

Extending the theory of planned behavior to understand hotel managers pro-environmental behavior in supply procurement process: Sustainable resourcing to alleviate global warming

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Abstract— Hotel managers' behaviour and decision making significantly impacts hotel energy consumption, operating costs, and environmental issues. Encouraging pro-environmental behaviours among hotel managers is vital for sustainable development in the hotel and tourism sector. This study aims to understand the factors that drive hotel managers to adopt sustainable practices, especially in supply chain management, to combat global warming. An expanded model based on the Theory of Planned Behavior was developed, incorporating elements like global warming consciousness, actions to alleviate global warming, emotional responses, and varying supply expenses. An online survey was conducted with 479 hotel managers involved in the supply chain procurement process. Data analysis utilized partial least squares-structural equation modelling techniques, revealing that global warming consciousness greatly influences managers' attitudes and purposes to engage in sustainable practices. Fostering actions to reduce global warming also positively impacts these purposes. Additionally, anticipated emotions such as remorse are critical in shaping behavioural purposes. Findings also indicate that personal attitudes, subjective social standards, and perceived self-control over sustainability efforts influence managers' purposes in practising sustainable resourcing. Notably, varying food and beverage supply expenditure levels moderate seven out of nine of the proposed hypotheses. This research identifies a substantial gap in the current literature regarding the relationship between hotel managers' sustainable practices and global warming within the hotel and tourism sector. By employing an extended Theory of Planned Behavior framework, this research makes a meaningful contribution to the ongoing effort to improve sustainability in the hotel and tourism sector, particularly in Malaysia.

Keywords— Pro-environmental behaviour, Extended theory of planned behaviour, Hotel manager behaviour, Hotel and tourism sector, Malaysia

I. INTRODUCTION

The global community has collectively recognized the critical need to limit the rise in global temperatures to within 1.5° to 2°C above pre-industrial levels. Achieving this ambitious target necessitates a transformative reduction in greenhouse gas emissions, aiming to reach net-zero emissions by the middle of this century (IPCC, 2021; COP28, 2024). In light of this urgent challenge, identifying effective and scalable strategies for significantly decreasing emissions across the global economy is paramount. The hotel and tourism sectors play a crucial role in this endeavour due to their extensive reach and because it encompasses several key emission-intensive subsectors, including aviation. In 2022, it was estimated that hotels and tourism contributed approximately 8% to 11% of global CO₂-equivalent emissions (IEA, 2023). The sector's relevance is further underscored by its status as a growth industry, making implementing mitigation strategies even more vital (Kumail et al., 2024). As the world begins to rebound from the COVID-19 pandemic, projections indicate a return to high growth rates in tourism (UNWTO, 2020; IATA, 2021). Given these factors, effective carbon management—which includes mitigating carbon dioxide and other greenhouse gases—has emerged as a significant management challenge within the tourism sector. Addressing this challenge is essential for aligning the industry with global climate goals while ensuring a sustainable future for the hotel and tourism sector.

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Sustainable resourcing practices in the hotel and tourism sector hold significant importance on a global scale. However, most research on this subject has concentrated primarily on Western nations, including Canada, the United States, and a variety of European countries (Ahn et al., 2020). There is a notable scarcity of studies highlighting sustainable resourcing and green procurement within this industry, particularly in regions like Southeast Asia (Boluk et al., 2020; Trišić et al., 2021). It is crucial to investigate the practices of hotels and tourism providers in these countries, especially given the alarming trend of increasing contributions to global environmental degradation observed over recent decades (Raihan & Tuspekova, 2022; Kanwal et al., 2024; Voumik et al., 2024). The travel and tourism sector is reported to account for approximately 2.5 to 3% of global carbon emissions. However, this statistic faces criticism for failing to incorporate the impacts of the entire supply chain contributing to these emissions. Experts argue that to properly understand the environmental consequences of tourism, a comprehensive sustainable system must be conducted (Lenzen et al., 2018).

Tourism scholars have developed various theoretical frameworks to understand the motivations behind adopting sustainable resourcing practices and the broader implications these practices have on society and the environment. Notable contributions in this field include the works of Govindan et al. (2021) and He et al. (2021). In addition to these theoretical perspectives, some researchers have examined the connection between sustainable resourcing and corporate financial performance, highlighting its economic significance (Arslan et al., 2022; Yin & Xu, 2022). Despite these advances, many of these studies overlook a crucial aspect: the viewpoints of hotel managers. Their insights and experiences are essential for successfully implementing sustainable resourcing initiatives.

Furthermore, the Theory of Planned Behavior (TPB), which has proven effective in explaining pro-environmental behaviours in various contexts (Aziz et al., 2021; Karimi et al., 2022), has been validated within the hotel and tourism sectors as well (Lin et al., 2022; Rao et al., 2022). However, a research gap remains; currently, the limited study utilizes the TPB framework to investigate how managers' perceptions of global warming awareness relate to their commitment to alleviating this issue through sustainable resourcing practices. This inquiry could provide valuable insights into the role of management in fostering environmentally responsible behaviour within the hotel and tourism industry.

To address these gaps, this research extended the TPB model to include the psychological factors of managers and company operation characters to examine how these elements might affect tour operators' implementation of sustainable resourcing practices. Given the critical importance of hotel managers' behaviour in mitigating climate change, this study begins to create and validate an expanded Theory of Planned Behavior (TPB) framework. The focus is on predicting the behaviours of hotel managers concerning sustainable resource management aimed at mitigating global warming within the Malaysian hotel sector. This extended TPB model meticulously examines the intricate relationships between several key factors: awareness of global warming, actions to mitigate its effects, and feelings of anticipated pride and guilt. Additionally, it explores the four foundational constructs of the TPB framework and categorizes hotel managers into high and low supply chain cost categories. The primary goal of this research is to enhance our theoretical understanding of the environmental practices tied to hotel supply chain management while addressing the practical challenges of sustainable resource utilization. Ultimately, this study aspires to significantly contribute to the existing literature on hotel supply chains and sustainability, presenting a novel model that sheds light on practical, sustainable resource practices in the hotel industry. Such practices not only have the potential to lower operational costs but also play a vital role in protecting the environment and promoting human health.

A. Global Warming Consciousness and Action Taken to Alleviate its Effects

Global warming consciousness can be understood as recognizing and understanding the pressing concerns regarding the threats that global warming poses to both human society and natural ecosystems (Almulhim, 2021; Naaz et al., 2023). This consciousness plays a crucial role in driving the development of proactive approaches to managing the risks associated with global warming. These initiatives often include vital

practices such as waste reduction and energy management, essential in combating global warming. Furthermore, increasing awareness of global warming significantly affects consumer behaviour, and promoting the implementation of low-carbon consumption practices is essential for advancing mitigation efforts related to global warming (Almulhim, 2021; Naaz et al., 2023). The link between global warming consciousness and environmentally friendly behaviours is evident, as heightened awareness often catalyzes participation in various mitigation initiatives. In this research, global warming consciousness is the apprehension regarding the causes, impacts, and potential risks associated with global warming (Balasubramanian, 2023). This definition also encompasses responses to weather events and atmospheric conditions related to climate change, including phenomena like fine dust and deteriorating air quality, which have become increasingly prevalent (Balasubramanian, 2023).

