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CLIMATE CHANGE KNOWLEDGE, ATTITUDES, BEHAVIORAL INTENTIONS, AND ADAPTATION AMONG EMPLOYEES OF A GLOBAL SOFTWARE COMPANY

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This paper prepared by **MIKE ANTOLIN** with the title: **"Climate Change Knowledge, Attitudes, Behavioral Intentions, and Adaptation among Employees of a Global Software Company"** is hereby accepted by the Faculty of Information and Communication Studies, U.P. Open University, in partial fulfillment of the requirements for the degree Program.

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Biographical Sketch

Mike Antolin is a regional marketing professional driving marketing strategies and business development in the Asia-Pacific region. With over a decade of experience in sales and marketing in the region, Mike has worked with various multinational IT software companies, leading their regional marketing efforts – developing and implementing go-to-market strategies to achieve business goals. He is currently working as the Regional Marketing Manager of AEB Asia Pacific, a German-based company specializing in software solutions for supply chain and global trade.

Mike is currently based in Singapore where he lives for 8 years. He was born and raised in Asingan, Pangasinan, and completed his basic education at Carosucan Sur Elementary School, where he graduated as First Honors. He finished his secondary education at the Carosucan Sur National High School, graduating as the valedictorian. Mike obtained his bachelor's degree in accountancy from Panpacific University in Urdaneta City, Pangasinan.

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Dedication

I dedicate this thesis to all the climate activists and climate movements around the world who are committed to challenging and pressuring governments, businesses, and other institutions to take climate action for the benefit of future generations.

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Abstract

CLIMATE CHANGE KNOWLEDGE, ATTITUDES, BEHAVIORAL INTENTIONS, AND ADAPTATION AMONG EMPLOYEES OF A GLOBAL SOFTWARE COMPANY

Empirical evidence has established that the business sector is experiencing the consequences of the climate change phenomenon. The Deloitte Global 2021 Climate Check report revealed that a significant majority of business executives express concern over the adverse effects of climate change. Based on the Paris Agreement, businesses may adopt the agreement's training, education, and public awareness programs to reduce carbon emissions by 2030. This study examines the climate change knowledge, attitudes, subjective norms, behavioral intentions, and adaptation among employees of a global software company.

A sample study of 202 participants from Germany, United Kingdom, the Netherlands, Sweden, Switzerland, and Singapore participated in this study. The research design is descriptive–quantitative study, utilizing online survey method to gather data using online questionnaires. Data was collected from October to February 2022. Complete enumeration sampling technique was employed in determining the participants for this study.

The results indicate that the participants had a moderate level of climate change knowledge, demonstrating strong agreements on certain statements. Additionally, the respondents had a neutral stance towards social pressure and expectation from their colleagues and friends for taking climate action. The study also found that the respondents demonstrated a positive attitude towards climate change. They strongly believe that climate is changing and express concern about the implications of global climate change. However, while participants showed a desire to engage in climate- related initiatives, the findings of the study indicated that participants were neutral towards taking actions to climate change.

The findings of the study imply that while the respondents showed a positive attitude towards climate change, their motivation to take climate action was found to be neutral. Therefore, based on the findings, the concept of climate neutrality *(Klimaneutralität)* refers to an individual's behavioural intention to perform a climate action, but they are neutral to perform climate action. Neutrality could possibly be

attributed to the subjective norms and climate change knowledge of the respondents, which have been found to be neutral. In addition, incorporating KAP variables to TRA framework enhances the predictive power of TRA to predict behavioural intentions. Future research in development communication can explore the concept of climate neutrality as a phenomenon and examine how to employ communication interventions and approaches to address climate neutrality.

Keywords: Climate change knowledge, behavioral intention, Theory of Reasoned Action, climate neutrality *(Klimaneutralität)*

Chapter I

INTRODUCTION

The Rationale of the Study

Climate change has a massive impact across the globe including business organizations and industry sectors. Previous studies have shown that there is unequivocal scientific evidence for climate change. According to the 2021 Climate Check research by Deloitte Global, a significant majority of company leaders, up to 80 percent, express concerns over the ramifications of climate change. Furthermore, companies are already starting to witness the tangible effects of this global phenomenon.

Scientific data also established that the business sector is suffering the effect of climate change. More business organizations will be impacted by extreme weather conditions including extreme heat, droughts, typhoons, and rising sea level, resulting in business uncertainty and operational losses. In fact, according to Swiss Re Institute's stress-test research, the global economy might lose as much as 18 percent of its GDP because of climate change if nothing is done. Furthermore, the research found that Asian economies would be severely damaged, with Europe seeing a loss of around 11% of its GDP and major economies facing a 10% reduction in GDP over the next 30 years. In addition, as shown by the Deloitte Global 2021 Climate Check research, corporations worldwide are now experiencing the repercussions of climate change on several aspects of their company operations, including asset expenses, regulatory frameworks, expenditures, and detrimental effects on corporate culture. Further, it is projected by the International Labour Organization (ILO) that the escalation of extreme heat brought about by the phenomenon of increasing temperatures would lead to

a reduction in efficiency, amounting to the equal of 80 million permanent jobs by the year 2030.

The Paris Agreement on Climate Change serves a critical part in enhancing the abilities of business organizations to address climate change. Many business organizations throughout the world are battling climate change and reaffirming their commitment to achieving carbon neutrality by 2050. The Paris Agreement serves as an international benchmark for corporate action in implementing national climate plans and regulations. The agreement, on the other hand, acts as a guideline for many business organizations throughout the globe in their pursuit of net-zero emissions. To maintain business organization's commitment to Paris Agreement's goal in reducing carbon emissions by 2030, business organisations could adopt different awareness programs such as educating their employees about climate change, conducting trainings and workshops, planning public awareness campaigns and providing access to climate information.

More individuals believe that they feel powerless for bringing about action on climate change (Leach, 2013). But if billions of people participate in even relatively low climate change efforts, it can have a substantial effect. Determining employee climate change behavioral intention using the theory of reason action framework, policy implementors, communicators and stakeholders can create and design climate change communication materials, interventions, and approaches. Strategies, measures, education, and effective information dissemination programs are essential components for increasing understanding and promoting climate action. As stated in Article 12 of the Paris Agreement on Climate Change, participating governments are bound to enhance and strengthen the dissemination of climate change knowledge and raise consciousness on the topic of climate change (United Nations, 2015). Long-term

climate change communication plans and participation initiatives based on current guidelines and standards will improve public climate change literacy. Indeed, it is worth noting that a collaborative effort between UNESCO (United Nations Educational, Scientific and Cultural Organization) and the UNFCCC (United Nations Framework Convention on Climate Change) has resulted in the development of a comprehensive strategy aimed at bolstering climate action through the means of education, training, and public awareness. The individuals within the community are increasingly equipped with the resources needed to engage in climate change mitigation efforts and possess a deeper knowledge of the fundamental causes contributing to climate change and its consequential effects, because of to the dissemination of educational initiatives and the cultivation of public awareness (Bank et al., 2016).

The main objective of this research seeks to examine the connection among the participants' perception regarding climate change knowledge, subjective norms, attitudes, behavioral intentions, and climate adaptation. Using Martin Fishbein and Icek Ajzen's Theory of Reasoned Action (TRA), this study sought to analyze employees' attitudes, subjective norms, and intentions about climate change (Feder, 2009). According to theory, TRA variables are behavioural beliefs and evaluations are results from attitude. These factors include normative beliefs, motivation to comply, and subjective norms which are necessary conditions for engaging a behaviour. Based on the TRA framework, one may construct persuasive messages to influence behaviors by delivering information intended to strengthen belief, evaluation, perception of norms, and motives to comply with the norms. In addition, TRA and its constructs serves as the foundation in providing a theoretical understanding of messages and communication in promoting behavioural change. Lastly, determining individuals' attitudes, subjective norms and behavioural intentions are critical predictor models that

will help communicators in framing messages as behavioral interventions to comply or perform a behavior.

Statement of the Problem

Climate change education and awareness is crucial for business organizations to take climate action. The Paris Agreement illustrates the pivotal position of promoting knowledge, training, and awareness as fundamental components in the dissemination of climate-related facts. The establishment of the United Nations Framework Convention on Climate Change (UNFCCC) signifies a pivotal step taken within the United Nations system to tackle the urgent matter of climate change. This international treaty acknowledges the importance of the concern and also recognizes the impact of incorporating community groups in the discourse surrounding climate change. Consequently, the UNFCCC has devised a systematic approach to engage and involve various stakeholders from community groups, thereby fostering a more inclusive and comprehensive dialogue on this global challenge. It recommends six areas for involving the public in climate change solutions: education, capacity development, creating public awareness, access to information and engagement, and global collaboration.

Many companies started to take programs relating to sustainability and climate change. However, few research has been conducted to investigate employee attitudes, subjective norms, and behavioral intentions in business organization setting specifically in the software or IT sectors. Researchers have not adequately investigated the key components that influence the pre-environmental practices that employees may choose to perform or comply. Determining employee attitudes, subjective norms, and behavior intentions are key predictors that would help communicators to design

and develop communication interventions and approaches.

The focus of this research was to investigate the connection between the constructs of Knowledge, Attitude, and Practice (KAP) and the Theory of Reasoned Action (TRA). By delving into these concepts, the study sought to explore on the underlying factors that shape employee behavioral intentions with regards climate change. This study sought to answer the following questions:

1. What is the demographic profile of the respondents?
2. What are respondents' media consumption patterns and preferences in climate change and sources of climate information?
3. What are the respondents' level of perception in terms climate change knowledge, subjective norms, attitude, and behavioral intentions?
4. What actions have the respondents' taken to adapt to climate change?
5. Do demographic profile and climate change knowledge significantly affect the attitudes and subjective norms of the respondents?
6. Do attitude and subjective norms significantly affect the respondents' behavioral intention?

Objectives of the Study

1. To determine the demographic characteristics of the respondents.
2. To assess respondents' climate change media consumption patterns and preferences and respondent's sources of climate change information.

3. To explore employees' level of perception in terms of climate change knowledge, subjective norms, attitude, and behavioral intentions.
4. To investigate respondents' climate action to adapt to climate change.
5. To identify whether there's a significant relationship between respondents' demographics profile and climate change knowledge and how this affects the respondent's attitude and subjective norms.
6. To examine whether there's a significant relationship between attitude and subjective norms and how this affects the respondents' behavioral intention.

Significance of the Study

The formulation of the Paris Agreement signifies a concerted worldwide effort aimed at enhancing the capacity across different governments to engage in climate action. Many multinational corporations across the globe are proactively advancing their efforts to address the ramifications of climate change and attain zero emissions by the year 2050. Businesses are adopting new business models, sustainability initiatives, and innovative solutions to motivate and engage more employees to take on climate change. Business organizations are in a great position to have a significant influence in combating the catastrophic effects of climate change. However, based on Deloitte's 2022 CxO Sustainability Report, there is a disconnect between most of executives' beliefs, intentions, actions, and impact they have within their organizations. Furthermore, policymakers and communicators encounter several obstacles when attempting to communicate climate-related matters. These problems encompass skepticism regarding the extent of human impact on the global climate, the intricate and ambiguous nature of climate concerns, inadequate indicators which suggests the need for action, perceptual limitations, and personal gain.

This research aimed to determine employees' attitudes and subjective norms that will lead to climate change behavioural intention which are motivational factors that influence a particular behaviour. The study will help business leaders, communicators, and other stakeholders to build and design effective climate change communication frameworks, and guidelines. Determining employees' behavioral responses to climate change would be a critical component in enhancing the global response to climate change consequences and achieving a carbon-neutral planet by 2050.

In addition, the results of this research may add to the existing pool of knowledge in climate change behavioural sciences and climate literatures. Furthermore, since this study uses TRA and KAP to determine behaviour intent. The research findings aim to provide direction to future research with more focus on incorporating different variables from different models of communication and behavior that might potentially influence intentions related to climate change.

Scope and limitations

The primary objective of this research is to assess the level of climate change knowledge, subjective norms, attitudes, and behavioral intentions among employees. The research is grounded in two communication theories, namely the theory of reasoned action (TRA) and knowledge, attitudes, practices (KAP).

This study is limited only to the employees of the global software company located in Germany, United Kingdom, Switzerland, Sweden, Netherlands, Singapore, and Philippines. Using TRA and KAP constructs, the study utilizes a quantitative research methodology to identify employee climate change behavioral intention. The study's objective does not involve conducting further analysis and interpretation of

attitudes, subjective norms, and intentions. The present inquiry only examines the key elements of the Theory of Reasoned Action (TRA) and the Knowledge, Attitudes, and Practices (KAP) parameters. Future researchers can utilize additional behavioral and communication theories, such as the theory of planned behavior (TPB), an extension of the theory of reasoned action theory with the addition of a perceived control variable. or use the Integrated Behavioral Model (IBM) which is the combination of the two theories focusing on determinants of behavioral intention. Furthermore, future studies can complement other theories to determine message outcomes. Future researchers can also employ quantitative studies or using mixed methods. Finally, there was no communication intervention was used in this research to investigate the effectiveness of communication interventions for carrying out climate actions.

Chapter II

REVIEW OF RELATED LITERATURE

This section explores the factors that impact individuals' understanding of climate change, their attitudes towards it, the social norms around it, and their intentions to take action, as presented within the conceptual framework of this research. The literature review is categorized into five distinct components, each with its own unique set of attributes. Firstly, it is necessary to assess the available knowledge pertaining to climate change, encompassing both historical and scientific data that highlight the impact of climate change on business corporations. Next, it is imperative to discuss the concept of climate change communication as proposed by prominent institutions specializing in the area of climate change communication. Additionally, it is crucial to investigate into the level of climate change awareness among employees. Thirdly, it is imperative to explore various theories of behavior, including an in-depth review of the Theory of Reasoned Action (TRA). Furthermore, the review of related literature presents an overview of determinants related to behavioral intention, specifically in the context of climate change behavior, including attitudes and subjective norms. Finally, a summary of findings of employee pro-environmental or green behavior.

Climate change impacts and scientific evidence

In the past century and a half, there has been a substantial growth in the utilization of fossil fuels, namely coal, oil, and natural gas, for the generation of electrical power as well as for the purpose of travel and industrial activities. Consequently, this surge in usage of fossil fuels has led to a notable escalation in the

concentration of greenhouse gases inside the Earth's atmosphere (Denchak, 2022). The phenomenon of greenhouse gases, including water vapor (H_2O), carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and ozone (O_3), effectively capturing thermal radiation inside the Earth's atmosphere, leading to an increase of the temperature of the air and subsequent augmentation of the average global temperature (Mobius, 2021).

Numerous institutions and groups dedicated to addressing the worldwide issue of climate change have extensively recorded compelling information regarding the catastrophic impacts of this phenomenon. For instance, The Intergovernmental Panel on Climate Change (IPCC) has been assigned the task of assessing climate change study and producing thorough assessments and evaluations on the current scientific, technical, and knowledge-based understanding of climate change. Additionally, they provide potential strategies to mitigate the impact of climate change by identifying present and future risks, as well as offering potential remedies. The most recent report by the IPCC explains the comprehensive, expeditious, and escalating implications of climate change on a global scale (IPCC, 2021). Additionally, the World Meteorological Organization (WMO) has proposed that there is a 93 percent possibility that within the time frame of 2022 to 2026, there will be at least one year that exceeds the data set in 2016 as the warmest year on history. There is a 93% probability that the five-year average for the period 2022-2026 will exceed the average of the preceding five years (2017-2021) (WMO, 2022).

There has been an emerging discipline of climate change science, particularly on the extreme nature of climate change related occurrences and their influence on humans. In recent years, attribution science, a field of study often employed in climate studies, has evolved. This new field of study brings together scientists and researchers

to evaluate the influence of climate-related disasters on individual weather phenomena such as hurricanes, heat waves, floods, and wildfires (Harvey, 2022). According to research released by Morgan Stanley in 2019, it was projected that catastrophes due to climate change will incur a monetary cost of around $650 billion on a global scale over a span of three years. Morgan Stanley recognized four primary factors contributing to climate change, including rising sea levels, extreme weather occurrences, disturbances in agriculture, and the proliferation of serious diseases. (Harmstone, 2020).

