Climate Change Adaptation Intention among Secondary School Science Teachers: Application of An Extended Model of The Theory of Planned Behavior

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Abstract

This research was conducted to investigate the factors affecting climate change adaptation behavioral intention among Malaysian secondary school science teachers. This study adopted variables from the Theory of Planned Behavior (TPB), namely attitude, subjective norms, and perceived behavioral control , and added one more variable risk perception. Previous research papers have reported that risk perception is one the important predictors in climate change adaptation capabilities. Researcher used SPSS 23.0 to analyze the collected data. Descriptive statistics was used to get mean and standard deviation. The collected data was non-normally distributed, so a spearman correlation test <0.05 was used. The key findings of this study indicate that risk perception (β=0.674), specific attitude (β=0.651), subjective norms (β=0.643) and perceived behavioral control (β=0.587) have significant associations with climate change adaptation behavioral intention among teachers. This research contributes to effective socio scientific decision-making on climate change adaptation among teachers which may eventually motivate young generations to dive into and explore climate change adaptation approaches.

Keywords: Theory of Planned Behavior, Risk Perception, Climate Change, Adaptation, Secondary School Science Teacher.

Introduction

According to World Economic Forum 2021 analysis, climate action failure is the highest impact risk for next decade (The Global Risk Report, 2021). The environmental risks such as cyclones, wildfires, floods and droughts are now undeniable due to the failure of climate change mitigation and adaptation behavior. The increased recognition of climate change issues, required effective responses that integrate adaptation, mitigation, and sustainable development paths (Winn et al., 2011). In 2015, Paris Agreement adopted 17 Sustainable Development Goal and the 13th goal is *take urgent action to combat climate change* and impacts by setting targets for strengthening resilience and adaptive capacity to climate related hazards, integrate climate change into national policy, improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact

reduction and early warning . The goal aims to mobilize US$100 billion annually by 2020 and extends to 2025 to support developing countries in climate change adaptation and invest in low-carbon investment (United Nations, 2015; Mitchell et al., 2021). Thus, it is clear that understanding how humans determine pro environmental behavior is vital to address the climate change challenges.

In Malaysia, it was found that the National Climate Change Policy and any action plans to address climate issues is given priority to mitigation over adaptation and there is a gap in terms of implementation between adaptation strategies that have been and are being implemented (Tang, 2018). Few researchers have confronted that the hindering factors for the implementation of adaptation strategies are government policies, social, economy and also politics (Merila & Hendry, 2014; Berrang-Ford & et al., 2015; Valkengoed & Steg, 2019) . According to the Eleventh Malaysia Plan 2016-2020, adaptation actions are given priority to vulnerable sectors such as agriculture, water, urban infrastructure and health. Most of the research studies on climate change focus on the flood disaster, as Malaysia is vulnerable to flash floods (Abdul Halim et al., 2017; Jamaluddin et al., 2018 ; Zulkarnain et al., 2020).

The importance of climate change adaptation actions at individual level is documented by Fischer, (2019). Previous studies have been documented research based on teachers' knowledge, awareness, belief, attitude, perception and teaching and learning methods in climate change subjects (Dal et al., 2015; Liu et al., 2015; Lucy & Catherine, 2016; Herman & Vernaza-Hernandez, 2017; Seroussi et al., 2019). It has been noticed that studies on climate change adaptation have received less attention and this draws the interest of the author to conduct study on teachers' climate change adaptation behavior intention. Climate change adaptation behavior is one of the crucial roles to engage in. Recently, flash floods in Malaysia have become more frequent and intense. The flash flood of December 2021 can be classified as one of the worst floods with a massive impact. Such calamaties proved that our people are still not aware and adapt to the occurrence of climate change. With such occurrences expected to be more common in future our strong belief is urging authorities to be with disaster preparedness behavior. Adaptation behavior towards climate change enables us to be mentally and physically prepared to reduce the consequences due to this climate crisis. The past researches on adaptation behavior intention in Malaysia are scarce and the studies conducted in other countries may not be able to be generalised and applicable under Malaysia's context due to difference in various aspects such as social, economic, cultures and also socio- geographical. Therefore, this research would be useful for future researchers pursuing research on climate change adaptation behavior intention among Malaysian citizens. Over the last decade, there has been surge in interest applying the theory of planned behavior (TPB) to environmental science research around the world, as it has important implications predicting and managing individual behavior, to enhance social and environmental sustainability (Ding et al., 2018; Li et al., 2019). Icek Ajzen advocated TPB in 1991, and it extends from Fishbein and Ajzen's Theory of Reasoned Action (TRA) (1975). TPB differs from TRA in that TPB includes perceived behavioural control as a new variable (Robinson 2010). Thus, TPB is designed with three socio-psychological and behavior-specific factors, namely attitude, subjective norm, and perceived behavioural control, to predict intention, and intention becomes actual behaviour (Heinrich, 2016). TPB is an extensively used theory in measure of climate change behavior (Tikir & Lehmann, 2011; Harries, 2012; Lin, 2013; Clement et al., 2014; Masud et. al., 2015; Jellason et al., 2019). According to Bao et al (2016) additional variables can be added in Theory of Planned Behavior due to a large proportion of variance unaccounted for both intentions and behavior. Risk perception is the important measure on