Global warming alleviation encompasses a range of strategies and practices designed to significantly reduce greenhouse gas emissions, which significantly contribute to global warming (Nunes, 2023). Many stakeholders can embrace these initiatives, including individuals, businesses, organizations, and governmental bodies. For example, waste reduction and recycling programs are vital actions that diminish life-cycle energy consumption and lower industry emissions. Both organizations and private citizens can implement these environmentally friendly practices, contributing to a collective effort in combating global warming. In contrast, choosing a plant-based diet is primarily driven by individual preferences and values. While concerns about climate change largely influence this decision, it can also be motivated by factors such as animal welfare, improvements in personal health, and the desire to protect biodiversity (Franks et al., 2021; Hoffman, 2022). To tackle the global warming crisis effectively, it is crucial to integrate supply-side strategies, which include optimizing production processes, improving transportation logistics, and enhancing food processing techniques with demand-side approaches (Roy et al., 2021; Creutzig, 2022). These demand-side interventions focus on modifying consumer food choices and minimizing food loss and waste. By combining these strategies, we can reduce greenhouse gas emissions and strengthen our food systems' overall resilience in the face of environmental challenges (Roy et al., 2021; Creutzig, 2022).

B. TPB and Theory Expansion

The Theory of Planned Behavior (TPB) offers a framework for comprehending the relationship between individuals' beliefs and their subsequent actions. This theory posits that three key factors—perceived self-control over behaviour, individual attitudes toward the specific behaviour under consideration, and the influence of subjective social standards—play crucial roles in shaping an individual's intentions, which ultimately influence their behaviours (Dorce et al., 2021; Lavuri, 2022). Recent research has shown that when predicting pro-environmental behaviours, by integrating additional key factors, such as an individual's sense of responsibility, the personal values they uphold, and the anticipated emotions they might experience—like the uplifting feeling of pride or the heavy burden of guilt substantially enhances the theory's ability to explain environmentally friendly actions, particularly in the context of hotel management (Yeh et al., 2021; Fauzi et al., 2024). In the realm of sustainable tourism, the TPB has been further expanded. This extended version incorporates elements like a green image, environmental awareness, and anticipated emotional responses, which collectively provide a more comprehensive understanding of individual intention to alleviate the effect of global warming (Yeh et al., 2021). The insights gained from this extension reveal that it effectively captures the motivations behind tourists' environmentally conscious decisions. Similarly, within hotel management, the constructs of the TPB have been instrumental in elucidating the behavioural responses of staff at eco-friendly hotels, offering valuable perspectives on how hotel workers interact with and contribute to sustainable practices. This application of the theory helps stakeholders better grasp the reasons behind managers' choices related to green accommodations, thereby informing strategies to foster more environmentally responsible behaviours among hotel managers.

II. RESEARCH MODEL

A. *Global Warming Consciousness, Shaping Attitudes, and Driving Behavioral Purposes*

Recognizing anthropogenic global warming is closely tied to individuals' view of risk and proactive behaviours, often termed "pro-climate friendly behaviour" (Gong et al., 2023). Increased public awareness of global heat influences societal attitudes and communication strategies regarding climate issues (Yli-Panula et al., 2022; Gong et al., 2023). Moreover, greater awareness leads to an uptick in the use of eco-sustainable resources to reduce greenhouse gas emissions (Williams, 2022). Public perceptions of climate change are significantly influenced by individuals' environmental attitudes and willingness to embrace energy-efficient practices (Williams, 2022). Based on these observations, this research proposes two hypotheses focused on sustainable resourcing among hotel managers:

Hypothesis 1 (H1). Managers' consciousness of global warming significantly influences their commitment to sustainable sourcing.

Hypothesis 2 (H2). Managers' global warming consciousness significantly influences their behavioural purposes regarding sustainable sourcing.

B. *Global Warming Alleviation: Fostering Actions, Attitudes, and Purposeful Behavioral Change*

While individuals may strive to take action against global warming, various structural, economic, and social obstacles often hamper their efforts. These barriers can include a lack of awareness about the seriousness of the issue, prevailing attitudes that downplay the urgency of environmental improvement, and insufficient actions that collectively hinder progress in protecting our planet (Frazier, 2023; Fritz et al., 2024). Such limitations also significantly shape their attitudes and behaviours towards sustainable practices. Research indicates that individuals who actively recognize the importance of global warming alleviation typically possess a strong pro-environmental mindset, demonstrating engagement in behaviours that support climate action (Haldorai et al., 2024; Yang et al., 2025). In addition, individuals who acknowledge the reality of human-induced global warming tend to exhibit more significant concern for its consequences, motivating them to participate in alleviation efforts (Yang et al., 2025). This relationship suggests that engaging in actions to reduce climate impact fosters a more positive attitude toward environmental responsibility and enhances proactive behaviours. Based on these observations, we propose two key hypotheses focused on sustainable resourcing strategies to promote sustainability within hotel management.

Hypothesis 3 (H3). Managers' global warming alleviation fostering actions significantly influence their attitude toward sustainable sourcing.

Hypothesis 4 (H4). Managers' global warming alleviation fostering actions significantly influence their behavioural intention on sustainable sourcing.

C. *Expected Gratification, Remorse and Shaping Behavioral Purpose*

The expectation of experiencing a positive emotional state from engaging in environmentally friendly actions impacts a person's decision-making process regarding environmental matters. Specifically, individuals who look forward to the feelings of gratification and accomplishment associated with their green actions exhibit more excellent intentions to behave in an eco-conscious manner compared to those who only anticipate the negative emotions tied to inaction, such as remorse or guilt (Elia, 2022; Salamah et al., 2024). In tourism, emotions are vital in shaping personal norms and behaviours. Individuals often find that feelings

of pride—stemming from their environmentally responsible choices—coupled with a sense of remorse for not acting can inspire them to promote eco-friendly practices through word of mouth, responsible purchasing, and personal sacrifices (Elia, 2022; Salamah et al., 2024). In our research, we define expected gratification as the emotion associated with feeling proud of one's efforts, achieving personal goals, and gaining confidence through actions to reduce waste, particularly within the hotel management environment. Conversely, expected remorse is characterized by guilt or regret for failing to minimize unwanted costs at the hotel. Given these findings, we propose two hypotheses specifically aimed at understanding these dynamics within hotel management.

Hypothesis 5 (H5). Managers' expected gratification significantly influences their behavioural purpose on sustainable sourcing.

Hypothesis 6 (H6). Managers' expected remorse significantly influences their behavioural purpose on sustainable sourcing.