The Climate Economics Index, conducted by the Swiss Re Institute, provides insights into the potential consequences of rising temperatures on a global scale. This comprehensive analysis encompasses 48 nations, which collectively represent almost 90 percent of the global economy. According to the index, climate change is expected to lose the global economy 10% of its overall economic value. Moreover, as indicated by the Swiss Re Institute, in the event that worldwide temperatures persistently increase by 3.2 degrees Celsius, the potential consequences of warmer temperatures could end in a collapse of about 18 percent of the world's GDP by the year 2050. According to the index, Asian countries would be the heaviest impacted, with a catastrophic scenario of a 26.5 percent cut to GDP. Other nations are expected to experience losses because of the adverse impact of climate change. China is projected to have a decline of around 24% in its Gross Domestic Product (GDP), while the United States, Canada, and the United Kingdom are expected to face a comparatively lower reduction of 10%. Similarly, Europe is anticipated to encounter a decline of 11% in its GDP (Gray & Haller, 2021).

The Environmental Agency reports that the cumulative economic losses resulting from weather and climate-related disasters in the 32-member states of the

European Environment Agency (EEA) during the period from 1980 to 2020 amounted to an estimated range of EUR 450-520 billion, adjusted for inflation to 2020 euros (referred to as EEA-32). Only around 25% to 33% of these losses were mitigated. Based on data provided by two distinct European sources, namely NatCatSERVICE and CATDAT, it is estimated that this event led to the loss of human lives, with figures ranging from 85,000 to 145,000 fatalities (EEA, 2022).

Moreover, the Intergovernmental Panel on Climate Change (IPCC) report highlighted the significance of climate change's effects on the Asian continent. According to the report's findings, several physical climate hazards, including but not limited to elevated heat and humidity levels, sea level rise, and floods, would have a significant influence on all regions within Asian region. Massive economic damage to local and global infrastructure, supply chains, and labour capability, with significant implications for Asian GDPs (IPCC, 2021). The economic cost of climate change will have a dramatic effect on people's lives and health, resulting in food supply chain disruptions, loss of life, massive displacements, illnesses, and mental health challenges. However, while individuals and countries throughout the world are experiencing the effects of the phenomenon, it also underscores several significant issues pertaining to inequality. For example, the biggest extreme weather occurrences in 2021 had a severe impact to developing countries that have contributed little to climate change (Christian Aid, 2021).

Climate change impacts have also been seen to influence businesses globally. As per the European Commission, the majority of small and medium enterprises (SMEs) are anticipated to experience substantial impacts from climate change. These consequences encompass operational disturbances, assets damage, logistics, supply chain and facilities disruptions, increased expenditures for maintenance and

costs, as well as escalated pricing (European Commission, 2021). Moreover, the Columbia Climate School emphasized the economic impacts of climate change. According to Cho (2019), the agricultural industry is identified as the one most susceptible to climate- related threats. It is subsequently followed by the infrastructure, human health and productivity, tourism, business sector, and the financial system (Cho, 2019). Furthermore, the scholars Wade and Jennings (2016) provided an analysis of the influence exerted by climate change on the economy globally. The authors asserted that there is a growing trend in the magnitude and severity of extreme weather events. These effects are predicted to have a detrimental influence on economic activity, leading to inflation and an increase in energy costs. They also stated that developing countries, such as parts of Africa and Asia, would shoulder the burden of the effects of the phenomenon.

Business organizations are not spared from suffering the consequences of the climate change phenomenon. According to the forecasts made by the International Labour Organization (ILO) in 2019, the potential realization of growing temperature patterns might pose a significant danger to around 80 million employments. The threat is mostly attributed to the adverse impact in workplaces. Based on the findings of the ILO, it is anticipated that the agricultural sector would see the greatest significant global effect. The global agricultural sector provides employment to around 940 million individuals. By the year 2030, it is projected that extreme temperatures stress would be responsible for approximately 60% of the total global working hours wasted. The construction sector is anticipated to have significant adverse effects, with an approximate reduction of 19% in global working hours. Various forms of economic activity, including environmental goods and services, waste management, transportation, tourism, sports, and other industrial sectors, are also susceptible to

potential risks or threats of climate change (ILO, 2019).

Indeed, business leaders from business organizations are alarmed about the damaging impacts brought by extreme weather conditions. In the report published by Deloitte in 2021, survey results suggested that global corporations are already being impacted by climate change based on their operational impacts, shortage of food, water and energy, uncertainties on policies and regulations, lack of insurance availability and damaging organization‘s reputation. Consequently, 2022 Deloitte CxO Sustainability Report highlighted that business executives believe that 97% of their organizations have already been impacted by climate change, and 50% claim supply chain and business models have been interrupted.

Climate change has an impact on the information technology (IT) industry as well. The excessive weather conditions such as storms, floods, extreme heat, and droughts may have an impact on the continuity and sustainability of IT systems, including cost and fundamental strategy difficulties.

Leading technology corporations are intensifying their efforts to address emissions of greenhouse gases and contribute to the decarbonization of the worldwide economy as a whole. Some business organizations are willing to allot money to curb carbon emissions. For example, Google has made multi-million-dollar investments in renewable energy including a wind farm in Sweden and a solar facility in Chile. Facebook Inc. has also stated that by the end of 2018, they target to use sustainable energy in their operations. Meanwhile, Adobe plans to run every aspect of its business entirely using renewable energy. Due to the high energy consumption of the information and communications technology (ICT) companies, the sector continues to be a net contributor to global greenhouse gas emissions.

Currently, the 2% global greenhouse gas emissions from data center generate

to support digital services are comparable to the emissions of the aviation sector. The Global e-Sustainability Initiative (GeSI) suggested that the technology sector has the potential to reduce global greenhouse gas (HGH) emissions by 20% by 2030 by helping business organizations and consumers to conserve energy more effectively (GeSI, 2015). Policies and innovation are also crucial for the ICT industry to reduce carbon emissions. For example, paying a carbon tax to reduce carbon emissions. This acts as an added cost for carbon emissions related with the company's worldwide activities for data centers, offices, laboratories, manufacturing, and business air travel. However, according to the statistics, only 27 nations have a carbon price in place. Furthermore, the World Bank reports that 64 carbon pricing programs are now in place on different regional, national, and subnational levels throughout the world, with three more slated for implementation. These measures are expected to cover 21.5 percent of worldwide greenhouse gas emissions in 2021.

The evidence presented by different organizations only demonstrated the existence of threat affecting human life and economic activities. Climate change has been observed to have an effect on various industries, including infrastructure and transportation, the energy system, agriculture and forestry, insurance, tourism, and the business sector specifically the ICT industry. However, it also highlighted that a specific group of people suffers the most from the devastating effects of the phenomenon. Individuals living in developing countries are subject to vulnerabilities and the worsening of consequences resulting from the phenomenon.

Climate change adaptation and climate action

Considering the implications brought by climate change on people and businesses, several guidelines, frameworks, and regulations have been established to

minimize these impacts. These climate change laws and regulations serve as tools for regulating, implementing, and managing climate change policies. The Kyoto Protocol, as an instance, operationalizes the United Nations Framework Convention on Climate Change (UNFCCC) by mandating different countries to lessen their emissions of greenhouse gases (GHG) in accordance with specific goals (United Nations, 1998).

The Paris Agreement, a global pact signed by 196 nations, became legally binding and commenced in November 2016. The momentous accord establishes a comprehensive international framework aimed at mitigating climate change effects. Its primary objective aims to reduce the global average temperature to below 2°C (Stavins & Stowe, 2016).

The United Nations Climate Change (UNCC) launched various initiatives to increase climate action. Climate Neutral Now Initiative was formed in 2015 to increase climate action by including non-party stakeholders (subnational governments, businesses, organizations, and individuals). Another example is the Race to Zero, a worldwide effort aimed at mobilizing leadership and gaining assistance from organizations, communities, and investors to foster a robust, resilient, carbon-neutral recovery that generates high-quality employment opportunities, and advancing sustainable development goals. Finally, the United Nations Carbon Offset Platform is an e-commerce platform where a firm, an organization, or an ordinary person may acquire units (carbon credits) to pay for greenhouse gas emissions or just to support climate action.

Moreover, the National Adaptation Plans (NAP) was created as part of the Cancun Adaptation Framework (CAF). It enables different stakeholders to build and carry out national adaptation plans to pinpoint adaptation needs to create and carry out strategies and activities to meet those needs. It is a comprehensively transparent,

participatory, gender-sensitive, progressive, and country-driven process.

As a result, an increasing number of countries have adopted adaptation strategies and policies to address the adverse impacts of climate change. For example, The European Green Deal, as an exemplary initiative, aims to achieve carbon neutrality in Europe by the year 2050. In an effort to establish a legally enforceable framework, the Commission has put forward the European Climate Law, which concurrently introduces a heightened and more ambitious goal of reducing net emissions of greenhouse gasses by a minimum of -55% by 2030, in comparison to the levels recorded in 1990 (European Commission, 2020). In addition, on February 24, 2021, the European Commission adopted a new EU policy for responding with climate change. The recently proposed adaptation plan put emphasis on key objectives such as adopting smart, efficient and comprehensive adaptation efforts. Additionally, the policy aims to strengthen global initiatives aimed at addressing the impacts of the phenomenon through adaptation measures (EEA, 2021).

However, based on the Association of Southeast Asian Nations (ASEAN) State of Climate Change study, Asian countries particularly in ASEAN nations do not have uniform outcome-based goal for climate change adaptation. Similarly, sectors that are commonly impacted by climate change impacts across ASEAN nations aim to set process-oriented and/or outcome-based goals, 47 with reference to the Paris Agreement goal on adaptation (PA, Article 7.1; see ASCCR, p.24) (Association of Southeast Asian Nations, 2021).

Adaptation strategies are critical to promoting climate action. In addition, communicating and educating individual's and business organizations about climate change is also pivotal to take climate action. Understanding the effects of the environmental crisis through effective communication will enable people, communities,

and businesses to advocate climate action. In light of this, the Paris Climate Change Agreement urges stakeholders to continue to support the systematic integration of gender-sensitive and participatory learning, training, awareness campaigns, public engagement, public availability of information, regional, and global cooperation into all mitigation and adaptation activities carried out in accordance with the Paris Agreement including into the processes of designing and putting into effect the activities. In addition, the Action for Climate Empowerment (ACE) acknowledges the importance of climate change education, training, public awareness, and information dissemination. ACE aims to facilitate the coordination of various stakeholders to collectively implement the required actions and measures.

Communicating climate change in the business sector

The Yale Program on Climate Change Communication (YPCCC), a renowned research institution specializing in the area of climate change communication, characterizes this practice which includes the dissemination of knowledge, utilization of persuasive techniques and mobilization of individuals and groups. The research center stated that early communication experts have suggested that the basic communication model, which incorporates messengers and channels, is rather simplistic for the purpose of climate change communication.

Given the complexity of communication channels and the ever-evolving dynamics of audiences, various elements such as knowledge, perception, and even political factors, scholars and researchers in the field of communication attempt to understand the complex processes of communication, empirically examine theoretical frameworks, and cultivate more efficacious strategies for effective communication (YPCCC, 2019). Climate Outreach, leading experts in climate change in the UK, has

collaborated with recognized research institutes across Europe to produce a comprehensive guidebook for the Intergovernmental Panel on Climate Change (IPCC). The booklet included the basics of successful climate change communication and public engagement. The authors provide six principles: how to be a confident communicator, how to talk about the actual world rather than the abstract, how to connect with what is essential to the audience, how to tell a narrative, and how to use images and graphics (Corner et al., 2018). The IPCC, a United Nations organization responsible for analyzing climate change research, advocated for the following principles to provide IPCC scientists with the necessary resources to improve public engagement and communication initiatives (Corner et al., 2018). A collection of practical guidelines will assist policymakers in directing their efforts towards the production of climate resources intended to the public.

A further study conducted at Monash University by the Monash Climate Change Communication Research Hub indicated that reputable outlets need to provide consistent messaging on climate change to their target audience. The study highlights the need of conducting audience research to build an effective climate change communication plan that takes into account several factors such as messaging, sources, and target audiences (Holmes & Hall, 2019).

Climate change communication is becoming increasingly crucial in the business sector. According to Deloitte's Mark Hutcheon, communications should be at the center of an organization's response to climate change. Sustainability and communications teams are generally skilled at detecting shifts in public perception, sharing stories, persuading audiences to embrace change, and laying out a clear vision for the future (Hutcheon, 2021).

According to a study conducted by Kathi Kaesehage and others, to increase the

number of small and medium enterprise (SMEs), climate change communications have to focus on corporate executives' personal values and ethics. The message must emphasize the effects and implications of climate change, advantages of participating and engaging local communities, and potential economic gains for the enterprises. Effective climate change communication needs to go beyond just financial incentives and scientific data and offer comprehensive economic and political benefits (Kaesehage et al., 2014). Moreover, a comparison of top ANZ enterprises' communication strategies regarding climate science suggested that more deeply cross-country research and longitudinal study are crucial to obtain a deeper understanding of how companies can effectively convey scientific matters to their stakeholders (Thaker, 2019).

Nadia Kahkonen, Deputy Director of Global Communications, also identified five strategies for improving business communications on climate action. She believed that to successfully communicate climate action and assure the effectiveness of communication, organizations should evaluate fundamental demographics and psychographics, understand the audience's particular "climate context", and make it visible by demonstrating the first-hand effect of climate change, be more accessible, and be honest (Kahkonen, 2019).

Climate change needs behavioral change

Social and behavior change (SBC) also known as communication for development (C4D) is an iterative process that utilizes a range of methodologies, including advocacy and interpersonal communication, to influence behavior change at both the community and individual levels. Increasing SBC knowledge and abilities might help development practitioners in avoiding cantering their efforts on any

behavioral variable that they perceive is driving an adaptive behavior (USAID, 2019). Behavior change communication (BCC) has been evolving. In 1972, as cost-effective method for disease prevention information dissemination from health education to Information Education and Communication (IEC) in the early 1990s. IEC gradually evolved to BCC and it is a part of BCC. BCC is now mainly concerned with providing a suitable atmosphere in which individuals may shift their behavior from negative to positive (Nancy & Dongre, 2021).

Creating and developing behavioral solutions and measures provides a possibility to minimize global carbon emissions (Williamson et al., 2018). Many environmental difficulties, according to Williamson's research, are caused by human action. To address climate change issues, it is important to employ behavioral tactics. The effective management of climate risks necessitates behavioral modifications to develop climate change solutions for various entities are crucial for constructing efficient risk communication strategies and policy. According to Chadwick, the focus of climate change communication is understanding the public's perspective of climate change. These factors have an impact on the public's awareness of climate change, media coverage and impact, and message framing (Chadwick, 2017). In a prior study conducted by Gifford and peers on the behavioral features of climate change, it was asserted that effectively tackling the complex challenges posed by climate change necessitates the utilization of intervention approaches that specifically target human behavior. The study has indicated that behavioral intervention techniques have predominantly been utilized in the domains of information and communication due to their demonstrated efficacy. Various interventions including persuasive messaging, modeling of desired behaviors, feedback mechanisms, rewards, and the establishment of social marketing norms, have been used utilized to encourage the adoption of green

behavior (Gifford et al., 2011). In a separate research study, Nicholas and Wynes (2018) highlighted the significance of behavioral modification in the successful implementation of sustainable climate measures, particularly within industries of aviation and meat production. The study examined a total of eleven distinct behavioral intervention aimed at achieving collective climate change targets and enhancing climate change awareness.

Other bodies of research have directed their attention towards the use of behavioral theories to analyze climate change behavior. Nerlich et al. (2010) examined several theories with the aim of actively involving diverse segments of the public. Moreover, Gifford and others emphasized climate change's behavioral aspects. Based on their research, the authors suggested that understanding how intrapersonal, interpersonal, and environmental variables interact with GHG-emitting behavior is crucial for creating successful intervention strategies (Gifford et al., 2011).