climate change related behavior and past studies have confronted the linkages between risk perception and behavior (Han & et al., 2017; Han & et al., 2017).

In Malaysia, research at the individual level in this scope is still rare. No studies, to the best of our knowledge have so far explored this relationship on theoretical framework among teachers. Thus, this paper is meant to fill the gap by examining secondary school science teachers' climate change adaptive behavior intention by utilizing this extended theory of planned behavior among postgraduates teachers at education faculty, National University of Malaysia. This theory consists of attitude, subjective norm (SN) perceived behavioral control (PBC) and risk perception that may influence teachers' climate change adaptation behavior intention (Figure 1).
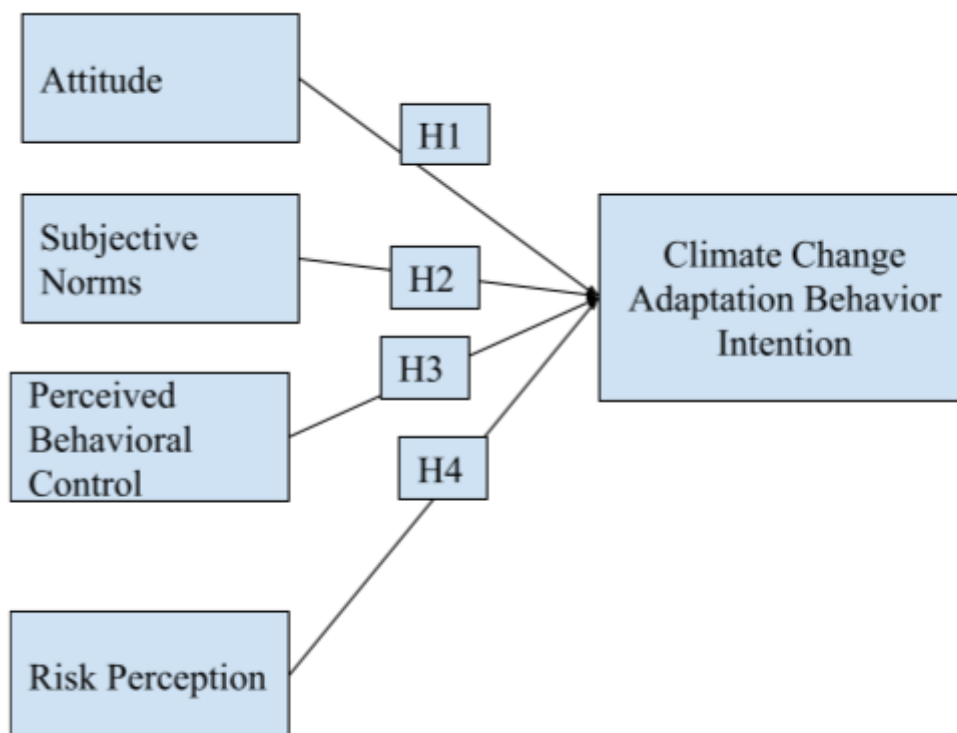