D. Attitude, Subjective Standards, Behavioral Self-Control, and Behavioral Purpose

The Theory of Planned Behavior (TPB) includes three key variables: subjective standards, attitudes, and perceived behavioural control. Research has consistently shown that these elements can predict behavioural intentions with a high degree of accuracy. For instance, when it comes to sustainable resourcing, positive attitudes towards this practice, along with the influence of subjective standards—essentially, the expectations of those around them—have been found to boost their intentions to practice sustainable resourcing significantly (Zhang et al., 2023; Lu, 2023). In the context of green hotels, the attitudes management environment, its subjective standards, and the staff's perceived control over their behaviours play a crucial role in determining whether they intend to practice sustainability (Zhang et al., 2023). If workers feel optimistic about sustainability and believe they can contribute to sustainable resourcing, they are more likely to implement the practice frequently. The extended version of the TPB model highlights that managers' beliefs about sustainability—shaped by their standard beliefs and attitudes—directly impact their intentions to practice sustainability in supply chain management. Based on these insights, we propose three hypotheses that focus on enhancing sustainability resourcing efforts within the hotel and tourism sector:

Hypothesis 7 (H7). Managers' attitude significantly influences their behavioural purpose on sustainable sourcing.

Hypothesis 8 (H8). Managers' subjective standards significantly influence their behavioural purpose regarding sustainable sourcing.

Hypothesis 9 (H9). Managers' perceived behavioural self-control significantly influences their behavioural purpose on sustainable sourcing.

E. Mediating Role of High and Low of Food and Beverages Supply Expenditure

In the hotel and tourism sector, there is a noticeable divergence in how managers prioritize various aspects of sustainable resourcing based on their spending habits during procurement. Those who typically allocate a higher budget for their resource management tend to place greater importance on the quality of the resources compared to their counterparts who spend less (Abernethy et al., 2021; Leigh et al., 2021). Conversely, managers with lower expenditure levels often perceive the resource quality as less critical than those who are willing to spend more (Abernethy et al., 2021). As a result, it is anticipated that the differing levels of managers' supply procurement expenses will significantly influence nine relationships within the proposed framework of this research.

Hypothesis 10A (H10a-i). Managers' high or low food and beverages supply expenditure mediates the nine hypotheses suggested above; global warming consciousness and alleviation fostering actions, expected gratification and remorse, attitude, subjective standards, perceived behavioural self-control, and behavioural purpose on sustainable resourcing (Figure 1).

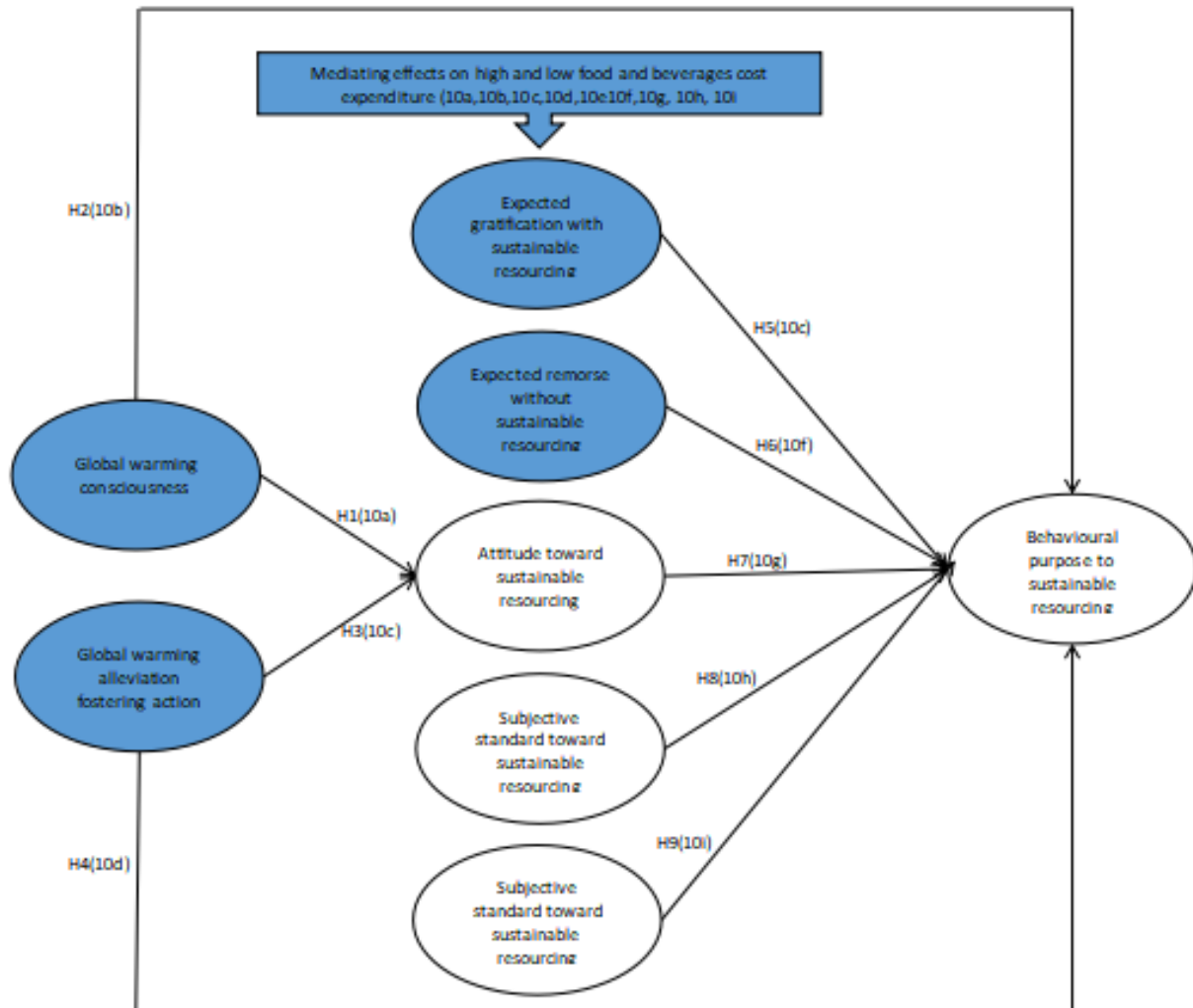


Figure 1: Proposed extended Theory of Planned Behaviour (coloured constructs denotes the extended part of the theory)

III. METHODS

A. Measurement

The online survey developed for this research comprised a total of 31 items. These items were systematically categorized into eight distinct constructs: global warming consciousness, global warming fostering actions, expected gratification, expected remorse, subjective standard, attitude, perceived behavioural self-control, and purpose. Each item was thoughtfully derived or adapted from prior research to ensure a comprehensive and nuanced assessment of these constructs, emphasizing waste reduction practice. The survey employed a seven-point Likert-type scale, allowing individuals to nuancedly express their views and behaviours regarding sustainability. In addition to the primary items, the survey included eight overarching questions focused on sustainable resourcing behaviour and seven socio-demographic questions to capture the diverse backgrounds of respondents. The original English version of the survey was carefully

translated into Malay, followed by a back-translation process to ensure cultural and linguistic accuracy. This step was crucial in preserving the integrity of the questions while making them accessible to the target population. The content validity of the survey was rigorously evaluated by four specialists with expertise in the relevant areas. At the same time, input from seven Hotel managers provided practical insights that reinforced the survey's relevance to sustainable practices within Malaysia's hotel sector. In response to the feedback obtained, additional items were integrated into the survey, and existing questions were revised for improved clarity and effectiveness. A pilot test involving five PhD candidates allowed for preliminary testing of the survey's functionality, followed by a pre-test with 50 hotel managers that further honed the quality of the survey questions. After incorporating these refinements, the final version of the survey was officially prepared for use in data collection, ready to gather essential insights into sustainable dining behaviours.