Several research have utilized the theory of reasoned action as a conceptual framework to comprehensively examine the factors influencing individuals' engagement in climate change adaptation (Nguyen et al., 2018a), predicting green behavior (Leach, 2013), and predicting individuals' intention to conserve water (Untaru et al., 2016). Others have focused on pro-environmental behavior in tourism and hospitality sectors (Loureiro et al., 2022), connection between food value and consumers' behavioral intentions (Jang & Cho, 2022), and factors of green perceived value, perceived knowledge, attitude, subjective norm, and trust are influential in facilitating organic buying decisions (Roh et al., 2022).

Theory of Reasoned Action

According to the Theory of Reasoned Action (TRA), persuasive communication

relies on the crucial factors of attitude and subjective norms (Ajzen & Fishbein, 1977). In 1975, Ajzen and Fishbein introduced the Theory of Reasoned Action, which was developed based on attitude concepts, principles from psychology, and models of persuasion. The proposed theory provides a theoretical framework for examining human behavior under various contextual settings. According to the theoretical framework, the strongest predictor of an individual's engagement in a certain activity is their desire to engage in the action. Behavioral intentions are hypothesized to be modeled by two key variables, namely attitudes and subjective norms. Where attitudes could be classified as either good or negative emotions towards the attainment of a certain target, whereas subjective norms refer to individuals' interpretations of their own progress towards goals. On addition, the framework explains that when an individual evaluates a positive attitude, and perceives that others have the intention to engage in the behavior, it will lead to an increased motivation to engage in the conduct.

Moreover, the progress of utilizing TRA framework has indeed evolved. Scholarly inquiries have been conducted pertaining to consumer behavior, health behavior, and pro-environmental behavior. For example, in the area of consumer behavior, Copeland and Zhao (2020) highlighted the significance of the theory of reasoned action (TRA) in establishing the correlation between social media usage and the perception of individuals, hence influencing their intention to make purchases. A subsequent study suggested that the application of the theory of reasoned action, along with its constructs, is associated with a direct correlation between attitudes, personal traits, and the desire to purchase counterfeit items (Negara et al., 2020).

Furthermore, the Theory of Reasoned Action model is frequently employed in the context of health behavior, specifically in relation to condom usage and other sexual behaviors. In a study conducted by, the author of the study argued that the TRA

is a viable approach for mitigating high-risk sexual behaviors (HRSBs) among individuals diagnosed with human papillomavirus (HPV) infection (Pourgholamamiji et al., 2020). This has been confirmed in a separate study that employed the theoretical framework of TRA, emphasizing the need of sufficient knowledge in the development of health education programs (Baker et al., 1996).

Moreover, additional research may be obtained pertaining to pro-environmental behavioral intention, which serves as the primary topic of this research. The utilization of the theory of reasoned action framework has been extensively employed in the prediction of pro-environmental behavior (Nadlifatin et al., 2016).

A case study was undertaken in Vietnam to evaluate the predictive role of the theory of reasoned action (TRA) in determining children's intentions towards climate change behavior. The findings of this study demonstrated that the TRA model has significant importance in understanding and predicting the behavioral intentions of schoolchildren in relation to climate change (Nguyen et al., 2018). The theory of reasoned action has demonstrated its ability to predict pro-environmental actions. However, recent studies have sought to enhance TRA by incorporating supplementary variables. The inclusion of perceived authority support (PAS) and perceived environmental concern (PEC) as additional factors in the existing Theory of Reasoned Action (TRA) framework results in the development of an expanded TRA model known as the pro-environmental reasoned action (PERA) model (Nadlifatin et al., 2016). According to the study, adding two extra variables showed a positive influence both in attitude and subjective norms. In a separate study carried out by Poudel and Nyaupane (2016), findings indicated the use of the TRA model, together with its supplementary theory of planned behavior (TPB) are considered crucial theoretical frameworks for understanding and fostering responsible environmental behavior among tourists. The

authors argued that the TRA model, along with its complementary theories of planned behavior and reasoned action model, are extensively employed in identifying a specific behavior within the context of effective and persuasive communication.

Interestingly, the theory of planned behavior (TPB), which is an extension of the idea of reasoned action, has been the focus of subsequent studies and scholarly investigations. While the Theory of Reasoned Action (TRA) places its emphasis on attitudes and subjective standards, the Theory of Planned Behavior (TPB) incorporates other factors to forecast an individual's purpose or action, namely the perceived behavioral control. According to the proponent, perceived behavioral control encompasses several factors, such as an individual's talents and abilities, the availability or scarcity of time, financial constraints, and access to resources (Ajzen, 2020). In addition, proponent asserted that individuals are more inclined to engage in a certain conduct when they possess a sense of self-efficacy in their ability to successfully execute that behavior (Ajzen, 2002).

Moreover, despite the effectiveness of the Theory of Reasoned Action (TRA) in forecasting behavior, several researchers have argued that the Theory of Planned Behavior (TPB) has greater predictive capacities. These critics believe that the constructs of TRA are inadequate, particularly in situations where volitional control is diminished (Glanz et al., 2015). In contrast, Fang Chen, as cited in Manstead (2000) and Raygor (2016) asserts that although the Theory of Planned Behavior (TPB) has been widely utilized in various behavioral investigations, it has been criticized for its failure to adequately address moral problems (Manstead, 2000; Raygor, 2016). Subsequently, according to Raygor's study (2016), there is a correlation between the execution of a certain activity and adherence to moral principles. In contrast, empirical evidence has demonstrated that the theory of reasoned action serves as a substantial

predictive framework for determining individuals' intentions towards climate change activity, particularly when considering communication both before and after treatment (Nguyen et al., 2018a).

Numerous studies have employed the theory of reasoned action, including the utilization of the theory of planned behavior (TBP) as an extension of TRA, together with other behavioral theories, in order predict a certain behavior. It is of paramount significance to incorporate different variables from various behavioral theories to effectively identify behavioral intents. Therefore, the incorporation of the Theory of Reasoned Action (TRA) and other relevant factors plays a crucial role in predicting behavioral intentions.

Subjective Norms

Researchers in this field have sought to investigate the influence of social groups and individuals' motivation towards climate change. Specifically, scholars aimed to investigate the correlation between subjective norms and attitudes towards behavioral intentions. Azjen (1991), one of the proponents of TRA defined subjective norms as individual's perception about the approval and support of a certain conduct by significant individuals or groups, such as family members, friends, coworkers, peers, and other influential entities.

The influence of social groups and people play a crucial role in shaping the decision- making process regarding the adoption of particular behaviors. Particularly in the area adapting pro-environmental behaviors such as climate action. Ajzen explained that subjective norms refer to an individual's impression of engaging in a specific action, which is influenced by the conduct of others and their incentive to comply with it (Ajzen, 1991). In addition, other researchers have also done inquiries on the influence

of subjective standards on a specific behavior. For example, Smith and Kingson (2021) argues that the subjective norms refer to the perception that a notable individual or a collective entity will express support or endorsement towards a specific behavior or action (Smith & Kingston, 2021). Furthermore, the research conducted by Ham et al. (2015) revealed that social and descriptive norms have a statistically significant positive association with the desire to engage in a certain activity (Ham et al., 2015).

Employee pro-environmental behavior in the workplace

Business organizations around the world are prioritizing climate change education and awareness and a more sustainable-driven initiatives promoting environmental consciousness at work. United Nations pointed out that business organizations create a significant opportunity to raise climate change education. Sophy Bristow, a Project Manager and Editor at The Climate Group, asserts that business entities adopting a proactive stance in addressing climate change would actively contribute to the mitigation of carbon emissions. Furthermore, such businesses will enhance their reputation enabling them to influence over their workers, customers, and suppliers, encouraging them to adopt similar environmentally responsible practices (United Nations, 2021).

According to the United Nations' Global Compact, a voluntary project centered on CEO pledges to implement universal sustainability principles, a total of 16,169 business organizations across 161 countries have currently endorsed the call for a green recovery. This recovery strategy aims to stimulate investments in areas such as training, education, and employment. The United Nations Global Compact promotes corporate responsibility by urging businesses to align their strategies and operations including topics such as tackling environmental issues, advocating human rights, and

anti-corruption. Business organizations are encouraged to implement strategic initiatives aimed at promoting larger social objectives, such as the United Nations Sustainable Development Goals (SDGs).

The significance of corporate social responsibility (CSR) is increasingly recognized within the business sphere, particularly in relation to climate change and sustainability. There has been a growing body of research that has focused on investigating employees' pro-environmental behavior. For example, Sundaes et al. conducted a study to investigate the impact of ecologically specialized transformational leadership (ETFL), green training (GT), and psychological green climate (PGC) on workers' environmental passion (EP) and subsequent pro-environmental behaviors (PEBs). (Nisar et al., 2021). Furthermore, the adoption of pro-environmental behaviors (PEBs) within the work environment has the potential to improve the positive results associated with an organization's environmental performance, hence facilitating the transition towards more sustainable practices in low-carbon manufacturing (Mouro & Duarte, 2021).

In addition, Victoria Wells conducted a study investigating the influence of generativity and attitudes on the conservation behaviors of employees in relation to water and energy usage both at home and in the workplace (Wells et al., 2016). Furthermore, research conducted by Alzaid and Iyana with the aim of building a theoretical framework for the voluntary pro-environmental behavior of employees explained that there are four critical components in pro-environmental conduct. The author explained that habit may have a moderating effect in predicting a behavior (Alzaidi & Iyanna, 2021).

There are also an increasing number of research on pro-environmental behaviors as part of corporate social responsibility. According to research done in

Pakistan, environmental action is the responsibility of every individual. Moreover, the recent study has the ability to emphasize the significance of sustainability in relation to the Sustainable Development Goals (SDGs). The United Nations' recent global emission report emphasizes the potential for significant improvement in environmental quality through sustainable actions at the individual level. In this context, an organization's corporate social responsibility (CSR) attitude may provide further support in promoting a sustainability perspective aligned with the SDGs (Jilani et al., 2021).

In addition, Afsar's study on corporate social responsibility (CSR) and pro-environmental behavior in the workplace revealed that perceived CSR had a significant impact on moral reflectiveness, colleague pro-environmental advocacy, and environmental commitment (Afsar & Umrani, 2020).

Furthermore, in scholarly research about the correlation between corporate social responsibility, organizational success, and environmentally friendly conduct exhibited by employees explained that the implementation of green practices somewhat influenced the organization's operation while implementing corporate social responsibility. However, the relationship between CSR and employees' pro-environmental behavior (PEB) in the workplace was shown to be statistically insignificant (Hongxin et al., 2022).

Theory of reasoned action and message framing

Several scholarly research have been conducted pertaining to the Theory of Reasoned Action and the phenomenon of message framing. These studies can be located within the body of research pertaining to health behavior. According to Rothman and Salovey, message framing may be utilized to influence health decisions

and motivate behavior change (Rothman & Salovey, 1997). According to the results of this study, it has been observed that health-related messages have the potential to be presented in a manner that emphasizes the benefits (gains) or drawbacks (losses) linked to a certain behavior. Furthermore, it has been noted that the way in which these persuasive messages are structured may significantly influence the process of ensuring health-related decisions (Rothman & Salovey, 1997). Similarly, according to the study conducted by Keyworth et al. (2018), the importance of the framing of messages in health communication research was emphasized to facilitate behavioral transformation. However, Kristel M. Gallagher, in her study, claimed that despite the considerable attention given to message framing in health communication research, prior meta-analyses have failed to uncover any substantiated evidence supporting the use of framing to enhance the persuasiveness of health messages (Gallagher & Updegraff, 2012).

In addition to the growing body of research concerning the significance of message framing within the field of behavioral sciences, there has been a notable increase in the literature pertaining to the impact of message framing on pro-environmental behavior. For example, Meng-Chen Chang emphasised emphasized the impact of message framing on individuals' intentions towards engaging in pro-environmental activity. The author argued that that green marketing enterprises might potentially benefit by providing product-related information that highlights the potential adverse consequences associated with abstaining from the purchase of organic food products (Chang & Wu, 2015). This impact, however, is limited by the customers' level of environmental motivation and understanding.

Another study on the use of framing messages to promote environmentally sustainable behaviors contends that message framing modifies target audience's

perceptions of the promoted behavioral outcomes can significantly increase the effectiveness of social marketing. The study revealed that many factors should be considered when constructing communications. These factors include the perceived risk associated with adopting a certain behavior, the extent to which the message refers to oneself or others, the audience's degree of knowledge and experience, and the gender of the target audience. Message framing in connection to behavior is vital for understanding social marketing initiatives (Cheng et al., 2011).

The theory of reasoned action together with its variables provides an essential foundation for understanding the influence of communication in promoting behavioral change. As part of the literature discussion on how TRA action can be utilized, the authors suggest that researchers have categorized the purpose of using TRA in the body of research such as utilization of the theory to explain intention and the use of the theory to inform the design and evaluation of message-based interventions which is the focus of this study. Many literatures have supported the effectiveness of the theory in predicting behavioural intentions, but it doesn't mean that the theory of reasoned action will successfully changes individual's behavior. This was explained by the authors. The reason because there are many sources of influencing people's belief. This could be from interpersonal communication, media content, experience, culture, religion among others. More importantly, the concept of reasoned action is a significant behavioral theory that provides a valuable framework for determining content messages and results. In addition, to be able to fully maximize the use of the theory of reasoned action, other theories should be complemented including information processing, self-concept theories among others in understanding message outcomes.

Determining climate change behavior among employees is critical in creating effective climate change communication interventions. Based on the literature review

it can be argued that determining behavioral attitudes are important factors in communication interventions. Climate change behavioral studies in the business sector are limited.

The literature review indicated that there is still a significant amount of work to be conducted in this area of subject matter particularly employing different factors in predicting intentions and using communication interventions to predict an actual behavior. With an understanding of these weaknesses, this study aims to fill this void by employing the theory of reasoned action (TRA) as a conceptual framework with other related communication theories to uncover employee attitudes, subjective norms, and behavior regarding climate change. The literature review revealed that the theory of reasoned action is a relevant and valuable theoretical framework for investigating intentions connected to climate change. Furthermore, this study also seeks to explore its distinct contribution in investigating the correlation between climate change knowledge, demographics, media use and other relevant characteristics on the predictability of an individual's intention.

Theoretical Framework

The theory of reasoned action is a behavior model that uses three constructs to explain and predict behavioural intentions. The three components are as follows: 1) behavioral beliefs, 2) assessments of behavior outcomes that contribute to attitude and normative beliefs, and 3) the desire to perform which will lead to subjective norms (Ajzen, 1991). According to the theoretical framework provided by Ajzen and Fishbein, the prediction of behavioral outcomes relies on the consideration of two significant factors: attitude and subjective norms. The concept states that behavioral intention serves as a determinant in capturing people' motivation to engage in a given activity,

ultimately leading to a particular course of action. The theory of reasoned action does not include subjective view of individuals regarding their own capabilities and influence over their conduct. In contrast, the theory of planned behavior incorporates the concept of perceived behavioral control which affects individuals' capacity to perform an actual behavior.

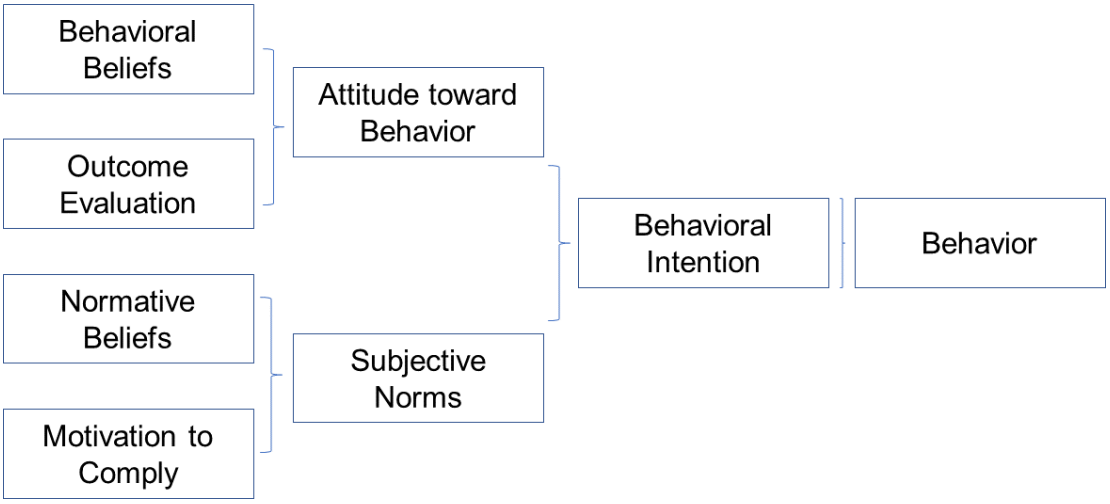
Within the framework of this behavioral paradigm, attitude emerges as a pivotal factor that significantly shapes behavior. This effect is dependent upon people' capacity to assess and appraise prospective consequences, which can be categorized as positive, negative, or neutral in nature.