Figure 1 : *Theoretical Framework*

The significance of climate change adaptation practices cannot be denied in today's world. Individual understanding of climate change adaptation is crucial because it has effects on their behavior towards climate change issues (Fischer, 2019) as well as their ability to practice and influence the people around them. Thus, this research is about the climate change adaptation behavioural intention among science teachers. Teachers should be role models by engaging themselves in a methodical approach to the issue of climate change in order to shape students' knowledge and beliefs on the subject. To the best of our knowledge, in Malaysia there is no published research on teachers' adaptation behavior intentions towards climate change, which researcher aim to address in this research article. Element of adaptation behavior is likely neglected in this field of research especially when subjected to teachers. Element of adaptive behavior is important for vulnerability reduction, preparedness during on-going climate change issues and also preparedness on its consequences. No mitigation actions alone can prevent a climate crisis, but interlinkages between mitigation and adaptation are important. In overseas, previous research on this scope mostly emphasize elements of

climate change awareness, knowledge, beliefs, attitudes, perspectives, teaching and learning approaches about climate change in the classroom (Dal et al., 2015; Liu et al., 2015; Lucy & Catherine, 2016; Herman et al., 2017; Seroussi et al., 2019). Thus, this research was initiated to investigate the adaptation behavior intention among secondary school science teachers in Malaysia.

This research focuses on the adaptive behavior intention towards climate change among secondary school science teachers, pursuing Masters in Education at National University of Malaysia. The intention of adaptive behavior among teachers is vital. Researcher believe such intention may lead to further research in future on teachers' competencies to relate current climate change issues that are aligned with the curriculum and implemented in educational settings, as well as how to seek out more progressive involvement from the educational community and use collaborative problem-solving techniques. Such action requires continual pro environmental training for the adoption of greener behavior. Few researchers have addressed that although people are aware of environmental issues and know what they should do to protect the environment, that does not mean they intend to take action. As a result, there are slew of other potential intervening elements, such as social-psychological aspects, that can influence environmental intentional behaviour (Frantz & Mayer, 2014; Mei et al., 2016). Thus, this research focuses on the influence of attitude, subjective norms, perceived behavioral control and risk perception towards climate change adaptation behavior intention among science teachers.

Research Aim and Research Questions

Due to the scarcity of research on adaptive behavior, especially among teachers in our country, the aim of this study is to investigate the aspects that will influence secondary school science teachers' climate change adaptive behavior intention. This type of research—looking for elements that are associated with behavior intention which are important for the development of interventions in environmental education, the goal is to improve pro-environmental behavior. The following individual study objectives have been narrowed down from the general research objective:

- To investigate the relationship between attitude and teachers' adaptation behavioural intention towards climate change

- To investigate the relationship between subjective norm and teachers' adaptation behavioural intention towards climate change

- To investigate the relationship between perceived behavioural control and teachers' adaptation behavioural intention towards climate change.

- To investigate the relationship between risk perception and teachers' adaptation behavioural intention towards climate change.

The study addressed four hypotheses:

H1: There is a significant relationship between attitudes and climate change adaptation behavioral intentions

H2: There is a significant relationship between subjective norm and climate change adaptation behavioral intentions

H3: There is a significant relationship between perceived behavioural control and climate change adaptation behavioral intentions

H4: There is a significant relationship between risk perception and climate change adaptation behavioral intentions.

Research Methodology

General Background

Quantitative method and survey approach was used in this research. Creswell (2008) mentioned that in education, survey research designs are widely used to uncover trends in survey respondents' attitudes, opinions, and beliefs about a topic. According to Singleton & Straits (2009) surveys are widely used in social and psychological research because they are frequently used to describe and explore human behaviour. Thus, this design assists in identifying the most impactful factors that are associated with the individual behavior intention.

The participants of this research consist of secondary school science teachers pursuing Masters in Education at National University of Malaysia. Researcher chose Masters Degree students as samples . A study by Chowdhury et al (2021), teachers' with Masters' degree and higher level of education show a better level of awareness and understanding on climate change issues. Thus, the researcher of this paper intends to further explore their intention especially in adaptation behavior. The Questionnaire of this research was created in *google form*. This online survey data were collected from 103 science teachers. The sampling method utilised was simple random sampling (SPS), which is a basic and well-defined procedure that ensures an equal likelihood of selecting each example from the sampled population (Taherdoost, 2016).

Instrument and Procedures

The design of the questionnaire was based on relevant studies conducted within an interdisciplinary and international framework, ensuring that it was well designed and appropriate to the scope of the survey. The content of the tool is divided into two sections, namely part A and part B. Part A is divided into two, such as demographic information of respondents and teachers' perceptions on the climate change issue they have assessed based on consciousness, importance, knowledge and awareness. For this section, dichotomous and open-ended questions were designed to help respondents understand the scope of this research in general, which may help answer the hypothetical test items in Part B. Part B covered research variables, which included attitude, subjective norms, perceived behavioral control, risk perception and behavioral intention.

