.3%
	Feel a sense of belonging to the environment	175	43.8%	175	43.8%	50	12.5%	2.31	77.1%
	Helped me form an opinion about climate change.	207	51.8%	148	37.0%	45	11.3%	2.41	80.2%
	It made me feel like getting involved in climate change awareness initiatives.	165	41.3%	157	39.3%	78	19.5%	2.22	73.9%
Behavioral effects	After watching climate change Reels I follow the instructions on	204	51.0%	149	37.3%	47	11.8%	2.39	79.8%

Statements \ Position		Agree		Neutral		Disagree		M	R1
		F	%	F	%	F	%		
	precautions regarding climate change.								
	I have already participated in a climate change initiative.	93	23.3%	116	29.0%	191	47.8%	1.76	58.5%
	I followed the influencers who are interested in climate change issues.	134	33.5%	155	38.8%	111	27.8%	2.06	68.6%
	I made Reels about climate change issues	82	20.5%	110	27.5%	208	52.0%	1.69	56.2%
	I invite my family and friends to watch the climate change Reels	137	34.3%	130	32.5%	133	33.3%	2.01	67.0%

As the data shows, the most sentence that got the highest rank (86.8%) is "climate change reels provide me with information about what is climate change, the causes of it, and the precautions", followed by "climate change reels provide me with important information about the risks of climate change" with (86.5%), which indicates that the cognitive effects are the most effects caused by watching reels about climate change on social media, which prove the significance of climate change reels on social media in raising awareness about climate change issues.

- **Raising awareness of climate change issues scale:**

Table 15

Raising awareness of climate change issues scale

raising awareness of climate change issues	M	R1	Minimum	Maximum	Alpha	p
Total effects	25.12	64.4%	13	39	0.585	0.765
Cognitive effects	5.97	49.7%	4	12	0.717	0.847
Affective effects	9.25	77.1%	4	12	0.758	0.871
Behavioral effects	9.90	66.0%	5	15	0.771	0.878

As shown in the table, the affective effects got the highest rank (77.1%) in terms of the effects of watching climate change reels which measure the extent of increased awareness of climate change issues, followed by behavioral effects (66.0%) at the second place. This can be interpreted that watching reels about climate change causes respondents to have emotional effects like feeling threatened by the effects of climate change and a sense of belonging to the environment. These emotional effects may be the main reason why respondents

participate in climate change awareness-raising initiatives or follow climate change precautions instructions.

4- The interaction with climate change reels on social media and the extent of trust in them.

- Interaction with climate change reels

Table 16

Interaction with climate change reels

Generation / Interaction with reels	Z		Millennial		Total	
	F	%	F	%	F	%
Rarely	76	29.9%	54	37.0%	130	32.5%
Sometimes	140	55.1%	80	54.8%	220	55.0%
Always	38	15.0%	12	8.2%	50	12.5%
Total	**254**	**100.0%**	**146**	**100.0%**	**400**	**100.0%**

The largest percentage of the participants (55.0%) interact with climate change reels on social media "sometimes", followed by (32.5%) interact with climate change reels "rarely", which indicates that respondents may watch these types of reels and get the information but they don't interact with them.

- Watching climate change reels carefully:

Data shows that the largest percentage of the participants (61%) watch "sometimes" climate change reels carefully, followed by (24%) who are watching "always" climate change reels carefully.

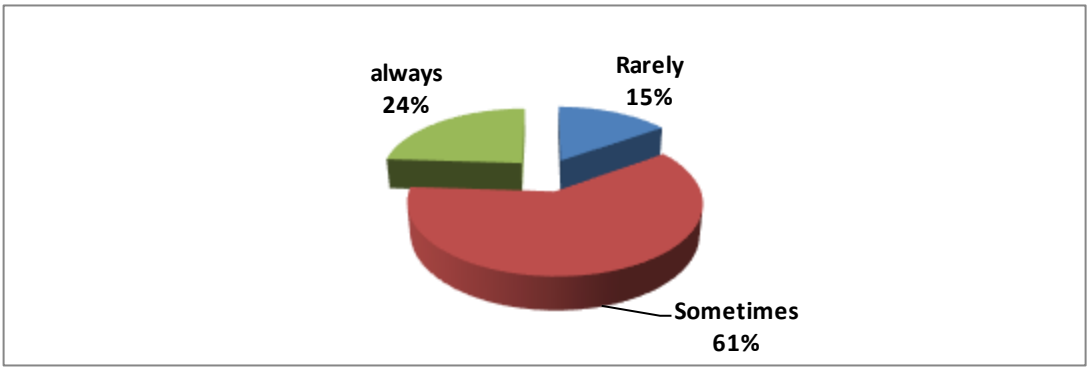


Figure 5

Watching climate change reels carefully

- Being a part of any Reel about climate change awareness on social media:

Table 17

Being a part of climate change reels

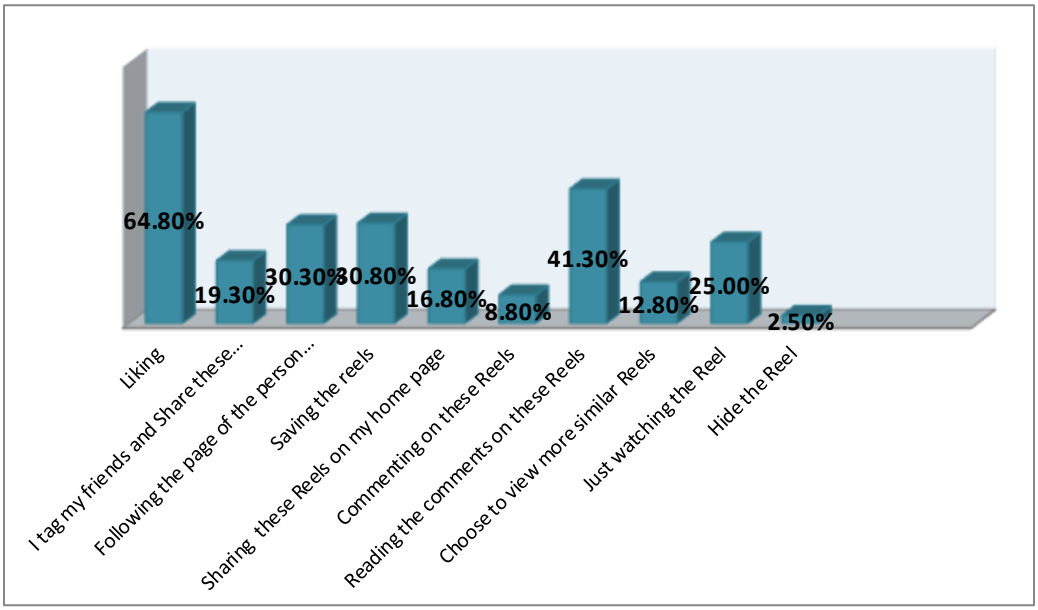
Generation	Z	Millennial	Total

Part of reels	F	%	F	%	F	%
No	185	72.8%	119	81.5%	304	76.0%
Yes	69	27.2%	27	18.5%	96	24.0%
Total	**254**	**100.0%**	**146**	**100.0%**	**400**	**100.0%**

The largest percentage of respondents (76.0%) had not participated in any reel about climate change awareness on social media before, which indicates that the majority of participants just watch the reels without participating in creating a content related to climate change awareness on social media. The data also shows that the younger generation (Gen Z) participates in making reels about climate change awareness on social media platforms more than the older generation (Millennial), this can be interpreted that the younger age (Gen Z) has good skills in dealing with social media platforms and is more efficient in creating content for these platforms.

- **interact with climate change Reels on social media:**

as the data shows, the largest percentage of respondents (64.8%) just make liking only on the climate change reels on social media, followed by the



participants who are "reading the comments on these reels" (41.3%) and this isn't a small percentage, which means that there are a lot of people interested in climate change issues and interacting with climate change reels on social media.

Figure 6
Interaction with climate change reels on social media

- **Interaction with climate change reels scale:**

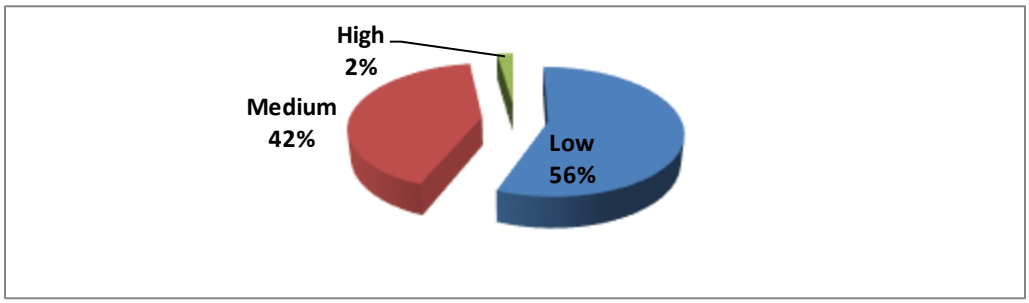


Figure 7

Interaction with climate change reels scale

As the data shows, the largest percentage of respondents (56%) has "Low" rates of interaction with climate change reels on social media, followed by respondents with "Medium" rates (42%) of interaction with climate change reels on social media, which indicates that both generations prefer just watching climate change reels without high rates of interaction.

- **The trust in the information presented in social media climate change reels:**

Table 18

The trust in climate change reels

Generation / Trust in reels	Z		Millennial		Total	
	F	%	F	%	F	%
I don't trust at all	4	1.6%	4	2.7%	8	2.0%
I trust a little	43	16.9%	25	17.1%	68	17.0%
I trust to some extent	181	71.3%	105	71.9%	286	71.5%
I trust a lot	26	10.2%	12	8.2%	38	9.5%
Total	**254**	**100.0%**	**146**	**100.0%**	**400**	**100.0%**

As shown in the table, the largest percentage of the participants (71.5%) "Trust to some extent" in the information presented in social media climate change reels, followed by participants who "trust a little" (17.0%), this can be interpreted that the public nowadays has become more aware and doesn't believe any information on the internet or social media unless they verify its accuracy.