B. Data Collection

Online surveys have gained significant traction in tourism research within Malaysia, primarily owing to their rapid deployment and cost-effectiveness. The research sample was carefully curated by Embrain, a company renowned for its rigorous sample selection protocols to ensure the integrity and quality of the data collected. Any surveys completed in an abnormally short timeframe were discarded to enhance the validity of the result. Additionally, to reduce bias, respondents responded to questions presented randomly. The survey was conducted over eight weeks, from June 25 to August 25, 2024, during which 5,245 respondents were drawn from the Embrain database. At the beginning of the survey, clear and concise definitions for key concepts such as “global warming consciousness” and “global warming alleviation actions” were provided to ensure all participants had a common understanding. The research team aimed to achieve more than 400 responses suitable for multi-group analysis, operating under the assumption of a 5% response rate. The final tally reached 1,441 respondents, among whom 974 confirmed that they were involved with hotel supply chain operations or decision-making. Of these, 665 participants completed the entire survey. To maintain data integrity, those who rushed through the questions or exhibited predictable answering patterns were excluded from the dataset. This meticulous process resulted in 479 valid responses, translating to a response rate of 49% and an exclusion rate of 31.9%. The careful handling of participants and responses underscores the commitment to thorough research methods in the face of pressing global issues like global warming.

C. Data analysis

The research model was validated using a robust partial least squares (PLS-SEM) approach. Memon et al. (2021) detailed that the PLS-SEM approach necessitates specific minimal criterion for verifying theoretical frameworks, a process achieved primarily through bootstrap resampling techniques. This method is particularly advantageous for conducting multi-group analyses (MGA) and for managing complex frameworks, offering significant benefits over traditional Structural Equation Modeling (SEM) methods (Ismael & Duleba, 2021; Troiville et al., 2025). For the validation of measurement, structural and exploration of research hypotheses, SmartPLS version 3.2.8 was employed (Nazeef et al., 2024). The study implemented MGA techniques to examine the effects between high and low spenders. Various strategies were undertaken to address potential standard method bias from respondents evaluating all survey items simultaneously. One such strategy involved targeting respondents directly involved with the hotel management's procurement process, ensuring a relevant and focused sample. Harman's single-factor test was applied to investigate the dataset for any signs of bias (Kock et al., 2021; Baumgartner et al., 2021). An exploratory factor analysis (EFA) performed on the questionnaires revealed the presence of seven variables, each with eigenvalue indicating 79% by factors containing the initial factor (43.2%) and subsequent factors (12.5%, 6.4%, 6.1%, 5.3%, 2.9%, and 2.5%). A comparative analysis between the EFA results and confirmatory factor analysis (CFA) demonstrated that the suggested hypotheses aligned more closely with the collected data than a simple single-factor model would have (Saeed et al., 2021). Furthermore, the chi-square statistics produced

significant results ($\chi^2 (5524.0)/df (23) = 240.0, p < 0.001$). It further strengthens the conclusion that common method bias does not pose a significant concern in this study, thereby enhancing the credibility and validity of the findings.

D. Grouping check

The food and beverage (F&B) supply expenditure analysis was conducted through a comprehensive survey question: "When you planned your procurement supply for F&B at your hotel, what is your average monthly spend in Malaysian Ringgit?" A median-split approach was employed to categorize the respondents effectively, setting the threshold at RM 20,000 for average monthly procurement expenses. This segmentation yielded 179 respondents classified as high spenders and 197 as low spenders. For the sake of accuracy in the analysis, respondents whose spending fell precisely at the median ($n = 103$) were excluded from the study. A comparison of average spending was performed to validate this grouping's effectiveness. The results showed that the high-spending group demonstrated a mean expense of RM 45,890, significantly surpassing the low-spending group, which had a mean of RM 11,646. This notable difference in average expenditures confirms that the grouping method was effective and satisfactory.

E. Respondents' profiles

When examining the food and beverage (F&B) supply procurement among hotel managers, a clear distinction emerges between high and low spenders (Table 1). A notable 57.5% of those categorized as high spenders are male managers, while 56.3% of low spenders are female managers. Age demographics also reveal interesting patterns: approximately one-third of the high spenders, precisely 30.6%, fall within the 40 to 49 years old bracket, contrasting with the low spenders, where a considerable 36.2% are in the younger 20 to 29 years old range. Marriage status also varies significantly between the two groups: 53.8% of high spenders are married, while slightly over half (50.8%) of low spenders are single. Financial performance is relatively close between the two categories of spenders as well. Among hotels earning a net income between RM 700k to 800k, 36.8% are identified as high spenders. In comparison, a majority, 29.1% of low-spenders, operate within a net income range of RM 500k to 700k. Finally, geographical distribution indicates that most surveyed hotels are in metropolitan areas. However, high spenders form a smaller percentage within this demographic at 67.2%, compared to low spenders, which dominate at 71.8%. This data suggests notable trends in spending behaviour tied to gender, age, marital status, financial performance, and location among hotel managers.

Table 1: Demographic characteristics of groups based on high and low expenditures on food and beverages

Categories	High ^a (%)	Low ^b (%)
Gender		
Male	57.5	43.7
Female	42.5	56.3
Age		
20–29 years old	18.8	36.2
30–39 years old	30.6	33.7
40–49 years old	30.6	20.1
50–59 years old	12.0	10.5
60 years old and over	3.9	4.5
Marital status		

Single	43.4	50.8
Married	53.8	47.7
Other (divorce)	2.8	1.5
Hotel net income		
Less than 500k RM *	4.6	14.6
From 500k to 699 RM	32.3	29.1
From 700k to 899k RM	36.8	25.5
From 900k to 999 RM	13.7	17.6
1mill RM and over	12.6	13.2
Hotel location		
Metropolitan areas	67.2	71.8
Non-metropolitan areas	32.8	28.2

Note: * US\$1 = RM (Ringgit Malaysia) 4.50 (1 Jan 2024). High a: expenditure ($n = 179$); Low b: expenditure ($n = 197$).