Two experts checked the questionnaire for face validity before piloting it with 20 teachers in the same vicinity, which was not part of the research. For reliability, a Cronbach's Alpha coefficient more than 0.65 obtained for each construct, which is acceptable because it is above 0.6 cut-off line (Konting, 2000; Ariffin, 2003). The questionnaire was reviewed for face validity by two lecturers and their recommendations were implemented prior to data collection.

Questionnaires for this instrument were adapted from previous studies described in the existing literature. The questionnaires were then adapted to the current study context. A total of 5 constructs and 23 items (attitude; 8 items, subjective norm; 4 items, perceived behavior control; 5 items, risk perception; 3 items, behavior intention; 3 items) are involved in this study. All the items were rated with 5-point Likert Type scale from "strongly disagree" to "strongly agree". Information related to the constructs , items and Cronbach's Alpha reliability is presented in Table 1. Attitudes, subjective norms, perceived behavioral control and risk perceptions are among the constructs that represent the independent variables while the behavioral intention construct represent the dependent variables. The first construct specific attitude consists of 8 items . In this study, it is measured as a latent reflective construct using affective(items A2, A3, A4, A6, A7) and cognitive (items A1, A5, A8). The second construct is

a four-item subjective norm. To assess the relationship between and adaptive behavioural intentions. In this study, social pressure from immediate social network groups such as friends, family and colleagues . Perceived behavioral control consists of five items, reflecting the perception that individuals have of their ability to adopt a behavior. Perceived behavioral is made up of situational factors and resources such as time, money, and knowledge that facilitate the conditions that cause individuals to behave pro-environmentally. In terms of understanding the consequences of climate change issues, risk perception contains three items that measure its relationship to adaptive behavioural intentions.

Respondent intention to behave pro environmentally, which is materialized by climate change adaptive behavior in this study, consists of 3 items which are made up of a sequence of expectations, desires and certainties.

Construct	Item no	Statements	α
Attitude	A1	Adaptive behaviour to climate change is very important to me.	0.877
	A2	I like to explore the themes of adaptation to climate change in my spare time	
	A3	I encourage my students to explore adaptation strategies to climate change	
	A4	I like to practice climate change adaptation strategies (rainwater harvesting, growing vegetables to avoid food shortages during the rainy season or drought, getting information and services from climate and weather sources to find out if my area is vulnerable to the effects of climate change so that I can make preparations to reduce risk).	
	A5	For me, sharing knowledge on climate change adaptation strategies in the classroom is important	
	A6	I like to organize campaigns on adaptation strategies to climate change either in or out of the school	
	A7	I enjoy participating in campaigns on climate change adaptation strategies, both inside and outside of school.	
	A8	I support research on climate change in order to formulate adaptation strategies for environmental sustainability	

Subjective Norm	SN 1	Peer discussions of adaptation strategies influenced me to adopt them.	0.748
	SN2	Individuals who are important to me feel satisfied if I get involved in campaigns on climate change issues	
	SN3	Individuals who are important to me feel that as a teacher I need to know ways to adapt to climate change in order to motivate and expose to students about the issue.	
	SN4	Individuals who are important to me support my efforts in teaching students about climate change adaptations	
Perceived Behavioral Control	PBC1	I have enough knowledge of adaptation strategies for discerning between responsible and harmful behavior	0.917
	PBC2	I have enough time to learn and practice climate change adaptive behavior	
	PBC3	I have enough resources to learn and practice climate change adaptive behavior	
	PBC4	I have the necessary will and wisdom in practicing climate change adaptation strategies	
	PBC5	I believe that I am responsible for the appropriate adaptation measures that should be shared with school students.	

Risk perception	RPer1	I will take immediate action to adapt to the effects of climate change that have already occurred and will occur in the future.	0.680
	RPer2	I would support if the government invests in climate change adaptation measures and strategies	
	RPer3	I am capable of adapting to the effects of climate change.	
Behavior Intention	BI1	I intend to participate in climate change adaptation activities organized by any party, whether government or non-profit.	0.814
	BI2	I intend to integrate climate change adaptation strategies in teaching and learning in the classroom	
	BI3	I intend to obtain information from climate change-related sources in order adapt myself and to reduce the risks of climate change	

Table 1: constructs, items and reliability value

Data Analysis

Descriptives (mean and standard deviation) and inferential statistics were conducted using SPSS. Analysis of research data used Spearman's Rho, correlation coefficient test; the prerequisite test; normality test used kolmogorov-smirnov.