5- The audience's attitudes of watching reels about climate change on social media:

Table 19

Audience's attitudes of watching climate change reels

Position	Agree	Neutral	Disagree	M	R1

Audience's attitudes	F	%	F	%	F	%		
I find a lack of access to climate change Reels	133	33.3%	163	40.8%	104	26.0%	2.07	69.1%
Climate change Reels sometimes include un clear information	159	39.8%	201	50.3%	40	10.0%	2.30	76.6%
Climate change Reels sometimes include misleading information	136	34.0%	203	50.8%	61	15.3%	2.19	72.9%
Watching climate change Reels wastes my time	63	15.8%	154	38.5%	183	45.8%	1.70	56.7%
The Reels are presented in an interesting and attractive way that makes me watch them	205	51.3%	167	41.8%	28	7.0%	2.44	81.4%
Climate change Reels are presented by trusted celebrities.	153	38.3%	180	45.0%	67	16.8%	2.22	73.8%
Climate change Reels make it easy to understand information about climate change because of their simplicity and short duration.	249	62.3%	132	33.0%	19	4.8%	2.58	85.8%
The climate change Reel presenter gets his information about climate change from reliable sources.	151	37.8%	224	56.0%	25	6.3%	2.32	77.2%

The data showcase that the highest percentage (85.8%) regarding the audience's attitudes of watching climate change reels was for the statement "climate change reels make it easy to understand information about climate change because of their simplicity and short duration", which confirms that both generations search for simple and quick content. At the second place (81.4%) the respondents referred to that "the reels are presented in an interesting and attractive way that makes me watch them", so according to the data shown, the short reels are one of the most appropriate ways for presenting information about climate change for them because of their attractiveness, simplicity, and short duration.

The audience's attitudes scale:

Table 20

The audience's attitudes scale:

Attitudes of watching climate change reels	Z		Millennial		Total	
	F	%	F	%	F	%
Negative	4	1.6%	2	1.4%	6	1.5%
Neutral	146	57.5%	99	67.8%	245	61.3%
Positive	104	40.9%	45	30.8%	149	37.3%
Total	**254**	**100.0%**	**146**	**100.0%**	**400**	**100.0%**

The data shows that the majority of respondents (61.3%) have "Neutral" attitudes towards the climate change reels, followed by the respondents who have "Positive" attitudes towards the climate change reels (37.3%), this

indicates that the participants prefer this content due to its attractiveness, fast-paced, and short duration.

6- The most important strategies which are used in climate change Reels on social media to influence the audience:

Table 21

Strategies used in climate change reels

Position / Strategies	Agree		Neutral		Disagree		M	R1
	F	%	F	%	F	%		
The climate change Reels encourage individuals to take social responsibility towards the environment.	282	70.5%	105	26.3%	13	3.3%	2.67	89.1%
The climate change Reels encourage people to change their behavior to protect the environment.	276	69.0%	111	27.8%	13	3.3%	2.66	88.6%
The climate change Reels focus on the role of each individual within their home to reduce the effects of climate change.	256	64.0%	119	29.8%	25	6.3%	2.58	85.9%
The climate change Reels use fear to persuade audiences to engage in certain behaviors to reduce the effects of climate change.	176	44.0%	168	42.0%	56	14.0%	2.30	76.7%
The climate change Reels highlight the negative impact on society such as water and food shortages, reduced crop production and flooding.	277	69.3%	108	27.0%	15	3.8%	2.66	88.5%
The climate change Reels emphasize the benefits that can be achieved by adopting positive behaviors towards the environment.	252	63.0%	128	32.0%	20	5.0%	2.58	86.0%
The climate change Reels influence the audience by using celebrities and influencers such as Ahmed Amin and Al-Da7ee7 الدحيح	234	58.5%	139	34.8%	27	6.8%	2.52	83.9%
The climate change Reels divide the audience into various categories and	228	57.0%	136	34.0%	36	9.0%	2.48	82.7%

Strategies \ Position	Agree		Neutral		Disagree		M	R1
	F	%	F	%	F	%		
address the message in the language that suits them.								

As for the strategies used in climate change reels on social media, the data shows that the statement which states "the climate change reels encourage individuals to take social responsibility towards the environment" occupied the first place (89.1%) and this indicates that respondents believe in the ability of climate change reels on social media in encouraging individuals to take social responsibility towards the environment. At the second place (88.6%) came the statement that states "the climate change reels encourage people to change their behavior to protect the environment", which confirms the significance of short reels about climate change on social media, because these reels encourage people to be responsible for environment and change their behavior to protect the environment, this according to respondents' point of views about the strategies used in climate change reels.