IV. RESULTS

A. Measurement Model

In order to assess the accuracy and precision of the measurement framework utilized, a comprehensive confirmatory factor analysis was conducted in this research. During the analysis, it was discovered that three specific items related to actions for climate change mitigation exhibited factor loadings below the acceptable threshold of 0.7. Consequently, these items were excluded from further consideration (Li et al., 2021). Following this, the analysis was applied to a refined set of 31 items that met the necessary criteria, all demonstrating standard distribution patterns. In line with recommendations outlined in the literature (Li et al., 2021; Xue et al., 2021; Furlan & Mariano, 2022), an extensive assessment was performed to evaluate the measures' reliability, discriminant and convergent validity. The results of this assessment, shown in Table 3, suggest that the construct reliability and coefficient alpha for each variable exceeded the benchmark of 0.70. It underscores the reliability of the constructs and points to a robust internal consistency across the measures. Additionally, the average variance extracted (AVE) for every construct was found to be greater than 0.5, while all of the indicators demonstrated factor loadings that exceeded the significant level of 0.7, indicating a strong correlation (Li et al., 2021; Cheung et al., 2024). These findings collectively affirm the convergent validity of the measurement framework.

Table 2: Reliability and validity of the items measuring hotel managers sustainable resourcing practice

Constructs	Factor	Factor	Mean	Skewness	kurtosis	VIFa
Global warming consciousness						
	1. I am distraught about global warming.	0.910	5.453	- 0.516	0.221	4.665
	2. I am appalling about the causes of global warming.	0.871	5.298	- 0.271	- 0.208	3.181
	3. I am distraught about the effect of global warming.	0.912	5.455	- 0.491	0.081	4.591
	4. I am distraught about the hazard of carbon emission.	0.900	5.669	- 0.597	- 0.047	4.690
	5. I am appalling about the causes for carbon emission.	0.878	5.445	- 0.528	0.044	3.405
	6. I am distraught about the impact of carbon emission.	0.901	5.689	- 0.732	0.418	4.758

Global warming alleviation fostering actions					
1. I favor sustainable energy over fossil energy to alleviate global warming	0.787	4.597	- 0.467	0.102	2.321
2. I favor vegetarian supply over meat supply to alleviate global warming.	-	-	-	-	-
3. I favor meat supply over vegetarian supply to mitigate global warming.	-	-	-	-	-
4. I favor cultured meat to help reduce global warming.	-	-	-	-	-
5. I prefer local resource supply than imported supply to mitigate global warming.	0.775	3.711	- 0.004	- 0.463	4.947
6. I prefer land freight for locally supply resource than air freight to mitigate global warming.	0.826	4.308	- 0.264	- 0.178	4.311
7. I prefer renewable energy sources over non-renewable to resolve carbon emission in the atmosphere.	0.792	4.617	- 0.570	0.521	2.363
8. I prefer local resource supply than imported supply to lessen carbon emission in the atmosphere.	0.759	4.717	- 0.080	- 0.605	4.749
9. I prefer land freight for locally supply resource than air freight in order to lessen carbon emission in the atmosphere.	0.829	4.273	- 0.304	- 0.231	4.345
Expected gratification by doing sustainable resourcing	0.947	4.607	- 0.271	0.002	4.602
1. I will take great pride in minimizing waste through sustainable sourcing.					
2. I will feel a great sense of achievement by minimizing waste through sustainable sourcing.	0.947	4.549	- 0.259	0.139	4.773
3. I will feel assured that I am minimizing waste through sustainable sourcing practices	0.950	4.638	- 0.355	0.330	4.544
Expected remorse without doing sustainable resourcing					
1. I will feel a sense of guilt if I fail to minimize waste through sustainable sourcing	0.942	4.113	- 0.161	-0.318	4.231
2. I will experience guilt if I don't minimize waste by utilizing sustainable resources	0.938	4.206	- 0.176	-0.319	3.769
3. I will regret it if I don't minimize waste at the hotel through sustainable sourcing	0.912	4.350	- 0.318	0.065	2.969
Attitude toward sustainable resourcing					
1. Minimizing electrical waste in hotel operations is a proactive action	0.896	5.532	- 0.593	-0.010	3.179
2. Minimizing food waste while operating in the kitchen is a positive practice	0.838	5.755	- 0.773	0.417	2.193
3. Minimizing water waste is a crucial practice in hotel operations	0.831	5.323	- 0.534	0.137	1.933
4. Minimizing the waste of natural resources is a valid practice in hotel operations.	0.902	5.397	- 0.475	-0.002	3.141
Subjective standard on sustainable resourcing					
1. Most staff at the place I work think I should practice waste reduction during hotel operation.	0.939	4.428	- 0.368	0.332	4.046
2. Most staff at the place I work would want me to practice recycle system.	0.930	4.416	- 0.405	0.430	3.643
3. Most staff at the place I work support my initiative in energy conservation while operating the hotel.	0.922	4.567	- 0.428	0.703	3.064
Perceived behavioral control on sustainable resourcing					
1. The decision to participate in sustainable resource practices relies on my personal sense of ethics.	0.843	4.995	- 0.471	0.442	1.860
2. I am confident that I can practice sustainable resourcing at my	0.896	4.787	- 0.548	0.996	2.420

workplace.					
3. I have enough opportunities to practice sustainable resourcing at my workplace.	0.908	4.733	- 0.436	0.821	2.480

Table 3: Convergent and discriminant validity.

Constructs	1	2	3	4	5	6	7	8
1. Global warming consciousness	0.896							
2. Global warming alleviation fostering actions	0.345	0.795						
3. Expected gratification by doing sustainable resourcing	0.405	0.490	0.948					
4. Expected remorse without doing sustainable resourcing	0.327	0.508	0.602	0.930				
5. Attitude on sustainable resourcing	0.517	0.324	0.436	0.382	0.867			
6. Subjective standard on sustainable resourcing	0.330	0.494	0.599	0.595	0.367	0.930		
7. Perceived behavioral self-control	0.345	0.364	0.406	0.349	0.444	0.378	0.882	
8. Behavioral purpose to sustainable resourcing	0.506	0.578	0.588	0.555	0.499	0.615	0.537	0.905
AVE > 0	0.803	0.633	0.900	0.866	0.753	0.866	0.779	0.819
Construct reliability (CR) > 0.7	0.960	0.911	0.963	0.950	0.923	0.950	0.913	0.931
Coefficient alpha (α) > 0.7	0.950	0.885	0.944	0.922	0.890	0.922	0.857	0.849
Rho_A (internal consistency reliability) > 0.7	0.952	0.894	0.947	0.924	0.892	0.923	0.864	0.889

Discriminant validity was assessed by examining the relationships between constructs to ensure the robustness of the study's measurement model. This validity is demonstrated when the Average Variance Extracted (AVE) square root for each construct is greater than the correlations observed between that particular construct and the other constructs in the model (Cheung et al., 2024). In this analysis, the lowest square root of the AVE found was 0.795 for the construct of global warming alleviation fostering actions. This value is notably higher than the correlations observed with other constructs, underscoring distinctiveness. For instance, the highest correlation identified in this study was 0.615 between the subjective norm and the intention to reduce waste. However, the square roots of the AVEs for these two constructs, which were 0.930 and 0.905, respectively, are significantly greater than this correlation. It further confirms the discriminant validity of the constructs involved. Moreover, the study rigorously evaluated multicollinearity among all indicators by calculating the Variance Inflation Factor (VIF) (Streukens & Leroi, 2023). The results indicated that VIF values for all items ranged from 1.860 to 4.947, which suggests that multicollinearity is not a concern in this research. It ensures that each indicator provides unique information, enhancing the findings' reliability.