Kolmogorov smirnov				Shapiro-Wilk		
	Statistic	df	Sig	Statistic	df	Sig
Attitude	.125	103	.000	.953	103	.001
Subjective Norm	.197	103	.000	.922	103	.000
Perceived Behavior Control	.147	103	.000	.962	103	.005
Risk Perception	.207	103	.000	.918	103	.000
Behavior Intention	.219	103	.000	.925	103	.000

Table 2 : Normality test

In Kolmogorov Smirnov the p-value for all variables are <0.05, thus indicating the data is not normally distributed. Thus, Spearman's Rho test was used to examine the relationship between the variables .

Research Results
Respondents' profile

Based on Table 3, 26 respondents were male teachers (25.2%) and 77 were female teachers (74.8%). Most of the teachers (30.1%) were experienced professionals with more than 16 years' service as teachers.

No	Category	Frequency	Percentage (%)
1	Gender		
	1.1 Male	26	25.2
	1.2 Female	77	74.8
2	Years of teaching experience		
	3.1 <1 year	22	21.4
	3.2 1-5 years	16	15.5
	3.3 6-10 years	20	19.4
	3.4 11-15 years	14	13.6
	3.5 >16 years	31	30.1

Table 3 :Demographic profile

Analysis of respondents' perceptions on climate change issues

No	Aspect	Question
1	Climate Change Consciousness	
		Are you concerned about climate change issues?
2	Importance	How importance the understanding of climate change issues to you personally?
3	Knowledge and awareness	1. In your opinion, why is the issue of climate change important to you? answer if your answer is "Very Important or Important" for question on the importance of climate change issues personally . 2. In your opinion, what are the factors causing climate change issues? answer if your answer is "Less Important or Not Important" for question on the importance of climate change issues personally.

Table 4: *Table 4 depicts the questions used to examine teachers' perceptions on climate change issues based on their consciousness, importance they placed on climate change issues personally, knowledge and awareness.*

Question		Frequency	Percentage (%)
Are you concerned about climate change issues?	Yes	89	86.4
	No	14	13.6

Table 5: *Analysis on climate change consciousness issues reveals that the majority of the teachers (86.4%) expressed their consciousness in climate change issues, while only 13.6% showed a minor degree of concern.*

Question		Frequency	Percentage (%)
How important is the understanding of climate change issues to you personally?	Very important	46	44.7
	Important	47	45.6
	Less important	10	9.7
	Not important at all	None	None

Table 6 : *Analysis the importance of understanding climate change issues* reveals that most of the respondents (very important 44.7%; important 45.6%) admitted it is important to understand climate change issues .

Descriptive Results

Variables	N	Mean	Standard Deviation
Attitude	103	3.88	0.62
Subjective Norm	103	3.87	0.69
Perceive Behavioral Control	103	3.65	0.71
Risk perception	103	4.00	0.60
Adaptation behavior intention	103	3.98	0.63

Table 7 : Mean and Standard Deviation for attitude, subjective norm, perceived behavioral control, risk perception and adaptation behavior intention

Inferential Results

Hypotheses	Correlation value (r)	Significant	Hypothesis
H1: There is a significant relationship between specific attitudes and climate change adaptation behavioral intentions	0.651**	0.000	Supported
H2: There is a significant relationship between subjective norm and climate change adaptation behavioral intentions	0.643**	0.000	Supported
H3: There is a significant relationship between perceived behavioural control and climate change adaptation behavioral intentions	0.587**	0.000	Supported
H4; There is a significant relationship between risk perception and climate change adaptation behavioral intentions.	0.674**	0.000	Supported

Table 8 : Summary of Spearman's Rho correlation
The findings show that all variables have a significantly strong relationship with climate change adaptation behaviour intention and among the variable risk perception identified as the best predictor for adaptive behavior intention.