7- The richness factors in Climate Change Reels on social media:

Table 22

The richness factors in reels

Richness factors \ Position		Agree		Neutral		Disagree		M	R1
		F	%	F	%	F	%		
Medium richness	Climate change Reels allow the audiences give an immediate and quick feedback on these reels	278	69.5%	107	26.8%	15	3.8%	2.66	88.6%
	The climate change Reels are short and fast-paced.	293	73.3%	95	23.8%	12	3.0%	2.70	90.1%
	Easy and quick access to climate change Reels on social media	286	71.5%	99	24.8%	15	3.8%	2.68	89.3%
	Low cost as watching climate change Reels only requires an internet	290	72.5%	98	24.5%	12	3.0%	2.70	89.8%

Richness factors \ Position		Agree		Neutral		Disagree		M	R1
		F	%	F	%	F	%		
	connection via mobile								
Content Richness	The content of climate change Reels includes statistics and numbers that support the accuracy of the information.	182	45.5%	178	44.5%	40	10.0 %	2.36	78.5%
	Multimedia is used in the content of climate change Reels, such as images, graphics, and links to related videos, as well as modern technologies such as AI.	281	70.3%	101	25.3%	18	4.5%	2.66	88.6%
	The duration of the climate change Reels is sufficient to convey the information	205	51.3%	157	39.3%	38	9.5%	2.42	80.6%
	The Reels address climate change issues in depth.	134	33.5%	187	46.8%	79	19.8 %	2.14	71.3%
Presenter richness	The presenter of climate change Reels presents the information quickly and concisely.	271	67.8%	117	29.3%	12	3.0%	2.65	88.3%
	The presenter of climate change Reels uses natural language that the audience understands, such as colloquial language, to convey the information simply.	274	68.5%	114	28.5%	12	3.0%	2.66	88.5%

Richness factors \ Position		Agree		Neutral		Disagree		M	R1
		F	%	F	%	F	%		
	Most of the climate change Reels presenters are celebrities and influence the audience.	174	43.5%	179	44.8%	47	11.8 %	2.32	77.3%
	Most of the climate change Reels presenters have an interesting and attractive way of presenting information.	217	54.3%	158	39.5%	25	6.3%	2.48	82.7%

The data revealed that the largest percentage of participants (90.1%) considers that the most richness factor in climate change reels is that "the climate change reels are short and fast-paced", which ensures that both generations prefer watching the content presented in a fast and short format, and this is consistent with the nature of these generations, who prefer a fast-pace in everything especially gen Z. At the second place (89.8%) the respondents referred to that "low cost as watching climate change reels only requires an internet connection via mobile". And a large percentage of respondents (89.3%) referred to that "easy and quick access to climate change reels on social media", this indicates that the majority of respondents' point of views related to the medium richness in terms of short duration, fast-paced, low cost, easy, and quick access to climate change reels on social media.

- **The richness scale:**

Table 23
Richness scale

the richness of climate change reels	M	R1	Minimum	Maximum	Alpha	p
Total richness factors	30.40	84.4 %	12	36	0.827	0.909
Medium richness	10.73	89.4 %	4	12	0.728	0.853
Content Richness	9.57	79.7 %	4	12	0.66	0.812
Presenter richness	10.10	84.2 %	4	12	0.626	0.791

As shown in the table, the medium richness factors got the highest rank (89.4%) in terms of the richness factors in climate change reels, followed by the richness factors related to the presenter (84.2%). Therefore, it can be concluded that the

most significant factors that motivate respondents to watch climate change-related reels are the medium's richness, including its affordability, accessibility, and short duration, as well as the ability to comment on the reels and provide quick, immediate feedback.

8- The suggestions for the factors that could raise awareness of climate change issues through social media reels:

The data shows that the largest percentage of respondents (63%) suggests "presenting the reels in an interesting and attractive way" regarding the factors that could raise awareness of climate change issues through social media reels, which proves that both generations are more interested in the attractive formats than the traditional formats, followed by (59%) of respondents who are suggesting "dependency on public figures and influencers", which refers to the significance of depending on those figures and influencers because they have a great influence on both generations especially the younger generation (gen Z). At the third place (57.3%) the respondents' suggestions are related to "the use of informative reels" and "producing more reels about climate change on all social media platforms", this indicates that the respondents want to find the climate change reels available on all social media platforms and more accessible, as they want to learn more about climate change issues, and this can be achieved by making the information easily available.

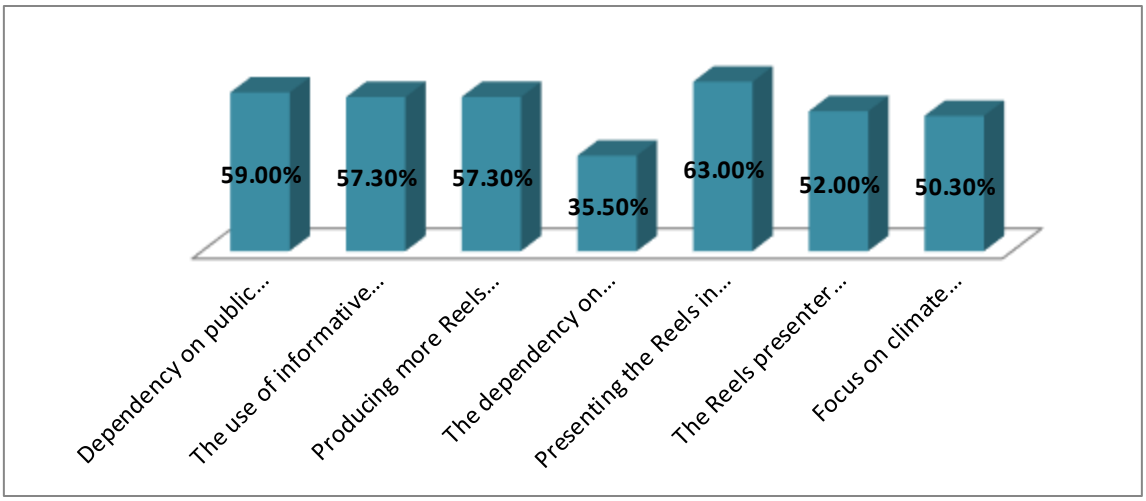


Figure 8

Factors for raising awareness of climate change issues through reels

B) Testing Hypothesis:

H1: There is a statistically significant correlation between the study sample exposure density to climate change reels on social media and raising awareness of climate change issues.