However, it is worth noting that subject norms play a crucial role in shaping behavioral intention. These norms are regarded as social pressures exerted by people or groups, including friends and family members, to engage in a certain action. The effectiveness of the TRA model in persuasive communication has been empirically demonstrated, making it a commonly applied framework for studying pro-environmental behaviour. The relationship of attitudes and subjective norms towards a behavioral intention are summarized in Figure 1.

According to the theory of reasoned action (TRA) proposed by Fishbein and Ajzen, individuals are more likely to engage in a climate change behavior if they hold a favorable attitude towards it and perceive it as socially significant, as influenced by the opinions of others.

Figure 1

Theory of Reasoned Action by Ajzen & Fishbein



Conceptual framework

According to the theory of reasoned action (TRA) proposed by Fishbein and Ajzen, individuals are more likely to engage in a climate change behavior if they hold a favorable attitude towards it and perceive it as socially significant, as influenced by the opinions of others (Ajzen & Fishbein, 1977). In addition to evaluating the validity of the factors associated with the theory of reasoned action in predicting climate change behavioral intention, it would be beneficial to assess the impact of demographic characteristics, including age, gender, education, job function, and climate change understanding, as an additional factor.

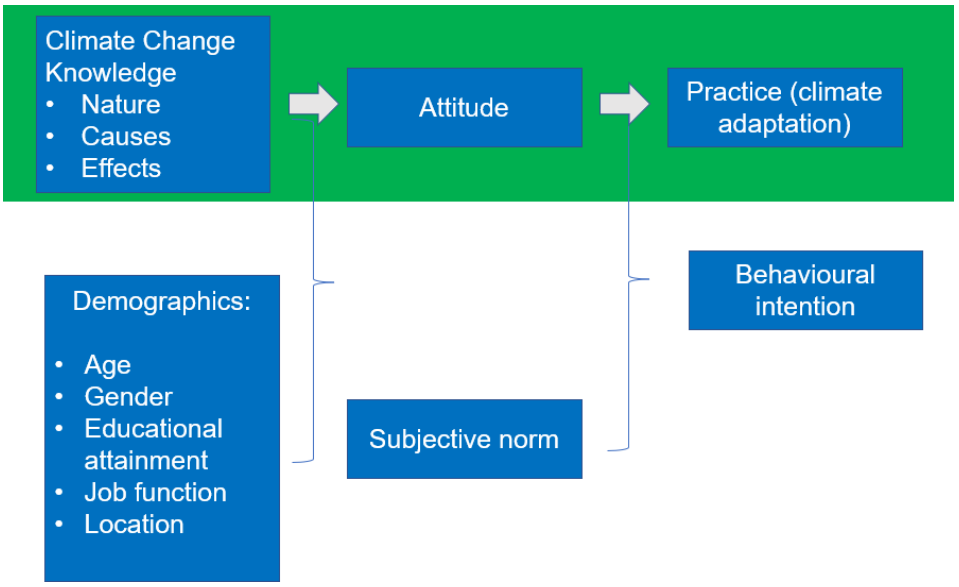
This research will investigate the influence of additional factors on behavioral intentions, which will be categorized as external variables. Furthermore, the research will use KAP variables to evaluate the correlation between the climate change knowledge, attitude, and practice of the respondents. These factors are crucial elements within behavioral change models. The KAP theory outlines the process of modifying human behavior into three distinct phases: information acquisition,

attitude/belief development, and practice/behavior formation.

These processes collectively enable the successful alteration of human behaviors. The integration of the Knowledge, Attitude, and Practice (KAP) framework with the Theory of Reasoned Action (TRA) variables provides researchers with a more holistic comprehension of the determinants that impact individuals' behavioral intentions. The integration of Knowledge, Attitude, and Practice (KAP) variables into the current Theory of Reasoned Action (TRA) framework is expected to enhance the predictive capacity of TRA model.

Figure 2

The enhanced predictive model using TRA and KAP variables.



A conceptual framework on climate change knowledge, attitude, subjective norms, practice (adaptation) and behavioral intention. The presented model illustrates the Theory of Reasoned Action proposed by Fishbein and Ajzen (2010), as well as the Knowledge, Attitude, and Practice (KAP) in a linear model. The enhanced predictive model framework offers an expanded understanding of the components that

create influence on behavioral intention. Specifically, the climate change knowledge (nature, causes, and effects) provides employees understanding of climate change, attitudes refer to employee's beliefs and evaluations and practices examine the actual employee's action to climate change – combining these KAP variables to TRA can lead to more accurate predictions of employee's behavioral intention.

Definition of Terms

This section presents the conceptual and operational definitions of the terminology included in this study, aiming to enhance clarity and establish a contextual framework.

The theory of reasoned action (TRA) was initially proposed by Martin Fishbein and Icek Ajzen. The Theory of Reasoned Action (TRA) or (ToRA) is a theoretical framework that explains the relationship between two separate independent variables, specifically attitude towards executing a behavior (AB) and subjective norm (SN), and their ability to predict an individual's intention.

Attitude describes to an individual's attitude as how positively or negatively he or she engages in a behavior.

Subjective norms pertain to an individual's perspective of the extent to which friends, colleagues, family members, or peers are likely to express approval or disapproval towards a particular conduct.

Normative beliefs refer to an individual's subjective understanding of the societal expectations in a particular behavior.

The motivation to comply corresponds to the social norms and expectations observed by the host's colleagues and relatives.

Behavioral intention describes the driving forces behind a certain behavior. If an individual has a strong intention to carry out a behaviour, the more likely it is to be complied.

Behavior may be defined as the outwardly evident reaction of an individual in response to a certain stimulus within a given context.

Climate change knowledge pertains to an individual's understanding and comprehension of the scientific evidence that substantiates the consequences, origins, and effects of global warming and other modifications to Earth's climate system.

Climate adaptation refers to the process by which both human and environmental systems adjust and respond to the impacts and effects brought about by climate change. Climate adaptation encompasses many strategies aimed at reducing vulnerability and enhancing resilience to climate-related risks.

The nature of climate change relates to the fundamental attributes, origins, and consequences of the Earth's climate system throughout its geological history.

The effects of climate change encompass a wide array of physical, ecological, and societal consequences resulting from alterations in the Earth's climate system.

The causes of climate change involve continual alterations in temperature and weather pattern events. The primary factors contributing to climate change encompass the emission of greenhouse gases, including but not limited to nitrous oxide, methane, and carbon dioxide.

Demographics refers to the social traits and statistical characteristics of human beings. It includes an individual's age, gender, education, nationality, or ethnicity.

Chapter III

METHODOLOGY

This chapter provides an overview of the research methods employed in the study. The provided information includes the research strategy, study participants, study location, sampling system, data gathering technique, and data analysis.

Research design

This research utilized descriptive-quantitative research design to determine the respondents' demographics profile, climate change knowledge, attitudes, subjective norms, behavioural intentions and adaptations, and to determine the correlational relationship among the different variables. The study used the Theory of Reasoned Action (TRA) and Knowledge, Adaptation and Practice (KAP) as a conceptual framework to examine the relationships of the variables. The Theory of Reasoned Action is a framework for communication that examines and predicts human behavior through examining the attitudes and subjective norms of individuals (Ajzen & Fishbein, 1977).

The adopted online survey method quantitative design utilized online questionnaires as survey instruments to measure the participants' demographic profile, sources of climate change information, knowledge, subjective norms, attitudes, and climate action. This study utilized an online survey approach to gather data from participants through the administration of online survey questions. For this research, quantitative design was employed because it provides precision which involves statistical techniques and standardized measures, provides a minimize bias and subjectivity, produces results that are generalizable to larger populations (Rando, 1985), and lastly it can test hypotheses and theories derived from the TRA variable.

Furthermore, a study done by Mohagan revealed that quantitative research is the predominant technique employed in this field of social sciences research (Mohajan, 2020).

However, challenges of using questionnaire methods include, low response rate, slow response rate, difficulty of identifying the validity of the answers. In this study, multiple methods were employed in to increase the response rate including posting in Yammer groups (enterprise social networking service) and internal mailed surveys. Moreover, the researcher coordinated with employee services in Germany to facilitate the data collection. In addition, the researcher used Microsoft Teams Survey Forms since it is HIPAA and BAA compliant. As of May 2018, Microsoft has ensured compliance with the Family Educational Rights and Privacy Act (FERPA) and the General Data Protection Regulation (GDPR) regulations. By utilizing the MS form, the confidentiality and protection of all the participants' data were ensured.

In the present study, participants were requested to provide responses pertaining to their own views towards climate change, including their perceptions of subjective norms associated with engaging in climate change-related actions. Moreover, the researcher explored the relationships among the different variables.

Locale of the study

This study was conducted in different branches of a global software company and in its international offices in Germany (HQ), United Kingdom, Netherlands, Singapore, Switzerland, and Sweden. The global software company is a German-based software company which provides global trade and logistics solutions worldwide. The software company started conducting an initial study of the greenhouse gas emissions brought on by its business operations in 2021. As a result of these

activities, the software company became carbon neutral in 2021 and 2022. The software company also made investments in climate protection projects based on footprint to offset the unavoidable emissions produced. The primary goal of the software company is to continuously cut carbon dioxide (CO2) emissions by implementing strategies aimed at lowering the organization's carbon footprint by 25% by the end of 2023.

Sampling scheme

Complete enumeration sampling technique was used for selecting the participants of this study. In this sampling method, every employee was given the chance to participate in the study. According to Australian Bureau of Statistics, complete enumeration sampling method offers a true representation of the population. This method also allows collection of benchmark data for future studies and increases the likelihood that specific data on small sub-groups of the population will be easily available.

Research Ethics

The researcher recognized the importance of ethical implications that involves human participants. The researcher has diligently implemented appropriate measures to guarantee that the study has been carried out in a responsible and ethical manner, with due regard for the protection of participants' rights and well-being. The research has been approved by the organization's data protection officer which is also a member of the company council. The anonymous survey has been approved in accordance with the software company's data protection policy. Subsequently, research ethics approval from the software company was sent to UPOU IREC for documentation purposes.

Prior to their involvement in the study, all participants were required to provide informed consent. The participants were provided with a detailed and clear explanation of the study's aims, methodologies, potential hazards, and advantages, along with the chance to ask about any questions they may have had, before participant in the study. The participants were further notified that their involvement in the study was completely voluntary and that they had the option to withdraw at any point without facing any negative consequences. This study's participants are fully anonymous. No information shared may be electronically traced back to the participants, the computer used, or any information provided.

The researcher has implemented appropriate measures to ensure the preservation of participant anonymity and confidentiality of their data. The data will be securely maintained and stored, and subsequently erased following the standard storage duration of 3-5 years. To ensure the respondents' data privacy, Microsoft Teams Survey Forms was used. MS Forms meet GDPR compliance requirements.

Questions about the respondents' rights as research participants, complaints, or problems they may be contacted via the UP Open University Institutional Research Ethics Committee (UPOU IREC) at irec@upou.edu.ph or via the AEB Data Protection Officer at dataprotectionofficer@aeb.com.

Research instrument

The study utilized an online survey questionnaire as a means of collecting data [refer to Appendix A]. The research has seven primary components, namely: (1) demographic factors, (2) climate information sources, (3) knowledge pertaining to climate change, (4) subjective norms, (5) attitudes, (6) behavioral intention, and (7) climate adaptation. The instrument matrix is presented in Appendix B. The survey

instrument was written primarily in English. The climate change attitude survey instrument was adapted from Christensen survey questions. Additionally, the Climate Change Knowledge Test (CCKT) survey questionnaires from Gazzaz, Nabeel M.; Aldeseet, Bassam A. was adapted to measure climate change knowledge. Moreover, climate change knowledge is a metric used to assess the participant's understanding of the fundamental aspects pertaining to the nature, causes, and impacts of climate change. Furthermore, the survey questionnaires utilized in measuring subjective norms and behavioral intentions were derived from the works of Ajzen (2006) and Francis et al. (2004). Additionally, the study will employ measures of climate change knowledge, subjective norms, attitude, behavioral intention and adaptation specifically utilizing a bad-good scale which will be rated on a scale ranging from 1 to 7.

Furthermore, the survey questionnaires on climate change knowledge and attitude have been modified to accurately represent their level of comprehensiveness and completeness. Subsequently, the researcher conducted a pilot test survey with 10 employees evaluating factors such as comprehension, logic and flow, acceptability, length, and adherence to ensure the survey's quality. The feedback obtained from the pilot test was considered to make the required modifications and enhancements to the survey instrument. To ensure the accuracy and consistency of response measurements, the researcher made necessary modifications and adjustments before to beginning the data collection phase.

Data gathering

In June 2022, the researcher has set up a meeting with the software company's head of sustainability about the conduct of the study with its employees. The researcher explained the purpose, objectives, and scope of this study. The researcher

further provided an explanation of the study's background and relevance, emphasizing the need of maintaining confidentiality and anonymity for the participants. In July 2022, the researcher coordinated with the Employee Services to secure the number of employees according to different locations and international offices.

From October 9 to 13, the researcher conducted a pilot test of the survey questions. The feedback was used to guide any changes and improvements to the survey instrument. The actual duration of the data gathering went between October 2022 to February 2023. The data gathering only formally started after the approval to conduct the study from the software company's data protection officer and company council.

Prior to administering the survey questions, all participants were provided with informed permission and the opportunity to refuse to answer or withdraw from the surveys at any point. The act of participation in this study will be both anonymous and voluntary. The study will provide a comprehensive explanation of the research objectives, as well as ensure participants of the confidentiality and anonymity measures in place. The completion time for each survey questionnaire ranges from 15 to 20 minutes.

Data Analysis

The data collected were interpreted using quantitative analysis. A combination of both inferential and descriptive statistics was utilized to tabulate quantitative data. In analysing the data, the mean scores and frequency were obtained to measure the respondents' demographic profile, climate change knowledge, attitudes, subjective norms, and adaptation. In addition, cross tabulations were utilized to determine if certain factors would validate possible relationships among other variables.

Spearman rank was used to perform statistical procedures to establish the

relationship between attitudes and age and education (p – value < 0. 05 indicate significant relationship). One Way ANOVA was employed to perform statistical procedures to establish the relationship between attitude and gender and location (p – value < 0. 05 indicate significant relationship). Pearson Correlation was used to perform statistical procedures to establish the relationship between attitude to nature, causes and effects of climate change (p – value < 0. 05 indicate significant relationship). Spearman Rank was used to perform statistical procedures to establish the relationship between subjective norms to age and education (p – value < 0. 05 indicate significant relationship). One Way ANOVA was used to perform statistical procedures to establish the relationship between subjective norms to gender, location, and department (p – value < 0. 05 indicate significant relationship). Pearson Correlation was utilized to perform statistical procedures to establish the relationship between subjective norms to nature, causes and effects of climate change (p – value < 0. 05 indicate significant relationship). And lastly, Pearson Correlation perform statistical procedures to establish the relationship between attitude and subjective norms (p – value < 0. 05 indicate significant relationship).

The data collected was analyzed employing both descriptive and inferential methodologies to investigate the interrelationships between:

- Climate change knowledge and attitudes – What are the participants feeling about climate change? Are the participants knowledgeable about the nature, causes and effects of climate change? Does knowledge lead to positive attitudes?
- Climate change knowledge and behavioral intention – How engaged are the participants once they become aware about climate change issues. Does knowledge lead to desirable behavioral intention?