Discussion
Consciousness, Importance, Awareness and Knowledge on Climate Change Issues
A total of 86.4 % of teachers agreed that they are concerned about climate change, while only 13.6 % showed a minor degree of concern. Even though only 13.6 % of teachers are unconcerned about climate change, this finding is still worrying. This is due to the fact that if one is lackadaisical about the issue of climate change, it limits one's ability as a pro-behavior in an effort to practise mitigation and adaptation (Pasquini, et al., 2013). In terms of the importance of understanding the climate change issues, all teachers acknowledged the importance of this matter, and 9.7 % thought it was less important. Understanding the issue of climate change in terms of factors, impacts, mitigative and adaptive strategies are important for an individual to become aware and commit to act in accordance with the principle of socio-environmental responsibility.
Teachers' responses about awareness revealed that they are aware of the issue of climatic change . Their responses are centred on raising awareness and which may either directly or

indirectly encourage the adoption of climate change mitigation and adaptation behaviours. Several studies have demonstrated that climate change awareness influences pro-climate behaviour (Korkala, 2014; Lee, 2015; Burçkin, 2015). Previous research, on the other hand, has found a gap between climate change awareness and pro-climate behaviour. This is due to psychological barriers which are influencing such gaps (Tam, 2019), and high levels of environmental awareness do not necessarily lead to pro-environmental behaviour (Mei, 2016). According to Klöckner (2013), environmental awareness itself is a poor predictor of pro-environmental behaviour. The question on the knowledge of climate change, which focuses on factors in this study, is addressed to teachers who consider that understanding climate change issues is less important. The overall response of this question shows that they have misconceptions about climate change and global warming. It is also observed that misconception among teachers is a confusion between greenhouse effect and global warming. This substantiates previous findings in the literature Arslan et al., 2012; McNeal et al., 2014; Liu et al., 2015; Herman et al., 2017. Such findings conclude that training is recommended for teachers in order to have a clear understanding of the factors, impacts, consequences related to climate change phenomenon.

Descriptive analysis
Based on descriptive statistical results (Table 7), overall mean score for risk perception is high with mean 4.00 and standard deviation 0.60. This suggests that teachers' understanding on the seriousness of the impacts of climate change may enable them to engage in adaptive behavioral intention. According to Kwon et al (2019), risk perception is an important determinant in predicting the individual's intentions and actual climate change actions. Leiserowitz (2006), conducted a risk perception survey on climate change in the United States and discovered that the risk perception of climate change was strongly influenced by empirical factors and the greater the individuals' perceived risk, the more involved they were in pro environmental behavior. This finding is also concordance with the study conducted by (Stevenson et al., 2014; Lee et al., 2015). Their findings showed that individuals with higher risk perception will demonstrate more positive actions on climate change. High mean score was obtained for variable specific attitude(Mean=3.88, SD=0.69), and subjective norm (Mean=3.87, SD=0.69), whereas average mean score was obtained by perceived behavioral control (Mean=3.65, SD=0.71).

Inferential Analysis
The findings indicated that teacher's attitude, subjective norms, perceived behavioral control, and risk perception had a significant relationship with climate change adaptation behaviour intention.
Teachers' risk perception influenced their adaptation behaviour intention most significantly and it has a strong relationship compared to other variables in this study, r=0.674. This is consistent with previous findings which have reported the highest correlation between perceived risks and participants' actions on climate change issues (Lacroix & Gifford, 2017; Kwon et al., 2019). Furthermore, Steg and Sievers (2000), reported that attitudes and evaluations pertaining to "risk" management strategies and policies are greatly influenced by environmental perceived risk. According to Sander van der Linden, (2015), risk perception plays an important role in determining pro-environmental behavioral intentions. Furthermore, Rasch (2015), stated that risk perception is a strong predictor in determining an individual's climate change adaptation strategy. However, these findings are in contradiction

from some other published studies. Lucy & Catherine, (2016) in their research stated that teachers and students were unaware of the importance of adaptive measurements even though they had personal experience with extreme weather events. Such finding is consistent with a research conducted by Whitmarsh, (2008). According to Bubeck et al (2012); Frondel & et al (2017); Valkengoed & Steg (2019), the relationship between risk perception and pro-environmental behavior are typically weak.. This is due to the other intervening variables such as socio-demographic characteristics, cognitive dimension, experiential processing dimension and socio-cultural acting as significant predictors of variances in climate change risk perceptions (Sander van der Linden, 2015). Based on previous studies it has been reported that climate change risk perception may vary over time, between countries (Lee et al., 2015) and also between people in the same countries (Tranter, 2013). In this study the researcher utilised cognitive dimension- knowledge about the causes of climate change as a predictor variable with risk perception. It is believed that accurate climate change knowledge on causes is a significant predictor of climate change risk perception (Linden, 2015).