Table 24

The correlation between exposure density to climate change reels and raising awareness of this issue

Raising awareness of climate change issues	exposure density	
Total effects	Pearson Correlation	0.280**
	Sig. (2-tailed)	0.000
	N	**400**
Cognitive effects	Pearson Correlation	-0.137**
	Sig. (2-tailed)	0.006
	N	**400**
Affective effects	Pearson Correlation	0.168**
	Sig. (2-tailed)	0.001
	N	**400**
Behavioral effects	Pearson Correlation	0.340**
	Sig. (2-tailed)	0.000
	N	**400**

The data shows that **H1** is totally supported. The results revealed that exposure density to climate change reels on social media is positively related to raising awareness of climate change issues, which means that watching reels about climate change on social media raises awareness about this issue among the respondents. The results shows also that affective effects (r= 0.168, P<0.05)

and behavioral effects (r=0.340, P<0.05) are positively related to exposure density, but cognitive effects are negatively related to exposure density (r= -0.137, P<0.05), which can be interpreted as some respondents watch many reels about climate change but without focusing on their content and aren't careful while watching; this is why there is a negative correlation between exposure density and cognitive effects.

The results also show that the effect of exposure density to climate change reels on raising awareness of this issue was less among younger generation (gen Z) than the old generation (millennials), which refers to that millennials are more interested in this issue and have a greater sense of responsibility towards the environment than the younger generation.

H2: There is a statistically significant correlation between the richness of climate change reels on social media and raising awareness of climate change issues.

Table 25

The correlation between the richness of climate change reels and raising awareness of this issue

raising awareness of climate change issues		the richness of climate change reels	Medium richness	Content richness	Presenter richness
Total effects	Pearson Correlation	0.153**	-0.033	0.218**	0.178**
	Sig. (2-tailed)	0.002	0.511	0.000	0.000
	N	**400**	**400**	**400**	**400**
Cognitive effects	Pearson Correlation	-0.567**	-0.431**	-0.476**	-0.501**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000
	N	**400**	**400**	**400**	**400**
Affective effects	Pearson Correlation	0.414**	0.302**	0.347**	0.381**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000
	N	**400**	**400**	**400**	**400**
Behavioral effects	Pearson Correlation	`0.265**	0.011	0.346**	0.282**
	Sig. (2-tailed)	0.000	0.820	0.000	0.000
	N	**400**	**400**	**400**	**400**

The data supported **H2** that there is a correlation between the richness of climate change reels on social media and raising awareness of climate change issues (r= 0.153, P<0.05). Also, the results revealed that, according to the respondents, the content and presenter richness are related to raising awareness

about climate change issues more than medium richness, which means that the participants are interested in the content of the reels and the presenter. The results also indicated that the effect on the older generation (millennials) was greater than the younger generation (Gen Z), which means that the richness of climate change reels has a greater effect on increasing awareness among the older generation (millennials). This may be due to that this generation has greater social awareness than the younger generation (Gen Z) and has more interest in societal issues, including climate change.

H3: There is a statistically significant correlation between motives for watching climate change reels on social media and raising awareness of climate change issues.

Table 26

The correlation between motives and raising awareness of climate change issues.

raising awareness of climate change issues		motives for watching climate change Reels	Utilitarian motives	Ritual motive	Motives related to the characteristics of the medium	Social interaction motives
Total effects	Pearson Correlation	0.358**	0.215**	0.337**	0.150**	0.288**
	Sig. (2-tailed)	0.000	0.000	0.000	0.003	0.000
	N	**400**	**400**	**400**	**400**	**400**
Cognitive effects	Pearson Correlation	-0.561**	-0.527**	-0.073	-0.522**	-0.464**
	Sig. (2-tailed)	0.000	0.000	0.144	0.000	0.000
	N	**400**	**400**	**400**	**400**	**400**
Affective / Emotional effects	Pearson Correlation	0.521**	0.455**	0.184**	0.419**	0.410**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000
	N	**400**	**400**	**400**	**400**	**400**
Behavioral effects	Pearson Correlation	0.458**	0.293**	0.363**	0.229**	0.384**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000
	N	**400**	**400**	**400**	**400**	**400**

The data revealed supporting to H3 that there is a statistically significant correlation between motives for watching climate change reels on social media and raising awareness of these issues ($r = 0.358$, $P<0.05$). The findings also indicate that respondents' awareness of climate change for the older generation increased with their use of climate change reels and their utilitarian motivations.

H4: There is a statistically significant correlation between the study sample dependency on the reels to obtain information about climate change and raising awareness of climate change issues.

Table 27
Correlation between dependency on and raising awareness of climate change issues.