- Attitudes and behavioral intentions - Does an individual's attitude have any relationship to behavioral intentions?
- Job function and climate change knowledge – How does job function correlate to climate change knowledge?
- Subjective norms and attitude – Does subjective norm correlate with attitude?
- Source of climate information and climate change knowledge – What are the sources of climate information of the participants?

Chapter IV

RESULTS AND DISCUSSION

This section provides an overview of the demographics of the study participants which includes variables such as gender, age, educational background, and geographical location as determined by their home market and departments.

Demographic profile of the respondents

Table 1

Gender

Gender	Count	Percent
Male	113	55.94%
Female	83	41.09%
Other	6	2.97%
Total	**202**	**100%**

Table 1 presents the distribution of participants by gender. According to the findings, the male participants accounted for 113 individuals, or 55.94% of the total respondents. The female participants included 83 individuals, accounting for 41.09% of the respondents. The remaining 6 individuals, or 2.97% of the respondents, identified as other. The table also showed that the majority of the respondents were male which highlighted the gender imbalance that exists in software and technology companies which are known as a male-dominated industry.

Table 2

Age

Age	Count	Percent
1946 – 1964	9	4.46%
1965 – 1980	73	36.14%
1981 – 1996	92	45.54%
1997 - 2012	26	12.87%
Prefer not to say	2	0.99%
Total	**202**	**100%**

The table presents the age of the respondents. Based on the results, 1946 – 1964 are 9 which is equivalent to 4.46%, 1965 – 1980 are 73 or 36.14%, 1981 – 1996 are 92 or 45.54%, 1997 – 2012 are 2 or 0.99 while 2 or 0.99% of the respondents preferred not to say their age. Results revealed that the majority of the respondents comprising of 45.54% of the total sample, were born between 1981 and 1996. According to the results, the group age 1981 – 1996 which is the millennial group has more respondents than the other groups. The study's results suggested that millennials are more interested in climate change topics. This is supported by a Yale University study which uncovered evidence that younger age groups are more likely to participate in activities related to climate change compared to other age groups (Williamson et al., 2018). There are important factors why younger generations are concerned about climate change such as rise of social media platforms and internet (Miller et al., 2020), climate change education and socialization (Schleussner et al., 2017), exposure to climate- related events (Heck et al., 2018), social responsibility and long-term impacts of climate change than would affect future generations.

Table 3

Educational attainment

Educational attainment	Count	Percent
No formal education	4	1.98%
High school diploma	29	14.36%
Associate's degree (e.g. Associate of Arts, Associate of Science)	10	4.95%
Bachelor's degree (e.g. Bachelor of Arts, Bachelor of Science)	80	39.60%
Master's degree (e.g. Master of Arts, Master of Science)	67	33.17%
Professional degree (e.g. Medical degree)	6	2.97%
Doctorate (e.g. Doctor of Philosophy, Doctor of Education)	6	2.97%
Total	**202**	**100%**

Table 3 shows the educational attainment of the respondents. The respondents were asked about their educational attainment. Based on the results, those with no formal education are 4 or 1.98%, with high school diploma are 29 or 14.36%, 10 or 4.95% are associate degree holders (e.g. Associate of Arts, Associate of Science). In addition, bachelor's degree holders (e.g. Bachelor of Arts, Bachelor of Science) are 80 or 39.60%. Moreover, master's degree (e.g. Master of Arts, Master of Science) are 67 or 33.17%, Professional degree (e.g. Medical degree) are 6 or 2.97% and lastly, doctorate degree holders (e.g. Doctor of Philosophy, Doctor of Education) are 6 or 2.97%. The figure also reveals that majority of the respondents are bachelor's degrees

(e.g. Bachelor of Arts, Bachelor of Science) holders.

It is notable that the majority of the respondents had obtained higher education degrees, with more than 70% having a bachelor's or master's degree. The results suggest that the survey respondents were a highly educated group, which may have implications for how climate change information is communicated to them. In a study by (Wang et al., 2020), the authors found that despite the high education levels of the respondents, many professionals still lacked knowledge about the causes and consequences of climate change. Similarly, (Yatskovskaya et al., 2018) assert that highly educated individuals had a greater understanding of climate change. However, the study also found that education alone was not enough to promote pro-environmental behavior. The relationship between educational attainment and pro-environmental behaviours regarding climate change doesn't necessarily translate. This highlights the complexity of the relationship between education and engaging in pro-environmental behaviors. Possible reasons could include an individual's personal motivation to engage in climate action, environmental barriers, and social norms.

Table 4

Location based on home market

Location based on home market	**Count**	**Percent**
Germany	160	79.21%
Singapore	18	8.91%
United Kingdom	13	6.44%
Sweden	4	1.98%
Switzerland	5	2.48%
Netherlands	2	0.99%
Total	**202**	**100%**

Table 4 shows the location based on the home market of the respondents. According to the results, the overwhelming majority of the respondents were from Germany which is 160 or 79.21% followed by Singapore with 18 respondents or 8.91%. There were also 13 respondents from the United Kingdom, representing 6.44%, 5 respondents from Sweden, accounting for 2.48%, 4 respondents from Switzerland or 1.98%, and finally 2 respondents from the Netherlands, which accounted for 0.99%. The findings also reveal that most of the respondents, comprising 79.21% of the total sample, were located in Germany where the software company has a larger number of employees compared to other locations.

Table 5

Department

Department	**Count**	**Percent**
Product development and solutions	79	39.11%
Sales and marketing	33	16.34%
IT/Infrastructure	30	14.85%
Other	27	13.37%
Operations and support	17	8.42%
Facility and care	5	2.48%
Management	5	2.48%
Employee services (HR)	3	1.49%
Accounting	2	0.99%
Controlling	1	0.50%
Total	**202**	**100%**

Table 5 indicates the department of the respondents. Based on the results, 79 or 39.11% are in product development and solutions while sales and marketing departments are 33 or 16.34%, IT/Infrastructure accounts for 30 or 14.85% and the

other represents 27 or 13.37%. Additionally, operations and support department consist of 17 respondents or 8.42%, facility and care are 5 or 2.48%, management are 5 or 2.48%, employee services (HR) are 3 or 1.49%, accounting are 2 or 0.99% and lastly, controlling has 1 respondent or 0.50%. In general, the results suggest that majority of the respondents are involved in product development and solutions.

Media use

This section provides an analysis of the media consumption patterns demonstrated by the participants. This involves the sources of climate information and the methods through which climate change communication can be effectively conveyed to survey participants.

Table 6

What are your sources of climate change information?

What are your sources of climate change information?	**Count**	**Percent**
Online news sites from major news organizations	164	81.19%
Conversations with colleagues, friends	146	72.28%
Social media	142	70.30%
Television	116	57.43%
Radio	68	33.66%
Printed newspaper	42	20.79%
Special climate change publications	37	18.32%
Online radio	21	10.40%
Total	**736**	**364%**

The respondents were asked about their primary sources of climate information. Most of the participants rely on online news sites from major news organizations

(81.19%) as their main source of knowledge about climate change. This is followed by conversations with colleagues and friends (72.28%), social media (70.30%), and television (57.43%). It is also interesting to note that traditional media such as radio (33.66%), printed newspapers (20.79%), and special climate change publications (18.32%) also play a role in disseminating climate information. However, they are not as widely used as online sources. Online radio was the least popular source of climate change information, with only 10.40% of respondents reporting using this source. The results revealed that online news from major news organizations has become more important channel for climate change information. In a research study pertaining to the impact of news media on consumer behavior and attitudes towards the environment. The study found that online news articles published by major news organizations showed a substantial influence on the behavior and views of consumers, particularly among younger groups, with regards to environmental issues (Borragán et al., 2017). This illustrates the significant influence by leading online news organizations in providing climate change information to the public, as well as providing reliable, accurate, and balanced coverage to promote awareness of climate change issues. Furthermore, it is important for the general people to exercise caution in regard to misinformation concerning climate change and strive to get a full comprehension of the issue. In order to combat fake news about climate change information, individuals need to fact-check, promote accurate and reliable sources of information, and remain vigilant when consuming and sharing climate information, particularly on social media platforms. Notably, conversations with colleagues and friends are a significant source of climate information. This highlights the significance of interpersonal communication and social engagement in fostering knowledge about climate change. According to a study about climate change communication and social learning, authors highlighted

the critical role of interpersonal communication and social engagement specifically in the context of community-based initiatives (Muiderman et al., 2020).

Table 7

How would you like climate change information to be communicated?

How would you like climate change information to be communicated?	**Count**	**Percent**
Online posting on Yammer	163	80.69%
Company talks (events, gatherings)	137	67.82%
Website	89	44.06%
Webinar sessions	68	33.66%
Social media: LinkedIn, Facebook, Instagram	66	32.67%
Email/newsletter	54	26.73%
Podcast	39	19.31%
Printed brochures or handouts	6	2.97%
Total	**622**	**308%**

The findings revealed that most of respondents at 80.69%, preferred to receive climate change information through online postings on Yammer. The results suggest that digital communication platforms are an effective way to disseminate climate change information to employees.

Company talks through events and gatherings were the second most preferred method, with 67.82% of respondents indicating their preference for this form of communication. This highlights the importance of in-person interactions and events in promoting climate change awareness and engagement to the employees.

The website was preferred by 44.06% of respondents, while webinar sessions

were preferred by 33.66%. The use of social media, including LinkedIn, Facebook, and Instagram, was preferred by 32.67% of respondents, while email and newsletters were preferred by 26.73%.

Interestingly, only 19.31% of the respondents preferred to receive climate change information through podcasts, and an even smaller proportion, at 2.97%, preferred printed brochures or handouts.

Overall, the findings of the survey indicate that digital communication tools, such as online posts on platforms like Yammer and the corporate website, are the most efficient methods for disseminating information on climate change to employees. However, in-person events and gatherings also play a crucial role in raising awareness and promoting engagement among stakeholders and employees. These findings have important implications for companies seeking to promote climate change action among their employees and highlight the importance of utilizing different communication channels to effectively engage with employees.

Climate change knowledge

What is the respondent's level of knowledge in terms of the following:

Table 8

Nature of Climate Change

Nature of Climate Change	Mean	Std. Dev.	Interpretation
NC1. Climate change is happening and is real.	6.75	0.90	Strongly Agee
NC2. Climate change manifestations varies from one climatic area to another region.	5.71	1.34	Agree
NC3. Climate change is unavoidable due to the nature and manner of modern daily living.	3.85	1.91	Neutral

NC4. Climate change is just the natural shifts in Earth's temperatures.	1.91	1.41	Disagree
NC5. Climate change is within human control.	5.22	1.56	Somewhat Agree
NC6. In general, climate change is damaging, and it causes more harm than good.	6.13	1.36	Agree
NC7. Climate change is the evident long-term shift in weather variables caused by increases in the amounts of greenhouse gases in the atmosphere.	5.71	1.33	Agree
NC8. Climate change scientific evidence is unreliable.	1.76	1.22	Strongly Disagree
NC9. Since 1900, the average minimum and maximum temperatures have never increased anywhere on the planet.	1.71	1.46	Strongly Disagree
NC10. It is too late for humanity to stop or minimize the effects of climate change.	2.26	1.55	Disagree
Overall Mean	**4.10**	**0.46**	**Neutral**

The participants were asked on their level of understanding regarding the nature of climate change. The findings of the study indicated that majority of the participants expressed a strong level of agreement (mean = 6.75, SD = 0.90) that climate change is real, and it is happening (NC1). The participants in the study also expressed agreement (mean = 5.71, SD = 1.34) that climate change varies from one area to another climatic area (NC2). Furthermore, they agreed that climate change has predominantly negative effects, rather than any potential benefits (mean = 6.13, SD = 1.36) (NC6) lastly, the participants agreed that climate change refers to long-term change in weather patterns, which are linked to the rising levels of greenhouse gases in the Earth's atmosphere (mean = 5.71, SD = 1.33) (NC7).

On the other hand, the respondents are neutral (mean = 3.85, SD = 1.91) on the perception that climate change is unavoidable because of the nature and manner

of mdern day living (NC3). Moreover, the respondents disagreed (mean = 1.91, SD = 1.41) that climate change is just unavoidable due to the nature and manner of modern daily living (NC4) and since 1900, the average minimum and maximum temperatures have never increased around the world (mean = 1.71, SD = 1.46) (NC9).

In addition, the participants expressed a moderate level of agreement (mean = 5.22, SD = 1.56) regarding the ability of the human population to exert control over climate change (NC5). Moreover, they agreed (mean = 5.71, SD = 1.33) with the notion that climate change refers to the tangible and persistent alterations in weather patterns, which are linked to the rising levels of greenhouse gases in the Earth's atmosphere. (NC7). They also disagreed (mean = 2.26, SD = 1.55) that it is too late for the human society to take action in mitigating or preventing climate (NC10).

In summary, the mean score of the nature of climate change is 4.10 (SD = 0.46), indicating a neutral stance among the respondents. The results suggest that the respondents had a neutral position towards the nature of climate change.

Causes of Climate Change

Table 9

Causes of Climate Change

Causes of Climate Change	Mean	Std. Dev.	Interpretation
C1. Climate change is mostly caused by industrial pollution.	5.36	1.38	Agree
C2. The impact of human activities on Earth's surface temperatures is low.	2.00	1.49	Disagree
C3. The burning of fossil fuels such as oil and coal leads to climate change.	6.54	0.97	Strongly Agee
C4. Climate change is made worse by	6.47	0.96	Strongly Agee

deforestation.			
C5. The cause of climate change is global warming caused by increases in the amounts of greenhouse gases in the atmosphere.	6.00	1.14	Agree
C6. The transportation industry does not significantly contribute to climate change.	2.20	1.41	Disagree
C6. The transportation industry does not significantly contribute to climate change.	2.20	1.41	Disagree
C7. The transportation industry does not significantly contribute to climate change.	2.78	1.62	Somewhat Disagree
C8. Climate change is caused by natural events such as volcanoes rather than by human activity.	1.86	1.20	Disagree
C9. Climate change is worsened by agricultural operations such as animal and plant cultivation.	5.85	1.40	Agree
C10. The energy sector is the one that contributes the most to climate change.	4.80	1.47	Somewhat Agree
Overall Mean	**4.38**	**0.49**	**Neutral**

The findings revealed people's views of the causes contributing to climate change. The results indicate that the respondents strongly agreed (mean = 6.54, SD = .97) that the burning of fossil fuels, such as oil and coal, is a significant factor to climate change. (C3). The participants expressed a high level of agreement about the role of deforestation as a contributing factor to climate change (mean = 6.54, SD = 0.97) (C4). Conversely, the participants agreed that climate change mostly comes from industrial pollution, leading to environmental contamination (Mean = 5.36, SD = 1.38) (C1), that primary factor contributing to climate change is the phenomenon of global warming, which is closely linked to the escalating levels of greenhouse gases present

in the Earth's atmosphere (Mean = 6.00, SD = 1.14) (C5) and that agricultural activities, both animal and plant cultivation, have been identified as significant contributors to climate change (Mean = 5.85, SD = 1.40) (C9).

Moreover, the respondents somewhat agreed that the energy industry is seen as the primary contributor to climate change (Mean = 4.80, SD = 1.47) (C10).

Furthermore, the respondents somewhat disagreed (M = 2.78, SD = 1.62) that the primary cause of climate change may be attributed to the depletion of the ozone layer (C7). On the other hand, the respondents disagreed that the impact of human activities on surface temperatures of the Earth is quite low (Mean = 2.00, SD 1.49) (C2). The respondents also disagreed the transportation sector's contribution to climate change is not significant (M =2.20, SD = 1.41) (C6) and (C7).

And lastly, the respondents disagreed climate change is primarily due to natural phenomena, such as volcanic activity, as opposed to human factors (M = 1.86, SD = 1.20 (C8).

In summary, respondents had neutral knowledge about the causes of climate change. Significantly, respondents have completely agreed that the primary factors contributing to climate change are the burning of fossil fuels and as well as deforestation. The findings presented are in line with the research conducted by Sheng & Wang (2022), who examined the impact of burning fossil fuels on climate change in major developed countries. The research provides evidence supporting the idea that burning fossil fuels is a significant contributor to climate change (Rantaniemi et al., 2022). Accordingly, the research indicates that the consumption of fossil fuels is a significant contributor to the rise of carbon emissions in developed countries. Thus, it is vital to modernize industrial infrastructure and transition towards the adoption of energy from renewable sources.