The findings indicated that specific attitudes, subjective norms and perceived behavioral control are also playing a crucial role in directly influencing teachers' climate change adaptation behavior intention. Based on the Spearman Correlation Test, the researcher found that specific attitude, subjective norms and perceived behavior control depict a strong positive relationship with climate change adaptation behavior intention with r=0.651, r=0.643 and r=0.587 respectively.

The result of strong relationship between attitude and adaptation behavior intention is in good agreement with previous studies on pro-environmental behavior (Lin et al., 2017; Ali & Yusof, 2018; Jacob et al., 2021). The cognitive and affective reflective indicators of teachers' attitudes enabled them to develop and propelled them to engage in adaptive behavior intention in this study. However, few published researches stated that there are no significant and weak association between attitude and pro environmental behavior observed among participants (Yusof et al., 2019; Hasan et al., 2015), which denied the notion that attitude is the best predictor of behaviour intent (Azjen, 1991). Even though they are well-equipped with pro-environment related knowledge, the weak association between the two variables may be due to lack of exposure, motivations and some structural barriers such as cost.

Subjective norms represent the social pressure from immediate social networks found that it exerted a strong relationship with adaptation behavior intention among teachers. This result is in line with other climate change pro environmental studies (Tikir & Lehmann, 2011; Kim &Yang, 2015) but contrary to the study by Jacob et al (2021), which found the subjective norm has no significant effect on the flood adaptation behaviors by municipal authorities in Canada, which indicated that behavior intention was not influenced by acquaintance, regional bodies, provincial and federal governmental authorities. Ayob & Sheau-Ting, (2016) also found that the subjective norm does not have a significant relationship with waste separation behavior intention among university students. This reveals that behavior intentions are not influenced by social pressures from peers, or lecturers. Ajen (1991) explains this is because intention is strongly influenced by personal factors, such as attitudes and perceive of behavior control. However, in our study, the strong relationship between subjective norm and climate change adaptation behavior intentions among teachers may enable them to grasp these current climate change issues and intend to carry on adaptive behavior.

Although the coefficient correlation of perceived behavioral control with adaptation behavior intention is strong r=0.587, the value is comparatively low when compared with other variables in this study, but still sufficient attention has given. According to Hasana et al (2015),

perceived behavioral control of students shows the highest relationship with intention to reduce usage of plastic among compared to other variables. Some authors suggested that perceived behavior control found significantly influence pro environmental behavior intention of participants in purchasing green product and dine-in to reduce waste (Paul et al., 2016; Kim & Hall, 2019). In addition, a research conducted by Lin et al (2021), reported that perceived behavioral control as a mediator between attitudes and intentions toward Marine responsible environmental behavior. This concurs well with Karatu & Mat, (2015) findings which reported that perceived behavioural control is the strongest predictor and mediator of green purchase intention among lecturers in Nigeria. In contrast, significantly different results reported in previous studies. Referring to research by Khan et al (2019) stated that perceived behavioral control is portrays insignificant relationship with recycling behavior intention. This correlate with Jacob et al (2021) findings where the perceive behavioural control has no significant effect on flood adaptation behavior intention by municipal authorities in Canada. Such findings may be due to lack of motivation or resources such as facilities, time, money which facilitate pro-environmental behavior.

Conclusions and Implications

To reach climate target and achieve the Sustainable Development Goals, a shift in adaptation behaviour intention on climate change issues is essential in order to makes one self to act accordingly. The Extended Theory of Planned Behavior in this research consists of four main factors (specific attitude, subjective norms, perceived behavior control and risk perception) which are driving forces to achieve an intention. Finding of our results, suggested that the variables in this research theory are important indicators for adaptation behavior intention among teachers. It is believed that, it may provoke self-interest among teachers to act on and engage their self for climate change adaptation behavior through various activities. Overall this study contributed to existing studies by integrating the risk perception variables with the TPB variables which has strong associations with teachers' climate change adaptation behavior intention. The results obtained in this study can be improved over time; it suggests climate change education courses to be incorporated in educators' professional development to enhance their pro-environmental skills.

Acknowledgement

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