Raising awareness of climate change issues		Dependency on climate change reels
Total effects	Pearson Correlation	0.166**
	Sig. (2-tailed)	0.001
	N	**400**
Cognitive effects	Pearson Correlation	-0.505**
	Sig. (2-tailed)	0.000
	N	**400**
Affective effects	Pearson Correlation	0.368**
	Sig. (2-tailed)	0.000
	N	**400**
Behavioral effects	Pearson Correlation	0.278**
	Sig. (2-tailed)	0.000
	N	**400**

The data revealed, supporting H4, that there is a correlation between dependency on reels to obtain information about climate change and raising awareness of climate change issues ($r = 0.166$, $P < 0.05$), which means that respondents' dependency on climate change reels on social media raise their awareness about this issue.

H5: There is a statistically significant correlation between the richness of climate change reels on social media and the study sample interaction with these reels.

Table 28
The correlation between the richness of climate change reels and the interaction with these reels

The richness of climate change reels	interaction with these reels	
Total factors	Pearson Correlation	0.155**
	Sig. (2-tailed)	0.002
	N	**400**
Medium richness	Pearson Correlation	0.177**
	Sig. (2-tailed)	0.000
	N	**400**
Content Richness	Pearson Correlation	0.083
	Sig. (2-tailed)	0.098
	N	**400**
Presenter richness	Pearson Correlation	0.133**
	Sig. (2-tailed)	0.008
	N	**400**

The results supported H5 that there is a significant correlation between the richness of climate change reels on social media and the study sample interaction with these reels ($r = 0.155$, $P < 0.05$). This indicates that the audience will engage and interact with the reels more if they have the richness factors. The results also show that there is no correlation between content richness and interaction with these reels ($r = 0.083$, $P > 0.05$); which refers to that the richness in the medium and the presenter of the reels motivates and encourages the respondents to interact with these reels.

The results also show that there is a correlation between the richness of climate change reels and the interaction with these reels ($r = 0.241$, $P<0.05$) according to the older generation (millennials), but for the younger generation, there is no correlation between the richness of climate change reels and the interaction with these reels ($r = 0.107$, $P > 0.05$), this can be interpreted as the older generation is more interested in climate change reels and interaction with these reels than the younger generation to get more benefit from these reels, whether on the cognitive or behavioral aspects.

H6: There are statistically significant differences between the study sample according to demographic characteristics (gender - age - education - socio-economic level), and raising their awareness of climate change by watching climate change reels on social media.

- **According to gender:**

The results showed that there is no difference between the respondents according to the gender variable ($t = 1.205$, $P < 0.05$) in terms of increasing their awareness of climate change issues by watching reels about climate change; this can be interpreted that in the current era there are no differences between males and females in their use of technology, especially social media platforms and the reels on them.

- **According to age:**

Table 29
Differences between respondents according to age

raising awareness of climate change issues	Age	N	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Total effects	15 – 27	254	24.92	3.89	-1.381	398	0.168
	28 – 42	146	25.47	3.63			
Cognitive effects	15 – 27	254	5.89	1.75	-1.155	398	0.249
	28 – 42	146	6.11	2.05			
Affective effects	15 – 27	254	9.07	2.15	-2.195	398	0.029
	28 – 42	146	9.56	2.11			
Behavioral effects	15 – 27	254	9.96	2.84	0.567	398	0.571
	28 – 42	146	9.79	2.78			

The results showed that there is no difference between respondents according to age variable (t = -1.381, P > 0.05) in terms of increasing their awareness of climate change issues by watching reels about climate change, but the data revealed that there are differences between both generations according to their age regarding the affective effects; these differences were in favor of the older generation (millennials) (t = -2.195, P < 0.05), which can be interpreted that the older generation is more emotionally affected than the younger generation due to their awareness of the seriousness of climate change and their sense of responsibility towards the environment and society, especially when they watch the disasters and crises that occur worldwide as a result of climate change.

- **According to education:**

Table 30

Differences between respondents according to educational level

raising awareness of climate change issues	Educational level	N	Mean	Std. Deviation	t	df	Sig. (2-tailed)
Total effects	Student	224	2.13	0.623	-0.276	398	0.786
	Graduate	176	2.14	0.602			
Cognitive effects	Student	224	1.35	0.549	-1.363	398	0.174
	Graduate	176	1.43	0.61			
Affective effects	Student	224	2.33	0.707	-2.054	398	0.041
	Graduate	176	2.47	0.65			
Behavioral effects	Student	224	2.08	0.689	0.689	398	0.492
	Graduate	176	2.03	0.68			

The results showed that there is no difference between respondents according to the educational level variable (t = -0.276, P > 0.05) in terms of increasing their awareness of climate change issues by watching reels about climate change, but the data revealed that there are differences between both generations according to their educational level regarding the affective effects; these differences were in favor of the graduates (t = -2.054, P < 0.05), which indicates that the graduates are more emotionally affected than the students because they may have greater knowledge and awareness of climate change than students, which makes them more emotionally affected by climate change issues.