B. Structural Model

The findings derived from the PLS-SEM analysis of the proposed research model are detailed in Figure 2. The results indicate that the expansion of TPB significantly enhances the prediction of individuals' behavioural intentions regarding waste reduction while dining out, achieving a predictive power of 59.9%. The original TPB offers a lesser predictive capacity of 51.5%. This improvement suggests that the framework utilized in this study more effectively captures the nuances of managers' intentions regarding sustainable resourcing management in hotel management settings. A total of nine hypotheses were evaluated through rigorous testing using the PLS bootstrapping method by the methodologies outlined by Streukens and Leroi (2016). Among the significant findings, several relationships were particularly noteworthy. Consciousness of global warming substantially influenced managers' attitudes ($\gamma = 0.462$, $t = 10.003$) and their behavioural purposes ($\beta = 0.154$, $t = 3.698$). Fostering actions to alleviate global warming positively affected attitudes ($\gamma = 0.137$, $t = 2.731$) and purposes ($\beta = 0.192$, $t = 4.346$). 3. The emotions of expected gratification ($\gamma = 0.108$, $t = 1.982$) and remorse ($\gamma = 0.091$, $t = 2.046$) also demonstrated significant positive impacts on individuals' intentions to practice sustainable resourcing. Furthermore, attitudes ($\gamma = 0.095$, $t = 2.180$), subjective standards ($\gamma =$

0.236, $t = 5.156$), and perceived behavioural self-control ($\gamma = 0.204$, $t = 4.637$) each played crucial roles in shaping behavioural intentions. All nine hypotheses in this study received empirical support, underscoring the relationships' robustness.

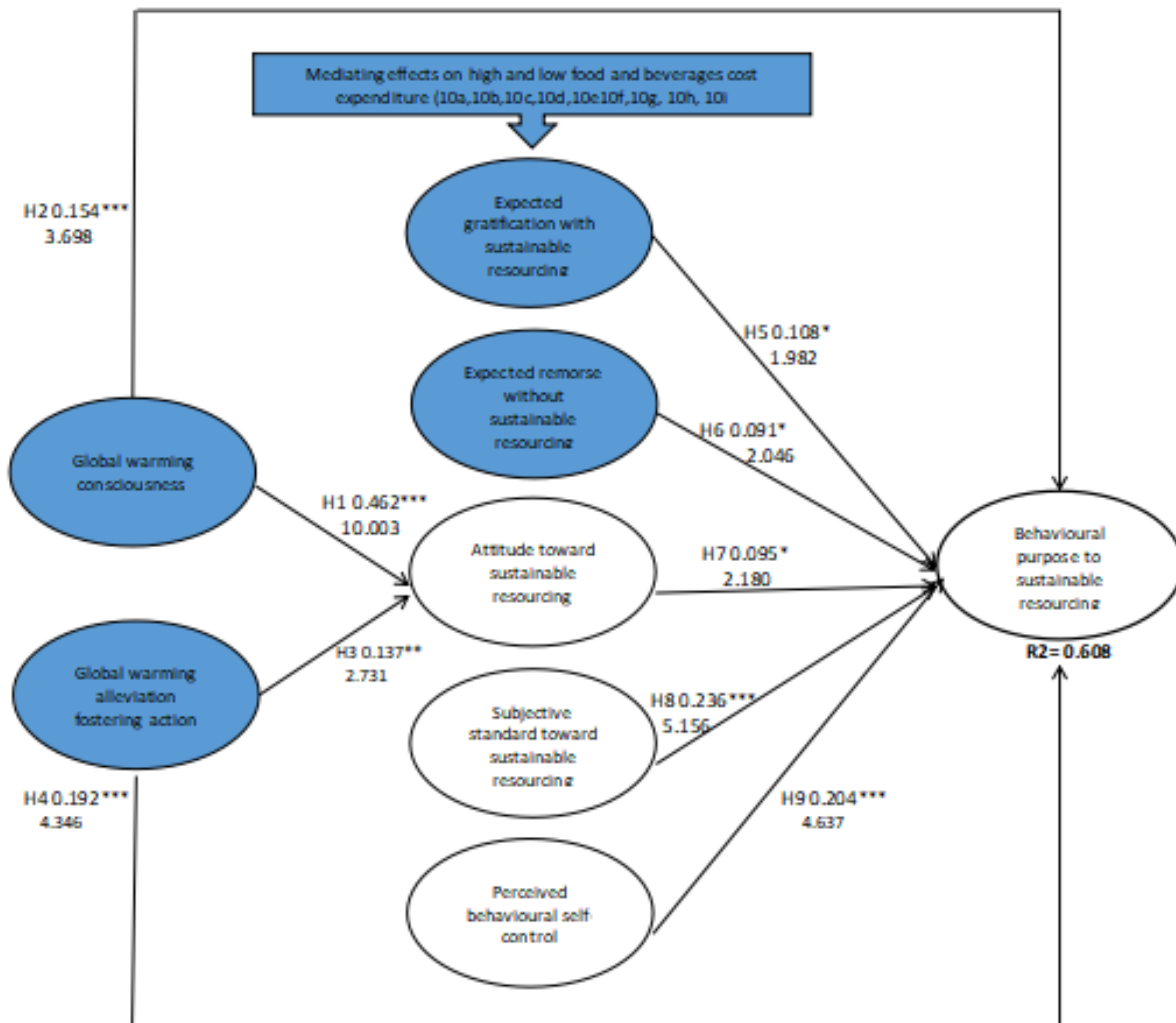


Figure 2: Path analysis results.

In analyzing how high and low expenditures in the food and beverage supply chain influence the outcome., a total of nine hypotheses were analyzed, as detailed in Table 4. The findings revealed that the coefficients for seven of these hypotheses significantly differed between respondents with high spending patterns and those with low spending tendencies. However, two hypotheses—specifically, hypotheses 10e (the influence of anticipated pride on behavioural intention) and 10h (the influence of subjective norm on behavioural intention)—did not show significant variation. Consequently, the data supported hypotheses 10a, 10b, 10c, 10d, 10f, 10g, and 10i. Notably, the effects of global warming awareness on attitude and perceived behavioural self-control on behavioural purpose were markedly stronger among high-spenders compared to their low-spending counterparts. In contrast, several relationships exhibited a more significant impact within the low-spending group. These include the influence of global warming consciousness on behavioural intention, the effects of global warming alleviation-fostering actions on attitude and behavioural purpose, the role of expected remorse on behavioural purpose, and the relationship between attitude and behavioural purpose. It indicates a nuanced dynamic where different spending behaviours manifest distinct patterns in their responses to global warming factors.