Conversely, the study conducted by Lawrence et al. (2022) revealed that tropical deforestation has a significant impact on global warming due to the combined impacts of CO2 emissions and biophysical factors.

Effects of Climate Change

Table 10

Effects of Climate Change

Effects of Climate Change	Mean	Std. Dev.	Interpretation
E1.Climate change contributes to biodiversity loss.	6.33	1.05	Strongly Agee
E2. Climate change causes a decline in Earth's temperature all around the world.	2.83	2.02	Somewhat Disagree
E3. Soil fertility increases as a result of climate change.	2.68	1.66	Disagree
E4. The human community is currently experiencing and suffering from the consequences of climate change.	5.97	1.25	Agree
E5. Climate change causes rising sea and ocean levels, as well as the submergence of islands and adjacent areas.	6.36	1.16	Strongly Agee
E6. Climate change reduces the incidence of communicable and infectious plant, animal, and human illnesses.	2.74	1.89	Somewhat Disagree
E7. Climate change may lead to a decrease in plant and animal food production and, as a result, a degradation in food security.	5.49	1.45	Agree
E8. Climate change may cause a shortage of water for residential consumption as well as irrigation of plants and animals.	5.89	1.39	Agree
E9. In some parts of the world, climate	6.51	1.05	Strongly Agee

change may increase the frequency and intensity of extreme weather events such as heat waves, drought, hurricanes, and heavy rains.			
E10. Climate change adds to increased wind and water erosion of soil.	5.75	1.31	Agree
Overall Mean	**5.05**	**0.72**	**Somewhat Agree**

The table shows the respondents' answer on “Effects of Climate Change”. According to the results, the participants strongly agreed (mean=6.33, SD=1.05) that climate change causes biodiversity loss (E1), that the participants strongly agreed (M = 6.36, SD = 1.16) the increase in sea and ocean water levels, as well as the submersion of islands and nearby areas, can be attributed to the phenomenon of climate change (E5). And lastly, the respondents strongly agreed (M =6.51, SD = 1.05) that climate change might potentially lead to extreme weather effects around the world (E9).

Moreover, the respondents agreed (M= 5.97, SD =1.25) the present population is experiencing and enduring the consequences of climate change (E4). The respondents also agreed (M = 5.49, SD = 1.45) that the potential consequences of climate change include a decrease in the production of plant and animal-based food sources, leading to issues in food security (E7). Also, the respondents agreed ((M = 5.89, SD = 1.39) that the scarcity of water for residential and irrigation may be attributedto climate phenomena (E9). And lastly, the respondents agreed (M = 5.75. SD = 1.31) that climate change is a key driver to wind and erosion (E10).

Moreover, the respondents somewhat disagreed that the climate change is responsible for global decreases in temperatures (M =2.83, SD =2.02) (E2) and climate change is associated with a reduction in the occurrence of communicable and

infectious illnesses affecting plants, animals, and humans (M = 2.74, SD = 1.89) (E6). Furthermore, the participants of the study strongly disagreed (M = 2.83, SD = 2.02) that the climate change is associated with global reductions in temperatures (E2).

In summary, the participants expressed a moderate level of agreement over the impacts of climate change. The results suggest that the respondents expressed a degree of agreement with the statement, but they may not fully agree with all aspects of it or have some reservations or uncertainty. For example, when respondents were asked about a statement, the respondents may somewhat agree but may not be completely convinced or may have some hesitations about the potential impacts of climate change. There are some factors about climate change scepticism or hesitation on the effects of climate change. The factors that may contribute to this phenomenon include an individual's socioeconomic background (Lübke, 2022), their patterns of media consumption (Vogl, 2020), and the dissemination of false information through social media platforms (Samantray & Pin, 2019).

Subjective norms

Table 11

Subjective Norms

Subjective Norms	Mean	Std. Dev.	Interpretation
SN1. I feel under social pressure, from my professional colleagues, to perform climate action.	2.86	1.53	Somewhat Disagree
SN2. Most people who are important to me want me to perform climate action.	3.54	1.70	Somewhat Disagree
SN3. It is expected of me to perform climate action.	3.95	1.71	Neutral

SN4. The people in my life whose opinions I value would expect me to perform climate action.	4.05	1.68	Neutral
Overall Mean	**3.60**	**1.31**	**Neutral**

The participants were also asked on their subjective norms. Subjective norms pertain to an individual's perception of the societal pressures or expectations that influence their decision to engage in a specific action. This perception may arise from individuals' views on others' opinions or emotions towards the behavior, or from their own ideas of the social norms and expectations in a specific situation. Based on the results, the respondents somewhat disagreed (M=2.86, SD = 1.53) that they feel social pressure from their professional peers to engage in climate action (SN1). Similarly, the respondents also somewhat disagreed (M=3.54 , SD = 1.70) that individuals prioritize climate action when it is deemed significant by their social network (SN2). On the other hand, the respondents had a neutral response when they asked if is expected of them to perform climate action (M= 3.95, SD=1.71) (SN3) and if the people in their lives whose opinions they value would expect them to perform climate action (M=4.05, SD= 1.68) (SN4). The results suggested that in general, the participants had a neutral feeling about social pressure and expectation from their colleagues and friends to perform climate action. There are factors why people are less motivated to perform climate action. According to Katz (2018), psychological barriers prevent individuals from taking climate actions. These include cognitive biases, emotional response, and social norms.

Attitudes

Table 12

Attitudes

Attitudes	Mean	Std. Dev.	Interpretation
A1. I believe our climate is changing.	6.72	0.62	Strongly Agee
A2. I am concerned about global climate change.	6.33	1.16	Strongly Agee
A3. I believe there is evidence of global climate change.	6.66	0.78	Strongly Agee
A4. Global climate change will impact our environment in the next 10 years.	6.37	1.05	Strongly Agee
A5. Global climate change will impact future generations.	6.67	0.91	Strongly Agee
A6. The actions of individuals can make a positive difference in global climate change.	5.54	1.54	Agree
A7. Human activities cause global climate change.	6.38	1.10	Strongly Agee
A8. Climate change has a negative effect on our lives.	6.26	1.18	Strongly Agee
A9. We cannot do anything to stop global climate change.	1.94	1.33	Disagree
A10. I can do my part to make the world a better place for future generations.	5.96	1.30	Agree
A11. Knowing about environmental problems me.	6.11	1.03	Agree
A12. I think most of the concerns about environmental problems have been exaggerated.	2.01	1.49	Disagree

A13. Things I do have no effect on the quality of the environment.	2.21	1.29	Disagree
A14. It is a waste of time to work to solve environmental problems.	1.46	0.94	Strongly Disagree
A15. There is not much I can do that will help solve environmental problems.	2.58	1.59	Disagree
Overall Mean	**4.88**	**0.40**	**Somewhat Agree**

In addition, the researcher asked about the employees' perspectives towards climate change. Attitude pertains to the extent to which an individual possesses a positive or negative assessment towards engaging in a specific behavior. Based on the results, the respondents strongly agreed that our climate is changing, and it is happening (M=6.72, SD=.62) (A1), the employees expressed strong concerned about global climate change (M=6.33, SD=, 1.16) (A2), the respondents have expressed strong agreement that there is evidence of global climate change ((M=6.66, SD=.78) (A3). In addition, the employees also indicated strong agreement that global climate change will impact our environment in the next 10 years (M=6.36, SD=1.95) (A4) and global climate change will impact future generations (M=6.67, SD=.91) (A5). The respondents were also asked about the cause and negative effect of climate change. The respondents strongly agreed that human activities cause global climate change(M=6.38, SD=1,10) (A7) and climate change has a negative consequence on their lives (M=6.26, SD 1.18) (A8).

Meanwhile, the respondents agreed that individual actions can make a positive impact in global change (M=5.54, SD=1.54) (A6), that individuals can do their part to make a better place for future generations (M=5.96, SD1.30) (A10) and that knowing the environmental problems and issues are important to them (M=6.11, SD=1.03) (A11).

In addition, when the respondents were asked about if it is a waste of their time to work to solve environmental problems, they expressed a strong disagreement (M=1.46, SD=.94 (A14). Similarly, they also indicated disagreement that they cannot do anything to stop the global climate change (M=1.94, SD=1.33) (A9), that most of the concerns about environmental problems have been exaggerated (M=2.01, SD=1.49), that things they do have no effect on the quality of the environment (M=2.21, SD=1.29) (A13) and that there's not much they can do to solve environmental problems (M=2.58, SD=1.59) (A15).

Overall, the respondents demonstrated a strong agreement and were concerned about global climate change. According to findings from research done on the population of the United Kingdom, it may be inferred from the observed cluster that these 'concerned' individuals exhibit the highest level of conviction in the existence of climate change, while also maintaining the belief that its impact has not been exaggerated (Katz, 2018). Interestingly, there is an increasing body of research pertaining to the phenomenon of behavior and attitude clusters. In their study, Kácha et al. (2022) classified individuals into four distinct categories based on their attitudes and views towards climate change. These are the engaged, pessimistic, indifferent, and doubtful ones. Moreover, different behaviors and attitudes on climate change could be related to factors such as media consumption. Media coverage plays a vital role in creating awareness and shaping public opinion. This view was supported by Penrod (2021) who found that media consumption can influence people's view on climate change. Based on his study, media consumption has a positive influence on climate beliefs.

Behavioral intentions

Table 13

Behavioral Intentions

Behavioral Intentions	Mean	Std. Dev.	Interpretation
BI1. I intend to perform climate action.	5.63	1.42	Agree
BI2. I will perform climate action.	5.46	1.41	Agree
BI3. I am planning to perform climate action.	5.17	1.69	Somewhat Agree
Overall Mean	**5.42**	**1.38**	**Agree**

Behavioral intentions were also measured in the study. Behavioral intentions construct refers to an individual's intentions and plans to perform climate action. The findings showed that the participants showed a positive attitude towards engaging in climate action, as evidenced by the mean scores of (BI1) and (BI2). However, the respondents expressed somewhat agreement when they asked if they were planning to perform climate actions (BI3).

Overall, the results suggest that the participants agreed to perform climate action and they intend to perform climate action. Nevertheless, it is essential to note that the standard deviations reveal a significant magnitude, suggesting a substantial degree of variability within the answers. The results suggest that there may be individual differences in the participants' actual behaviours related to climate action, despite their intentions and plans.

Climate change adaptation

Table 14

Action taken to adapt to climate change

Action taken to adapt to climate change	Mean	Std. Dev.	Interpretation
AT1. Walk or cycle to work	4.47	2.25	Somewhat Agree
AT2. Use less electricity	5.03	1.65	Somewhat Agree
AT3. Use public transport going to work	4.81	2.27	Somewhat Agree
AT4. Buy more energy-efficient Devices	5.32	1.64	Agree
AT5. Recycle e-waste	5.33	1.70	Agree
AT6. Participate in environmental campaigns in the company	3.75	1.95	Neutral
Overall Mean	**4.79**	**1.12**	**Somewhat Agree**

The respondents of the study were also asked about their actions taken to adapt to climate change. The respondents agreed to buy more energy-efficient devices and recycle e-waste. Meanwhile, they somewhat agreed to engage in active commuting by walking or cycling to their workplace, reduce their power use, and utilize public transportation for their daily commute. Notably, the respondents have a neutral stance in participating in environmental campaigns in the company.

In summary, the results showed moderate response. The participants expressed hesitations regarding their willingness to undertake measures aimed at mitigating the impacts of climate change.

Relationship of demographic profile and climate change knowledge to attitude and subjective norms

Are demographic profile and climate change knowledge significantly affects the following:

Attitude

Table 15

Spearman Rank – Attitude

Relationship of Profile to Attitude	Spearman	p-value	Interpretatio n	Decision	Remarks
Age	-0.080	0.255	No Relationship	Do Not Reject Ho	Not Significant
Education	-0.159	0.023	Weak Negative	Reject Ho	Significant

*Reject Ho if $p < 0.05$

A Spearman rank correlation analysis was performed to evaluate the association between attitude and the age and education of the respondents. The findings indicate that there was no statistically significant correlation between attitude and age (r=- 0.080, p= 0.255). Nevertheless, a significant association was seen between attitude and education, as shown by a negative correlation coefficient (r = -0.159, p = 0.023).

Table 16

One Way ANOVA – Attitude

Relationship of Profile to Attitude		Mean	SD	F-value	p-value	Decision	Remarks
Gender	Female	4.90	0.34	0.170	0.841	Do Not Reject Ho	Not Significant
	Male	4.87	0.44				
	Other	4.87	0.27				

Location	Germany	4.88	0.41	0.700	0.622	Do Not	Not
	Netherlands	4.57	0.24			Reject	Significant
	Singapore	4.82	0.41			Ho	
	Sweden	4.83	0.14				
	Switzerland	5.02	0.30				
	United Kingdom	5.01	0.26				
Department	Management	4.69	0.38	2.170	0.026	Reject	Significant
	Accounting	5.17	0.24			Ho	
	Controlling	5.13	*				
	Employee Services	4.91	0.20				
	IT/ Infrastructure	4.63	0.63				
	Sales and marketing	4.90	0.32				
	Operations and support	4.94	0.31				
	Product development and solutions	4.91	0.36				
	Facility and care	5.09	0.34				
	Other	4.98	0.19				

*Reject Ho if $p < 0.05$

A one-way between-subjects design an analysis of variance (ANOVA) was performed to assess the statistical significance of the respondents' attitudes with respect to gender, location, and department. The results indicated that there was no statistically significant association between gender ($F = 1.70$, $p = 0.841$) and location ($F = 0.700$, $p = 0.622$) at a significance threshold of $p > 0.05$.

Furthermore, the results showed that there were no significant correlations seen between the participants' attitude, their gender (male, female, or other), and their geographical location (Germany, Netherlands, Singapore, Sweden, Switzerland, and United Kingdom). Nevertheless, a significant correlation was seen between individuals' attitude and their department affiliation ($F = 2.170$, $p = 0.026$) at a significance level of $p > 0.05$.

Table 17

Pearson Correlation – Attitude

Relationship of Knowledge to Attitude	Spearman	p-value	Interpretation	Decision	Remarks
Nature	0.081	0.255	No Relationship	Do Not Reject Ho	Not Significant
Causes	0.373	0.000	Moderate	Reject Ho	Significant
Effects	0.474	0.000	Moderate	Reject Ho	Significant

******Reject Ho if $p < 0.05$

A Pearson Correlation was employed to evaluate the association between individuals' attitudes and their knowledge pertaining to climate change, including its nature, causes, and impacts. Based on the obtained data, it was found that there was no statistically significant connection seen between attitude and the type of climate change ($R = 0.081$, $p = 0.255$) at a significance level of $p > 0.05$. This indicates that there is no distinct association between the two variables.

Meanwhile, a significant relationship was seen between individuals' attitudes and their perceptions of the causes of climate change ($R = 0.373$, $p = 0.000$), as well as their perceptions of the impacts of climate change ($R = 0.474$, $p = 0.000$), with statistical significance set at $p > 0.05$. In summary, a robust positive association was seen between the attitudes of the respondents and the causes of climate change. Likewise, a strong positive association was seen between the respondents' attitude and the impacts of climate change, although the link between attitude and the kind of climate change remained consistent.

Subjective Norms

Table 18

Spearman Rank – Subjective Norm

Relationship of Profile to Subjective Norms	Spearman	p- value	Interpretation	Decision	Remarks
Age	0.014	0.838	No Relationship	Do Not Reject Ho	Not Significant
Education	-0.013	0.853	No Relationship	Do Not Reject Ho	Not Significant

*Reject Ho if $p < 0.05$

The Spearman's correlation coefficient was employed to assess the relationship between subjective norms and age, as well as subjective norms and education. The findings of the study indicated that there was not a statistically significant correlation between subjective norm and age (correlation coefficient = 0.014, p-value = 0.838). Furthermore, the analysis revealed that there was no statistically significant correlation between subjective norm and schooling (Rs = -0.013, p = 0.853) at a significance level of 0.05. In general, the findings indicate that there is no significant relationship between subjective norm and age, as well as subjective norm and education.