- **According to socio – economic level:**

Table 31

Differences between respondents according to socio – economic level

raising awareness of climate change issues	socio – economic level	N	Mean	Std. Deviation		Sum of Squares	df	F	Sig.
Total effects	Low	46	25.43	3.544	Between Groups	13.814	2	0.477	0.621
	Med	250	25.18	3.892	Within Groups	5748.426	397		
	High	104	24.84	3.703	Total	5762.240	399		
	Total	400	25.12	3.800					
Cognitive effects	Low	46	6.07	1.806	Between Groups	25.322	2	3.687	0.026
	Med	250	5.78	1.768	Within Groups	1363.256	397		
	High	104	6.37	2.062	Total	1388.578	399		
	Total	400	5.97	1.866					
Affective effects	Low	46	9.50	1.986	Between Groups	15.369	2	1.674	0.189
	Med	250	9.34	2.096	Within Groups	1822.129	397		
	High	104	8.93	2.312	Total	1837.498	399		
	Total	400	9.25	2.146					
Behavioral effects	Low	46	9.87	2.941	Between Groups	19.720	2	1.244	0.289
	Med	250	10.06	2.877	Within Groups	3146.280	397		
	High	104	9.54	2.599	Total	3166.000	399		
	Total	400	9.90	2.817					

The data indicates that there are no differences between respondents according to the socio - economic level ($F = 0.477$, $P > 0.05$) in terms of increasing their awareness of climate change issues by watching reels about climate change, but the results showed that there are differences between respondents according to their socio - economic level regarding the cognitive effects ($F= 3.687$, $P < 0.05$); and to reveal the differences between the groups, the Post-Hoc (LSD) was used as shown in the following table:

Table 32

LSD to reveal the differences between the groups

Cognitive effects	Mean Difference (I-J)	Sig.

group 1	group 2		
Low	med	0.281	0.345
	high	-0.300	0.361
Med	low	-0.281	0.345
	high	-0.581*	0.007
High	low	0.300	0.361
	med	0.581*	0.007

The results revealed that by using (LSD), differences appeared between the respondents with a high and medium socio – economic level, and the result was in favor of those with a high socio – economic level, this indicates that watching reels about climate change had a greater cognitive impact on participants with a high socioeconomic level, hence raising their awareness and knowledge of these issues. This can be interpreted that the participants with a high socioeconomic level are interested in climate change issue because they know very well how serious this issue is. But the participants with a low socioeconomic level may not care about climate change issue because they have other issues that are a priority for them, such as the high cost of living and rising prices. **Thus, the data supported H6 partially.**

Discussion:

This research aimed to identify "The effectiveness of short videos (Reels) on social media in raising awareness of climate change". The researcher used a quantitative descriptive analysis methodology through a questionnaire to collect data, and it was conducted on (400) respondents from both Gen-Z and Millennials who are living in Egypt. The researcher depended on media dependency theory in the theoretical framework in addition to proposing a scale for measuring the richness of climate change reels on social media regarding Media Richness Theory.

The findings provided substantial support for all hypothesized relationships, with one exception: H6 was partially supported. The age group, gender, education, and socio-economic level variables did not demonstrate a significant impact on the study variables, and this agreed with (Mourad, 2024) that the age group variable did not demonstrate a significant impact on the study variables. But there were sub-correlations appeared between the variables such as:

- The differences between both generations according to their age regarding the affective effects; these differences were in favor of the older generation (millennials).
- The differences between both generations according to their educational level regarding the affective effects; these differences were in favor of the graduates.

- The differences between respondents according to their socio - economic level regarding the cognitive effects, that watching reels about climate change had a greater cognitive impact on participants with a high socioeconomic level. The results showed that exposure density to climate change reels, richness of these reels, and dependency on reels to obtain information about climate change are positively related to raising awareness of climate change issues among both generations (Gen Z & Millennials). This result agreed with (Helmy Salama, 2023) that there was a correlation between the rate of exposure of adolescents to reels on Facebook and Instagram and the nature of their cognitive and behavioral aspect. This result also agreed with (Khashmon, 2021; Bogaga, 2019; Manar & Mostafa, 2023; Al- sheriff, 2022) that the dependency on social networking sites contribute to spreading environmental awareness and knowledge of climate change issues.

The results also demonstrated a relationship between the study sample's interaction with climate change reels and the richness of these reels on social media. This suggests that the richer the medium is in terms of its capabilities, content, and the presenter of the reels, the more it will encourage and push the audience to interact with these reels.

Regarding the respondents' **exposure density** to climate change reels, the study found that the majority of respondents have "Low" rates of exposure density and this disagreed with (Mohamed Bedir, 2023) found that intensity of the Egyptian public's exposure to Reels on social media increased by 92% b etween always and sometimes.

The results of the current study showed that Facebook topped the social media platforms as the most **preferred platform for watching climate change reels**, and this result agreed with many studies like (Marzouk Ibrahim,2023; Mohamed Bedir, 2023; Prakasam, et. Al, 2024; Khashmon, 2021; Bogaga, 2019), but disagreed with (Helmy Salama, 2023; Casillas & Márquez, 2023) that the Instagram came as the most important applications through which the sample members watch reels.

The results showed that the largest percentage of participants has "High" rates of **dependency** on reels on social media to obtain information about climate change, and then followed by participants who have "Medium" rates. This means that reels are very important for both generations as a source of information about climate change issues.