Table 4: Result of the structural model

H10	Path	High Group (A)	Low Group (B)	t-Value (A-B)	p-Value (A-B)	Hypothesis Test
H10a	Global warming consciousness → Attitude on sustainable resourcing	0.604 ***	0.324 ***	38.226	<0.001	Supported
H10b	Global warming consciousness → Behavioural purpose to sustainable resourcing	0.135 ns	0.172 **	-5.211	<0.001	Supported
H10c	Global warming alleviation fostering actions → Attitude on sustainable resourcing	0.002 ns	0.261 **	-32.361	<0.001	Supported
H10d	Global warming alleviation fostering actions → Behavioural purpose to sustainable resourcing	0.142 *	0.189 **	-7.010	<0.001	Supported
H10e	Expected gratification by doing sustainable resourcing → Behavioural purpose to sustainable resourcing	0.107 ns	0.109 ns	-0.242	ns	Not supported
H10f	Expected remorse without waste reduction → Behavioural purpose to sustainable resourcing	0.092 ns	0.125 *	-4.187	<0.001	Supported
H10g	Attitude on sustainable resourcing → Behavioural purpose to sustainable resourcing	0.069 ns	0.138 *	-8.592	<0.001	Supported
H10h	Subjective standard on sustainable resourcing → Behavioural purpose to sustainable resourcing	0.229 **	0.241 **	-1.569	ns	Not supported
H10i	Perceived behavioral self-control → Behavioural purpose to sustainable resourcing	0.292 ***	0.158 **	18.929	<0.001	Supported

V. DISCUSSION

The rapid rise in carbon emissions from industrial activities can be primarily attributed to inadequate resource management practices. Among the leading contributors to anthropogenic emissions are food waste and inefficient energy consumption (Abdou et al., 2020; Legrand et al., 2022; Prakash et al., 2023). By adopting sustainable resource management strategies, the hotel and tourism sectors can play a crucial role in mitigating global warming, especially as the influx of tourists begins to recover following the COVID-19 pandemic. Despite the critical importance of this issue, there has been a relative scarcity of research focused on the attitudes and behaviours of hotel management concerning sustainable resource practices (Nisar et al., 2021; Haldorai et al., 2022; Farooq et al., 2022). Much of the existing literature has predominantly concentrated on technical methods for reducing waste and addressing global warming. To fill this significant knowledge gap, this study aims to explore the factors that influence hotel managers to engage in sustainable resource management through the perspective of the TPB model. By employing an extended TPB framework, this research seeks to integrate elements such as awareness of global warming, actions aimed at its alleviation, emotions linked to anticipated pride, the four primary constructs of the TPB, and the moderating role of supply expenses. Through this comprehensive approach, the study provides deeper insights into the motivations behind sustainable resourcing practices in the hospitality sector, thereby contributing to global warming alleviation efforts.

The study results indicate that awareness of global warming is crucial in shaping individuals' attitudes and intentions to engage in sustainable resource practices. Furthermore, taking action towards alleviating global warming has a pragmatic impact on attitudes and the purpose of adopting sustainable resource usage. Emotional factors, particularly feelings of remorse and gratification anticipated by managers, have also been identified as significant drivers influencing their behavioural intentions. About the key components of the TPB, it is evident that managers' attitudes, perceptions of social norms, and perceived self-control over their behaviour significantly affect their choices regarding sustainable resource practices. Additionally, the study finds that the levels of supply chain expenses act as a significant moderating factor, impacting seven out of

the nine hypothesized relationships within the proposed model. The following sections will elaborate on the impact of the theory and managerial implications derived from these findings while also addressing the study's limitations and suggesting avenues for future research.

VI. CONCLUSION

A. *Theoretical Implications*

This study makes significant theoretical contributions to hotel management and tourism by utilizing an expanded Theory of Planned Behaviour (TPB) model within the context of a hotel environment in Southeast Asia, specifically focusing on Malaysia. A central theme of this research is the recognition of global warming awareness and its substantial impact on attitudes toward sustainable resource management and the behaviours of hotel managers. This observation builds upon existing literature that explores the connections between concerns about global warming, attitudes toward energy efficiency, and behaviours related to adopting renewable energy technologies and industrial energy-efficient practices. Furthermore, this research delves into how proactive efforts to mitigate global warming influence attitudes and behaviours related to sustainable resource management within hotel management. This aspect extends prior studies examining the relationships between an individual's interest in addressing global warming, characterized by calls for either individual or system change, but a more cross-cutting perspective to understand various factors that can enable and accelerate pro-environmental choices (Hampton et al., 2023) Additionally, the research brings to light the roles of expected remorse and gratification in shaping behavioural purposes toward sustainable resource management among hotel managers. This analysis expands on existing literature that investigates the relationship between these emotions and personal norms in the context of hotel management, specifically through the view of the norm activation model and the value-attitude-behaviour model. It also examines how expected remorse and gratification influence eco-friendly decision-making processes. The findings indicate that attitudes, subjective norms, and perceived behavioural self-control significantly impact the purpose of engaging in sustainable resource management practices. These findings are congruent with a previous study that has highlighted the importance of these key TPB variables in determining local technopreneur preferences for promoting sustainable practice in the Central Kalimantan region of Indonesia, as well as their effects on industrial waste behaviours within the TPB framework (Andhella et al., 2024)

Another significant theoretical contribution of this research is identifying the moderating effects of varying supply chain expenses on sustainable sourcing practices aimed at alleviating global warming, specifically within the context of hotel chains in Southeast Asia. The analysis reveals that for establishments with high food and beverage (F&B) supply expenditures, the relationships between awareness of climate change, physical attitudes, perceived behavioural control, and intentions to act are notably stronger. It suggests that hotels which invest substantially in high-quality organic products tend to exhibit a more pronounced eco-friendly mindset and a more significant commitment to sustainability, particularly in their support for organic producers (Wang et al., 2024). Conversely, findings indicate that for hotels categorized as low F&B supply expense spenders, the correlations between various factors—including awareness of global warming, intentions to engage in environmentally friendly behaviours, feelings of anticipated guilt, and overall attitudes towards sustainability—are significantly more robust. It highlights a juxtaposition wherein smaller to medium-sized hotel enterprises, which generally operate with tighter supply chains, are more inclined to produce less environmentally harmful wastage compared to larger hotel chains that may exhibit more significant wastage issues as they pursue leisure and tourism-related activities (Ageiwaah, 2020; Camilleri-Fenech et al., 2020). This research thereby expands on existing literature by underscoring the distinct environmental orientations of different types of hotel businesses based on their expenditure levels in the supply chain

B. *Practical Implications*

The Conference of the Parties to the United Nations Framework Convention on Climate Change (COP 28) has strongly emphasized the transformation of food supply systems as a central theme in its agenda, and this emphasis is undoubtedly warranted. Food supply systems contribute, on average, to a staggering 34% of global greenhouse gas (GHG) emissions while supporting the livelihoods and income generation of around half of the world's population. Therefore, ensuring a fair and equitable transition to sustainable and resilient food systems is paramount for achieving meaningful outcomes in climate action and human development.