Table 19

One Way ANOVA – Subjective Norm

Relationship of Profile to Subjective Norms		Mean	SD	F-value	p-value	Decision	Remarks
Gender	Female	3.42	1.32	3.65	0.02	Reject	Significant
	Male	3.78	1.28		8	Ho	

	Other	2.63	1.08				
Location	Germany	3.50	1.27	3.93	0.00	Reject	Significant
	Netherlands	4.38	0.88		2	Ho	
	Singapore	3.32	0.79				
	Sweden	5.35	1.07				
	Switzerland	3.44	2.26				
	United Kingdom	4.54	1.35				
Department	Management	3.65	1.21	3.14	0.00	Reject	Significant
	Accounting	3.75	0.35		1	Ho	
	Controlling	1.00	*				
	Employee Services	1.25	0.25				
	IT/Infrastructure	3.63	1.33				
	Sales and marketing	3.84	1.32				
	Operations and support	3.94	1.48				
	Product development and solutions	3.67	1.21				
	Facility and care	1.80	0.33				
	Other	3.54	1.19				

*Reject Ho if $p < 0.05$

A one–way between subjects ANOVA was used to assess the association

between subjective norm, gender, location, and department. The findings indicated a statistically significant association between subjective norm and gender (F = 3.65, p = 0.028), location (F = 3.93, p = 0.002), and department (F = 3.14, p = 0.001), as determined by the p-values over the threshold of 0.05. Hence, the results indicated a statistically significant relationship between gender, geographical location, and department with regards to subjective standards.

Table 20

Pearson Correlation – Subjective Norm

Relationship of Knowledge to Subjective Norms	**Spearman**	**p- value**	**Interpretation**	**Decision**	**Remarks**
Nature	-0.040	0.571	No Relationship	Do Not Reject Ho	Not Significant
Causes	0.014	0.839	No Relationship	Do Not Reject Ho	Not Significant
Effects	-0.016	0.823	No Relationship	Do Not Reject Ho	Not Significant

Reject Ho if p < 0.05

The Pearson correlation coefficient was employed to assess the correlation between subjective norm and the nature, causes, and impacts of climate change.

Based on the results, it was found that there was no statistically significant link seen at a significance level of p > 0.05 for the variables of nature (R = -0.040, p = 0.571), causes (R = 0.014, p = 0.839), and effects (R = -0.016, p = 0.823). Hence, the findings indicated a lack of statistically significant correlation between the participants' level of understanding about the nature, causes and effects of climate change and their subjective norms.

Relationship of attitude and subjective norms to behavioral intention

Are attitude and subjective norms significantly affects the respondents' behavioral intention?

Table 21

Pearson Correlation

Relationship to Behavioral Intention	Spearman	p-value	Interpretation	Decision	Remarks
Attitude	0.285	0.000	Weak Positive	Reject Ho	Significant
Subjective Norms	0.431	0.000	Moderate	Reject Ho	Significant

*Reject Ho if $p < 0.05$

Spearman correlation coefficients and p-values were used to assess the association between behavioral intention, attitude, and subjective standards. The findings indicated that there is a significant relationship between the respondents' attitude ($R = 0.285$, $p = 0.000$) and Subjective Norms ($R = 0.431$, $p = 0.000$) and Behavioral Intention at a significance level of 0.05. Therefore, it can be observed that there is a positive relationship between attitude and subjective norms, and the subsequent increase in respondents' behavioral intention. The results indicated that the participants display a favorable disposition towards the activity and regard it to be socially permissible, as inferred from subjective standard, thus, it is more likely that participants will have a string intention to engage in climate action.

Therefore, participants are more likely to have a stronger intention to perform climate action. The results of this study were consistent with the theoretical expectations of the theory of reasoned action. It provides an empirical support for the idea that attitude

and subjective norms play a substantial role in predicting behavioral intention. This view was supported by research conducted by Nguyen et al. (2018b), wherein they discovered that the Theory of Reasoned Action (TRA) served as a significant predictor of individuals' engagement in climate change activities.

CHAPTER V

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

This section provides a comprehensive synthesis of the findings and gives the conclusion that has been established from the results obtained during the study. Additionally, this chapter examines recommendations for future research on about climate change knowledge, attitudes, norms, and intentions.

Summary

This study is a descriptive-quantitative study on climate change knowledge, attitudes, and behavioral intentions of employees of a global software company located in Germany, Singapore, United Kingdom, Netherlands, Sweden, and Switzerland. This research was carried out to examine the employees' demographic profile, level of perception in terms of climate change knowledge, subjective norms, attitudes, and behavioral intentions. In addition, the research also investigated the respondents' actions to adapt to climate change, the relationship of demographics, climate change knowledge, attitudes, and subjective norms and the relationship of attitudes, subjective norms, and behavioral intentions.

Complete enumeration method was utilized to select the participants of the research. Online survey schedule was utilized as the primary data collection tool, divided into six major parts: (1) demographics, (2) sources of information, (3) climate change knowledge, (4) subjective norms, (5) attitudes and (6) climate action. Different statistical approaches were utilized to examine the findings. These techniques include Spearman rank, One Way ANOVA, and Pearson correlation to measure the correlation

of each variable. The focus of the analysis was to determine the relationships among different variables such as attitude, age, education, gender, location, department, subjective norm, nature, causes, effects, and behavioral intention. The use of statistical techniques allowed for a quantitative representation of the data results providing a clear understanding of the connections between the variables. Specifically, the research aimed to assess the respondents' media consumption patterns and preferences, explore their climate change knowledge, climate change attitudes and behavioral intentions, identify the relationship between the respondents' demographics to climate change attitudes, subjective norms, and climate change knowledge and investigate their climate action to adapt to climate change.

The sample contained slightly more males (55.94%) than females (41.09%). Majority of the respondents were aged 42 to 27 years old (45.54%). Additionally, the respondents were highly educated, with 39.60% having a bachelor's degree and 33.17% having a master's degree. Most participants reside in Germany, and 79% of them were from the product development and solutions department.

Majority of the participants indicated that their sources of climate information were online news from major news organizations, conversations with friends and colleagues, social media, and television. On the other hand, traditional media such as television, radio, and print received the lowest percentage. With more individuals turning to the internet for news and information, this shift towards online information sources is consistent with larger trends in media consumption. Technological advancement plays a critical role in shaping public opinion and understanding of climate change issues and challenges.

Moreover, most of the respondents want climate change information to be communicated through online posting on Yammer and company talks. The

respondents also want climate information to be communicated through webinars, on social media, and various websites. This only implies that digital platforms are crucial for disseminating climate information. Moreover, the majority of the respondents also want climate information to be communicated in company talks such as company gatherings and events. Aside from the digital channels, this also highlights the importance of peer-to-peer communication in communicating climate change.

Overall, the respondents demonstrated a moderate level of knowledge on climate of nature, causes, and effects with strong agreements to certain statements. Consequently, according to the results, they are more knowledgeable about the consequences of climate change than about its causes and nature. It could be that the respondents are more familiar with the effects of climate change compared to its causes and nature. In addition, they showed strong agreement that climate change is real and happening. Moreover, the respondents strongly believed that burning fossil fuels like oil and coal contributes to climate change, and deforestation is one of the causes of climate change. Moreover, the respondents also demonstrated strong agreement that climate change causes biodiversity loss the rise in water levels in seas and oceans is a result of climate change, and climate change may cause an increase in extreme weather conditions such as heat waves, droughts, and strong hurricanes.

The respondents had a neutral stance towards social pressure and expectation from their colleagues and friends for taking climate action. It's interesting to note that they didn't feel social pressure from their friends and family to take climate action. Consistent with the study of van der Linden et al. (2015) about the social influence of motivating individuals to perform climate action, he found that there's no direct social pressure from their peers to take climate action. The author also pointed out that one of the reasons could be that individuals are more likely to engage in pro-environmental

behavior when they feel that it aligns with their social identity or group membership. The author also explained that social influence might be indirectly operated through factors such as social identity and perceived social norms.

The respondents demonstrated a positive attitude towards climate change. Most respondents showed a positive attitude with strong belief that climate is changing and there is evidence of climate change globally. The respondents also expressed concern about global climate change. Additionally, they demonstrated a strong agreement that climate change will impact the environment in the next 10 years and will impact the future generations. Further, they strongly believed that human activities cause climate change, and it has a negative impact on our lives.

The respondents also expressed a desire to take climate action. However, they were undecided when they asked if they are planning to perform climate action. Interestingly, the respondents also expressed a lack of certainty in taking action to adapt to climate change. These findings are consistent with the results when they were asked if they are planning to perform climate action. Findings revealed that the respondents are neutral to take action to adapt to climate change. Specifically, they are undecided to walk or cycle to work, use less electricity and use public transportation going to work.

Conclusion

Scientific data established that the business sector is suffering from the effects of climate change. Business organizations will be affected by extreme weather conditions such as heat waves, typhoons, droughts, and rising sea levels.

This study was conducted in a global software company which is in Germany

(HQ), United Kingdom, Netherlands, Singapore, Switzerland and Sweden provides valuable information for communicators and stakeholders about employees' climate change knowledge, attitudes, subjective norms, behavioral intentions, and adaptation. The study found that the majority of employees were neutral about their knowledge of climate change such as its nature, causes, and effects. Similarly, majority of the respondents also portrayed a neutral stance on social pressure and expectation from their colleagues and friends for taking climate action. However, based on the results, the employees demonstrated a positive attitude towards climate change, strongly believed that climate is changing and expressed concern about global climate change. Additionally, they also expressed a desire to take climate action. However, findings of the study showed that the respondents were neutral in taking actions to adapt to climate change. The findings of the study imply that while employees show a positive attitude towards climate change and have the intention to take climate action, they are neutral to take action to adapt to climate change.

Therefore, based on the findings, it can be inferred that climate *neutrality (Klimaneutralität) or climate change neutrality* refers to an individual's behavioral intention and making plans to perform a climate action, but they are neutral to perform climate actions. In other words, while there is a positive attitude towards addressing climate change and a willingness to take climate action, there seems to be a barrier or resistance preventing employees from fully taking the necessary actions to mitigate the effects of climate change. In social science, particularly in the area of climate change communication, terminologies such as climate change skepticism and climate change denial are well used terms in the ongoing debate about climate change. However, there are no studies yet describing individuals' neutral behavior or attitude towards climate change. Neutrality in social science refers to impartiality, absence of bias, or lack of

strong preference or opinion towards a particular side or position. Thus, the term climate neutrality refers to the impartial or lack of strong position towards climate change action while expressing concern about climate change. The concept *of climate neutrality* has the potential to significantly contribute to the body of knowledge in social sciences and climate change communication in future studies. Currently, there have been studies about different behavioral phenomenon related to climate change such us denials, skepticism, concerned, alarmed and cautious. However, there are no studies about climate change neutrality and its meaning. Future research in development communication can explore the concept of climate neutrality and examine how to employ communication interventions and approaches to address neutrality.

Furthermore, adding KAP variables such as climate change knowledge, attitude, and practice provides to the existing variables of the Theory of Reasoned action such as attitude and subjective norms more understanding of behavioral intention. The combination of the variables enhances predictive power of TRA variables and provides more nuances in understanding the relationship of different variables to predict behavioral intention. Lastly, the findings of the study validated that the TRA is a significant predictor of behavioral intention.

Recommendations

This section of the study presents recommendations for two areas: (1) for future studies (2) for communicators and other stakeholder; and (3) recommendations in development communication.

For future research

The research design employed in this study was descriptive-quantitative in

nature.

Based on the present methods, it is recommended for future researchers to:

1. Replicate the study with a larger and more diverse sample. This study is based on a specific sample and locations which may not represent a broader population.
2. Uncover wider and deeper explanation about climate neutrality, it is recommended to explore climate neutrality phenomenon.
3. Consider employing various statistical methodologies, such as regression analysis or structural equation modeling, to enhance the understanding of the correlation between profile characteristics and attitudes.
4. Explore additional profile variables that could influence attitude such as socioeconomic status, cultural norms, live experiences, psychological factor or personality traits.
5. Consider additional variables such as perceived control behavior, self-efficacy, emotions, social norms, perceived benefits and costs, and environmental factors to gain a more comprehensive understanding of the factors that influence behavioral intention.
6. Utulize a combination of quantitative and qualitative methods to uncover deeper explanations of climate change knowledge, attitude and behavioral intentions, and their relationships.

For communicators and other stakeholders

Design effective communication strategies to address climate neutrality

This study recommends that communicators should design effective communication strategies to address climate neutrality. It is critical to understand the target audience and tailor the messaging based on audience's language, values, and experiences. It is advisable to adopt behavior change communication (BCC) which encourages people to change their behaviors. With the concept and principles of this communication strategy, communicators and stakeholders would be able to analyze, strategize, design tailored messages, implement, and monitor programs towards changing individual's behavior.

Use evidence-based information

Communicators must provide clear, concise, and trustworthy evidence-based information to gain trust and confidence of the people and use credible sources and references to support the claims. Utilizing scientific and evidence-based information are critical in addressing climate neutrality. Science-based climate information can be posted through various channels such as posting on Yammer or company talks.

Development climate change awareness programs

Facilitating climate change awareness programs is very important to facilitate behavioural change, increase awareness among employees and address climate neutrality. There are few ways to drive climate change awareness. This includes driving awareness campaigns on social media, run company-based programs that will encourage employees to take climate action, partner with grassroots climate organizations in the community, and attend or sponsor events such as community clean up. Promoting sustainable behaviors such as using public transport, walking or

cycling to work, using less electricity, buying energy-efficient devices, and recycling e-waste would bring a positive impact to the environment.

Framing messages

Persuasive message framing may be employed by communicators to promote climate activities by emphasizing the advantages associated with these efforts, including but not limited to financial savings, health benefits, and environmental cleanliness. It is a fact that climate neutrality is a new concept in the growing number of climate attitudes and behaviors. In designing and creating messages, it is critical to address climate neutrality in framing communication messages. Lastly, communication should provide actionable insights to address climate solutions and empower employees to take the opportunity to seize the chance to contribute towards minimizing the impacts of climate change.

Recommendations in development communication

There hasn't been much research done on the concept of climate neutrality (Klimaneutralität) in social sciences or climate literatures. Based on the findings of this study, climate neutrality describes to individual's positive attitudes and intention towards climate action but has a neutral stance about performing it. Climate neutrality (Klimaneutralität) was derived from an enhanced predictive model which includes the combination of KAP and TRA variables such as climate change knowledge (nature, causes, and effects), demographics, attitudes, subjective norms, and adaptation. It is also interesting to investigate how the concept of climate neutrality (behavioral intention) that is derived from attitude and subjective norms—relates to a specific

behavior. Based on Martin Fishbein and Ajzen's Theory of Reasoned Action, attitudes and subjective norms are strongly connected with intention, which means that behavioral intention is likewise correlated to an actual behavior. The Theory of Planned Behaviors (TBP), an expansion of TRA, may be used as a tool to explore the connection between behavioral intention and actual behaviors employing additional component known as perceived behavioral control to predict an actual behavior.

Furthermore, based on the theoretical underpinnings of the Theory of Reasoned Action, it is suggested that a positive attitude towards a certain activity, along with the perception of social norms approving to carry out the behavior, will result in a higher intention. However, according to the findings of this study, the subject norms and climate change knowledge of the participants were found to be neutral. In this particular study, it can be argued that subjective norms and climate change knowledge have a significant impact on an individual's motivation to engage in a certain conduct that resulted to neutrality.

In the previous literatures, terminologies such as skepticism and denial are most used terms in climate change studies. Interestingly, there is a growing number of research about the behavior and attitude clusters towards climate change. According to Kácha et al. (2022), it was identified that individuals may be categorized into four distinct groups depending on their attitudes and views about climate change. These groups include the engaged, pessimistic, apathetic, and dubious. Furthermore, according to Yale's Climate Communication recent research on audience segmentation analysis based on climate attitudes, the researchers identified four analyses based on individuals' attitude, perception, and behaviour. The segmentation analysis includes alarmed, concerned, cautious, and disengaged. To date, no research has been conducted that specifically examines the neutral behavior or attitude of individuals

towards climate change. It is imperative to understand all of the factors that have influence in climate neutrality to develop targeted communications and design strategies to promote climate action and sustainable behaviours.