According to **the motives** for watching climate change reels, the motives related to the characteristics of the medium came at the first place, followed by the utilitarian motives. It can be observed that the majority of respondents' motives for watching climate change reels were related to the medium's

features, because these features can catch their attention to follow and watch these reels. But this result didn't agree with (Mohamed Bedir, 2023; Marzouk Ibrahim 2023; Helmy Salama, 2023) that the respondents were exposed to reels with ritual motives or utilitarian motives.

Regarding the respondents' **satisfaction** with the content provided in the climate change reels, the largest percentage of respondents were "Neutral", and then followed by the participants who are "satisfied" with the content provided in the climate change reels.

The results also indicated that the affective effects got the highest rank in terms of the **effects of watching climate change reels** which measure the extent of increased awareness of climate change issues, followed by behavioral effects at the second place, this agreed with (Parry, et al, 2022) that feeling emotionally affected by the reporting, critically apprising the content and feeling motivated to engage in climate change activism emerged from the content analysis. This can be interpreted that watching reels about climate change causes respondents to have emotional effects like feeling threatened by the effects of climate change and a sense of belonging to the environment.

As for the **interaction with climate change reels** on social media, the largest percentage of respondents has "Low" rates of interaction with climate change reels on social media, followed by respondents with "Medium" rates of interaction, which indicates that both generations prefer just watching climate change reels without high rates of interaction. This result disagreed with (Wolfe & Liang, 2022) that reels were found to receive the highest average engagement, allowing posts to gain more likes and comments than pictures and videos, this result can be interpreted that the nature of the reels topic may affect the audiences' interaction with these reels, so if the reels are about comic and light topics the interaction will be more than serious topics such as climate change, unless the audience is interested in these serious issues.

The results showed also that the highest percentage regarding the **audience's attitudes** of watching climate change reels was for the statement "climate change reels make it easy to understand information about climate change because of their simplicity and short duration", which confirms that both generations search for simple and quick content. The results also showed that the majority of respondents have "neutral" attitudes toward the climate change reels, followed by the respondents who have "Positive" attitudes, and this result disagreed with (Marzouk Ibrahim, 2023) that the attitudes towards short videos of preachers on social networking sites were generally positive, this may be due to the difference in the reels topics. The respondents may prefer watching preachers or religious content more than the climate change content.

Regarding the **strategies used in climate change reels** on social media, the statement which states "the climate change reels encourage individuals to take social responsibility towards the environment" occupied the first place and this indicates that respondents believe in the ability of climate change reels on social media in encouraging individuals to take social responsibility towards the environment.

The researches in the current study proposed a scale for measuring the **richness factors** in climate change reels, this scale divided into three richness factors (medium – content – presenter), and the results showed that the largest percentage of participants considers that the most richness factor in climate change reels is that "the climate change reels are short and fast-paced", which ensures that both generations prefer watching the content presented in a fast and short format, and this is consistent with the nature of these generations, who prefer a fast-pace in everything especially gen Z. **The medium richness** factors got the highest rank in terms of the richness factors in climate change reels, followed by the richness factors related to the presenter, this agreed with (Parker, 2023; Zeng, 2022) that consumers are actively using social media and influencers as an information source, and perceived credibility depends on many factors, such as knowledge, presentation, and information sources, this result also agreed with (Radwan Abdelmageed, 2023) that using multimedia to present the content or publication in an integrated manner came in first place. Therefore, it can be concluded that the most significant factors that motivate respondents to watch climate change-related reels are the medium's richness, including its affordability, accessibility, and short duration, as well as the ability to comment on the reels and provide quick, immediate feedback.

The results also showed that the largest percentage of respondents **suggests** "presenting the reels in an interesting and attractive way" regarding the factors that could raise awareness of climate change issues through social media reels, which proves that both generations are more interested in the attractive formats than the traditional formats, followed by the respondents who are suggesting "dependency on public figures and influencers", especially that the social media influencers have a great effect on raising their awareness about the most important societal issues like climate change.

Conclusion:

The main purpose of this research is to identify "The effectiveness of short videos (Reels) on social media in raising awareness of climate change", in an attempt to determine the best strategies for raising awareness of climate change, particularly among both generations (Gen Z & Millennials). The researcher used a quantitative descriptive analysis methodology through a questionnaire

to collect data, and it was conducted on (400) respondents from both Gen -Z and Millennials who are living in Egypt. The researcher depended on media dependency theory in the theoretical framework in addition to proposing a scale for measuring the richness of climate change reels on social media regarding Media Richness Theory. Results showed that the medium richness factors got the highest rank in terms of the richness factors in climate change reels, followed by the richness factors related to the presenter. The results also revealed that exposure density to climate change reels on social media is positively related to raising awareness of climate change issues. And there is a correlation between the richness of climate change reels on social media and raising awareness of climate change issues. In conclusion, the study proposes **future research** about studying different strategies for raising climate change awareness among the public. In addition to supporting and updating websites and pages of the Ministry of Environment, encouraging civil society initiatives in the face of climate changes through social media, following up on what is published about climate changes on social media, and correcting the misleading information. Finally, it is necessary to include climate change issues in education, especially for the younger generations and children.

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