As individuals' perception towards climate change evolve, new terms and concepts in climate literature also emerge. Thus, this study recommends the inclusion of climate psychology as a sub-domain of climate action, including climate change denialism, acceptance, and advocacy, with a direct relation to behavioural intention. Additionally, the study proposes the incorporation of "climate neutrality" as a concept within the climate literatures and social sciences, as defined by this study.

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APPENDICES

Appendix A: Informed Consent form and Survey Questionnaire

INFORMED CONSENT FORM

Informed Consent Form for the *research participants of "Climate Change Knowledge, Attitudes and Behavioral Intentions among Employees of a Global Software Company" thesis.*

Researcher: Mike Antolin

University of the Philippines Open University

INTRODUCTION

This research is being conducted by Mike Antolin, a Master of Development Communication student from University of the Philippines Open University (UPOU) This study is part of the academic requirement for the Master of Development Communication program under Faculty of Information and Communication studies in University of the Philippines Open University.

PURPOSE OF THE RESEARCH

The objective of this study is to investigate climate change knowledge, attitudes, subjective norms, and behavioral intentions of employees to facilitate company leaders, communicators, and stakeholders in developing efficient communication plans and climate-related activities.

WHO CAN PARTICIPATE?

Global software company employees which are located in Germany, the United Kingdom, Netherlands, Sweden, Switzerland, Singapore and Philippines.

VOLUNTARY PARTICIPATION

Participation in this study is voluntary, and participants have the right to decline participation or withdraw from the study at any point without incurring any negative consequences or penalties. You may also decline to answer specific questions.

PROCEDURES

To participate in this study, it is necessary to complete the online survey. Participants in the study may answer the online questionnaire personally or have it read aloud by the researcher and afterwards transcribed. The duration of participation in the study ranges between 10 to 20 minutes, depending on the extent and depth of the participants' answers. The findings of this investigation will be documented, analyzed, and included into the researcher's thesis manuscript. Please be assured that the data will be safely stored and subsequently deleted following the standard stoarge period of 3-5 years.

RISK

Participants of the study may experience discomfort if they have dissent or opposing viewpoints on climate change.

POTENTIAL BENEFITS

Research participants will be contributing to thebody of knowledge in determining climate change knowledge, attitudes and behavioral intentions that can influence business leaders, communicators and shareholders to develop climate change communication strategies and climate-related programs. Participants of the study will potentially contribute to strengthening the global response to the effects of climate change and to achieve carbon-neutral world by 2050.

ANONYMITY

The participation in this study is entirely anonymous. The information shared by the participants cannot be traced of linked back to the computer used or to participant's identity. The data will be saved within the databank of the online survey site. The data will be accessible just to the researcher.

CONTACTS AND QUESTIONS

If you have questions about this study, you may contact me at +6593877921 or send me an email at mcantolin1@up.edu.ph.

If you agree to participate, kindly sign this consent form. Thank you very much!

CERTIFICATE OF CONSENT

I have accurately read this form or had this form read to me about the purpose of the survey and its possible risks and benefits. I understand that I can refuse to participate in this survey, even after signing this form. I can also stop answering at any point if I feel uncomfortable with the questions.

I understand that:

- the purpose of the survey is to determine employee climate change knowledge, attitudes and behavioural intentions
- my participation is voluntary and anonymous; and
- only the researcher will know my responses

Name of Participant:

Signature of Participant:

Date:

Appendix B: Instrument Matrix

Parts		Variables
I	Demographics	• Age Generation Z (1997 -) Millennials (1981 - 1996) Generation X (1965 - 1980) Baby Boomers (1946- 1964) Silent (1928 - 1945) • Gender Female Male Non-binary Prefer not to say • Educational Attainment No formal education Primary education Secondary education Tertiary education Masters PHD • Job Function Management Accounting Controlling Employee Services (HR) IT/Infrastructure Sales and marketing Operations and support Product development and solutions • Location Germany United Kingdom Switzerland Sweden Netherlands Singapore
II	Sources of climate information	• Television • Online news sites from major news organisation • Government • NGOs • Religious institutions • Conversations with colleagues, friends, or family • Social media

		• Printed newspaper • Radio • Online radio • Don't know • I don't pay attention to climate change
	How respondents would like information on climate change to be communicated in the organization	• Printed brochures or handouts • Social media: LinkedIn, Facebook, Instagram • Online posting on Yammer Webinar sessions • Company talks (events, gatherings) • Email/newsletter Podcast • Website
IV	Climate Change Knowledge	Nature of Climate Change Climate change is happening and is real. Climate change manifestations varies from one climatic area to another region. Climate change is unavoidable due to the nature and manner of modern daily living. Climate change is just the natural shifts in Earth's temperatures.
		Climate change is within human control. In general, climate change is damaging, and it causes more harm than good. Climate change is the evident long-term shift in weather variables caused by increases in the amounts of greenhouse gases in the atmosphere. Climate change scientific evidence is unreliable. Since 1900, the average minimum and maximum temperatures have never increased anywhere on the planet. It is too late for humanity to stop or minimize the effects of climate change. Causes of Climate Change Climate change is mostly caused by industrial pollution.
		The impact of human activities on Earth's surface temperatures is low. The burning of fossil fuels such as oil and coal leads to climate change. Climate change is made worse by deforestation.

		The cause of climate change is global warming caused by increases in the amounts of greenhouse gases in the atmosphere. The transportation industry does not significantly contribute to climate change. The ozone hole was the primary cause of climate change. Climate change is caused by natural events such as volcanoes rather than by human activity.
		Climate change is worsened by agricultural operations such as animal and plant cultivation. The energy sector is the one that contributes the most to climate change. Effects of Climate Change Climate change contributes to biodiversity loss. Climate change causes a decline in Earth's temperature all around the world. Soil fertility increases as a result of climate change. The human community is currently experiencing and suffering from the consequences of climate change. Climate change causes rising sea and ocean levels, as well as the submergence of islands and adjacent areas.
		Climate change reduces the incidence of communicable and infectious plant, animal, and human illnesses. Climate change may lead to a decrease in plant and animal food production and, as a result, a degradation in food security. Climate change may cause a shortage of water for residential consumption as well as irrigation of plants and animals. In some parts of the world, climate change may increase the frequency and intensity of extreme weather events such as heat waves, drought, hurricanes, and heavy rains. Climate change adds to increased wind and water erosion of soil. Source: Derived from Nabeel M. Gazzaz & Bassam A. Aldeseet (Gazzaz & Aldeseet,

		2021)
III	Subjective norms	I feel under social pressure, from my professional colleagues, to perform climate action. Most people who are important to me want me to perform climate action. It is expected of me to perform a climate action. The people in my life whose opinions I value would expect me to perform climate action.
III	Attitudes	I believe our climate is changing. I am concerned about global climate change. I believe there is evidence of global climate change. In the next ten years, global climate change will have an impact on our environment. Global climate change will impact future generations.
		Individuals' actions can have a positive effect on global climate change. Human activity contributes to global climate change. Climate change has a negative effect on our lives. We cannot do anything to stop global climate change. I can do my part to make the world a better place for future generations. Knowing about environmental problems and issues is important to me. I think most of the concerns about environmental problems have been exaggerated. Things I do have no effect on the quality of the environment. It is a waste of time to work to solve environmental problems.
		There is not much I can do that will help solve environmental problems. Source: Derived from Items 1-10 Christensen & Knezek, 2014 Items 11-15 Adapted from Wisconsin Center for Environmental Education (1994)

V	Action taken to adapt to climate change.	Have you taken the following actions to adapt to climate change? • Walk or cycle to work Use less electricity • Use public transport going to work • Buy more energy efficient devices • Recycle e-waste • Participate in environmental campaigns in the company
VI	Behavioral intention	• I intend to perform climate action • I want to perform climate action • I expect to perform climate action • I am planning to perform climate action.

Appendix C: Table of variables

Table 1: Nature of Climate Change

Nature of Climate Change	Strongly Disagree (1)	Disagree (2)	Somewhat Disagree (3)	Neutral (4)	Somewhat Agree (5)	Agree (6)	Strongly Agee (7)	Mean
1. Climate change is real and happening.	3	0	1	2	5	13	178	6.75
2. Climate change manifestations varies from one climatic area to another region.	3	3	9	16	40	63	68	5.71
3. Climate change is unavoidable due to the nature	21	42	33	28	31	22	25	3.85

and manner of modern daily living.								
4. Climate change is just the natural shifts in Earth's temperatures.	110	52	19	6	5	5	5	1.91
5. Climate change is within human control.	3	13	15	24	47	51	49	5.22
6. In general, climate change is damaging, and it causes more harm than good.	5	4	3	7	21	50	112	6.13
7. Climate change is the evident long-term	4	5	3	17	37	74	62	5.71

shift in weather variables caused by increases in the amounts of greenhouse gases in the atmosphere.								
8. Climate change scientific evidence is unreliable.	113	62	9	8	4	3	3	1.76
9. Since 1900, the average minimum and maximum temperatures have never increased anywhere on the planet.	145	24	9	12	3	1	8	1.71

10. It is too late for humanity to stop or minimize the effects of climate change.	91	46	25	12	20	5	3	2.26
Overall Mean								**4.10**

1.2 Causes of Climate Change

Table 2: Causes of Climate Change

Causes of Climate Change	**Strongly Disagree (1)**	**Disagree (2)**	**Some what Disagree (3)**	**Neutral (4)**	**Some what Agree (5)**	**Agree (6)**	**Strongly Agee (7)**	**Mean**
1. Climate change is mostly caused by industrial pollution.	5	4	11	22	51	70	39	5.36
2. The impact of human activities on	102	57	20	7	3	6	7	2.00

Earth's surface temperatures is low.								
3. The burning of fossil fuels such as oil and coal leads to climate change.	2	1	2	2	11	40	144	6.54
4. Climate change is made worse by deforestation.	2	1	1	2	16	49	131	6.47
5. The cause of climate change is global warming caused by increases in the amounts	2	3	1	11	32	73	80	6.00

of greenhouse gases in the atmosphere.								
6. The transportation industry does not significantly contribute to climate change.	70	82	24	7	10	3	6	2.20
7. The ozone hole was the primary cause of climate change.	57	47	30	41	11	11	5	2.78
8. Climate change is caused by natural events such as	99	71	11	10	7	2	2	1.86

volcanoes rather than by human activity.								
9. Climate change is worsened by agricultural operations such as animal and plant cultivation.	4	7	4	9	35	61	82	5.85
10. The energy sector is the one that contributes the most to climate change.	5	8	20	54	47	39	29	4.80
Overall Mean								**4.38**

1.3 Effects of Climate Change

Table 3: Effects of Climate Change

Effects of Climate Change	Strongly Disagree (1)	Disagree (2)	Some what Disagree (3)	Neutral (4)	Some what Agree (5)	Agree (6)	Strongly Agee (7)	Mean
1. Climate change contributes to biodiversity loss.	2	0	2	11	13	57	117	6.33
2. Climate change causes a decline in Earth's temperature all around the world.	79	39	16	21	13	21	13	2.83
3. Soil fertility increases as a result of climate change.	65	48	25	39	5	16	4	2.68
4. The human communi	4	3	2	7	38	65	83	5.97

ty is currently experiencing and suffering from the consequences of climate change.								
5. Climate change causes rising sea and ocean levels, as well as the submergence of islands and adjacent areas.	4	2	0	5	16	49	126	6.36
6. Climate change reduces the incidence of	70	51	19	24	12	13	13	2.74

communicable and infectious plant, animal, and human illnesses.								
7. Climate change may lead to a decrease in plant and animal food production and, as a result, a degradation in food security.	5	3	10	31	31	65	57	5.49
8. Climate change may cause a shortage	5	3	4	16	28	59	87	5.89

of water for residential consumption as well as irrigation of plants and animals.								
9. In some parts of the world, climate change may increase the frequency and intensity of extreme weather events such as heat waves, drought, hurricane	4	0	0	5	11	38	144	6.51

s, and heavy rains.								
10. Climate change Climate change adds to increased wind and water erosion of soil.	3	1	3	33	33	53	76	5.75
Overall Mean								**5.05**

1.4. Subject Norms

Table 1: Subject Norms

Subjective Norms	**Strongly Disagree (1)**	**Disagree (2)**	**Somewhat Disagree (3)**	**Neutral (4)**	**Somewhat Agree (5)**	**Agree (6)**	**Strongly Agee (7)**	**Mean**
1. I feel under social pressure, from my professional	42	57	37	36	18	7	5	2.86

colleagues , to perform climate action.								
2. Most people who are important to me want me to perform climate action.	20	49	38	29	41	12	13	3.54
3. It is expected of me to perform climate action.	16	34	32	38	43	23	16	3.95
4. The people in my life whose opinions I value would expect me to perform climate action.	15	28	31	45	38	31	14	4.05
Overall Mean								**3.60**

1.5. Attitudes

Table 1: Attitudes

Attitudes	Strongly Disagree (1)	Disagree (2)	Somewhat Disagree (3)	Neutral (4)	Somewhat Agree (5)	Agree (6)	Strongly Agee (7)	Mean
1. I believe our climate is changing.	0	0	0	2	12	26	162	6.72
2. I am concerned about global climate change.	4	1	2	3	21	47	124	6.33
3. I believe there is evidence of global climate change.	1	0	0	3	14	26	158	6.66

4. In the next ten years, global climate change will have an impact on our environment.	2	2	1	3	22	48	124	6.37
5. Global climate change will impact future generations.	2	1	2	0	9	24	164	6.67
6. In the next ten years, global climate change will have an impact on our environment.	4	8	12	14	52	37	75	5.54

7. Human activities cause global climate change.	2	2	4	2	18	45	129	6.38
8. Climate change has a negative effect on our lives.	4	2	0	7	20	55	114	6.26
9. We cannot do anything to stop global climate change.	99	61	21	8	6	3	4	1.94
10. I can do my part to make the world a better place for future generations.	1	5	3	20	32	43	98	5.96
11. Knowing about	0	0	4	13	33	59	93	6.11

environmental problems and issues is important to me.								
12. I think most of the concerns about environmental problems have been exaggerated.	102	57	15	11	6	5	6	2.01
13. Things I do have no effect on the quality of the environment.	74	65	28	22	8	5	0	2.21
14. It is a waste of time to work to solve environmental problems.	146	36	11	6	0	2	1	1.46

15. There is not much I can do that will help solve environmental problems.	62	61	26	24	15	10	4	2.58
Overall Mean								**4.88**

Table 1: Action taken to adapt to climate change

Action taken to Adapt to Climate Change	**Strongly Disagree (1)**	**Disagree (2)**	**Some what Disagree (3)**	**Neutral (4)**	**Some what Agree (5)**	**Agree (6)**	**Strongly Agee (7)**	**Mean**
1. Walk or cycle to work	35	19	16	21	28	24	59	4.47
2. Use less electricity	8	14	13	23	59	40	45	5.03
3. Use public transport going to work	29	22	11	13	22	31	74	4.81
4. Buy more energy-efficient devices	5	12	12	26	41	41	65	5.32
5. Recycle e-waste	8	9	14	25	36	42	68	5.33

6. Participate in environmental campaigns in the company	28	46	15	39	31	19	24	3.75
Overall Mean								**4.79**

1.7. Behavioral Intentions

Table 1: Behavioral Intentions

Behavioral Intentions	**Strongly Disagree (1)**	**Disagree (2)**	**Somewhat Disagree (3)**	**Neutral (4)**	**Somewhat Agree (5)**	**Agree (6)**	**Strongly Agee (7)**	**Mean**
1. I intend to perform climate action.	4	6	6	17	45	57	67	5.63
2. I will perform climate action.	3	6	6	28	58	39	62	5.46
3. I am planning to perform climate action.	8	11	11	33	47	30	62	5.17
Overall Mean								**5.42**