In response to the pressing challenge of global warming, this work aims to offer a series of actionable managerial strategies designed to enhance sustainable resource practices and promote environmentally conscious behaviours within the hotel management sector. Research indicates that raising awareness about global warming significantly influences attitudes toward sustainable resource utilization and encourages proactive behaviours. For instance, hotel supply chain managers can be motivated to recognize the critical issues surrounding climate change, such as the harmful carbon emissions from the incineration of hotel waste. By fostering this awareness, we can cultivate more environmentally friendly attitudes and practices among managers. This initiative can be undertaken through strategic advertising, promotional campaigns, and targeted behavioural interventions implemented by the hotel industry and government entities. One practical approach would be to adopt sustainable food and beverage practices within hotel businesses. This could include training staff to minimize waste by encouraging guests to waste less food at buffets.

The significant impact of pursuing actions to alleviate global warming also highlights the need for industry and government bodies to stimulate hotel managers' voluntary involvement in waste reduction efforts. By framing these activities as pro-social behaviours, we can encourage greater participation. Moreover, leveraging innovative technologies like augmented and virtual reality can effectively promote content that captivates hotel management's interest in environmental sustainability. Such technologies can vividly convey the journey of food from its source to its destination and illustrate the importance of proper waste disposal, thus deepening the managers' understanding of their ecological footprint and inspiring them to take concrete actions in their operations. The findings indicate that awareness of global warming has a more significant impact on the attitudes and perceived behavioural control regarding intentions among high food and beverage (F&B) supply expense spenders compared to those with lower spending levels. Restaurant practitioners should consider implementing market segmentation strategies that differentiate between customers based on their dining expenditure. Specifically, suppose hotel management and policymakers aim to engage consumers who spend more on dining. In that case, marketing efforts should prioritize emphasizing concerns related to global warming and fostering a sense of self-efficacy concerning waste reduction practices. Conversely, for low F&B supply expense spenders, the relationship between global warming awareness and behaviour, the pursuit of environmentally-friendly actions on attitude and behaviour, feelings of anticipated guilt about their environmental impact on behaviour, and the influence of attitudes on behaviour appear to be more pronounced. It indicates that stakeholders in the hospitality industry may need to adopt a different approach, focusing on waste reduction initiatives by showcasing pro-social behaviours that contribute to combating global warming and mitigating carbon emissions. By tailoring these specialized marketing strategies, hotels can enhance their environmental sustainability efforts and lower operational costs and expenses. It could lead to increased profitability while simultaneously leading to sustainable resourcing, aligning financial objectives with ecological responsibility.

C. Limitations and Future Research Direction

This research provides valuable insights into sustainable sourcing as a strategy for addressing global warming, yet it is important to acknowledge several limitations that highlight opportunities for further research. One significant limitation is that the survey was conducted in only one country, restricting the generalizability of the findings. Future research efforts would greatly benefit from expanding the scope to include additional nations and diverse cultural contexts, which could lead to meaningful comparisons and broaden the applicability of the results. Furthermore, the current study employed a quantitative approach to gather and analyze data, providing a numerical perspective. However, future investigations could gain a richer understanding of individual behaviour concerning sustainable sourcing in the hotel and tourism sector

by incorporating qualitative methodologies. These methods allow researchers to explore deeper motivations, beliefs, and experiences that shape hotel management decision-making. The survey focused on various factors related to atmospheric carbon emissions, a crucial issue tied to global warming, especially in Malaysia and other Southeast Asian regions. Future studies could enhance the existing research by measuring these factors independently, enabling a more detailed analysis of how different dimensions of global warming influence consumer behaviour. This differentiation is essential, as climate change is a global phenomenon with local ramifications that vary in intensity. In Malaysia, the urgency of addressing atmospheric carbon emissions may resonate more profoundly than in other contexts. Additionally, future research could benefit from examining various hotel management practices across multiple countries and locations. Integrating diverse research methods, such as observational studies or big data analysis, would provide a more comprehensive understanding of management behaviours related to global warming and sustainable resourcing within the hotel and tourism industry. Such an approach could help build a more robust knowledge base that supports effective strategies for enhancing sustainability practices across the sector.

The significance of sustainable sourcing in the hotel and tourism industry extends beyond mere compliance; it plays a crucial role in combating global warming. However, there has been a noticeable gap in research focusing on pro-environmental practices within the hotel sector. In response to this oversight, the present study developed and validated a comprehensive theoretical model encompassing various crucial elements. These include global warming awareness, the proactive steps taken to mitigate its effects, the anticipated emotions of pride and guilt associated with sustainable sourcing, and the four essential components of the TPB—namely, attitude, subjective standard, perceived behavioural self-control, and behavioural purpose. Additionally, the model differentiates between high- and low-expenditure groups regarding food and beverage supply. The findings from this investigation indicate that the hotel and tourism sector should emphasize the profound impacts and consequences of sustainable sourcing practices on hotel operations. Additionally, it concluded that the hotel and tourism sectors should leverage emotions experienced by managers to foster heightened engagement in pro-environmental practices, ultimately leading to cost reductions throughout the supply chain. Moreover, this study strongly advocates that industry entrepreneurs give earnest consideration to the primary constructs of the TPB. Doing so can significantly enhance their employees' sustainable management behaviours, paving the way for a more environmentally responsible and economically viable future in the hotel and tourism industry.

REFERENCES

- Abdou, A. H., Hassan, T. H., & El Dief, M. M. (2020). A description of green hotel practices and their role in achieving sustainable development. *Sustainability*, 12(22), 9624.
- Abernethy, M. A., Anderson, S. W., Nair, S., & Jiang, Y. A. (2021). Manager 'growth mindset' and resource management practices. *Accounting, Organizations and Society*, 91, 101200.
- Agyeiwaah, E. (2020). The contribution of small accommodation enterprises to sustainable solid waste management. *Journal of Hospitality and Tourism Management*, 44, 1-9.
- Almulhim, A. I. (2021). Public knowledge and perception of climate change and global warming in the context of environmental challenges and policies in Saudi Arabia. *WIT Transactions on Ecology and the Environment*, 253, 577-589.
- Andhella, S., Djajadikerta, H., & Marjuka, M. Y. (2024). Technopreneurship in pro-environmental behavior for sustainable carbon emission reduction in central kalimantan. *Aptisi Transactions on Technopreneurship (ATT)*, 6(2), 254-269.
- Arslan, H. M., Khan, I., Latif, M. I., Komal, B., & Chen, S. (2022). Understanding the dynamics of natural resources rents, environmental sustainability, and sustainable economic growth: new insights from China. *Environmental Science and Pollution Research*, 29(39), 58746-58761.
- Aziz, F., Md Rami, A. A., Zaremohzzabieh, Z., & Ahrari, S. (2021). Effects of emotions and ethics on pro-environmental behavior of university employees: a model based on the theory of planned behavior. *Sustainability*, 13(13), 7062.
- Balasubramanian, T. N. (2023). Global warming and health hazards to Indian farmers. *Journal of Agrometeorology*, 25(1), 92-97.
- Baumgartner, H., Weijters, B., & Pieters, R. (2021). The biasing effect of common method variance: Some clarifications. *Journal of the Academy of Marketing Science*, 49, 221-235.
- Camilleri-Fenech, M., i Sola, J. O., Farreny, R., & Durany, X. G. (2020). A snapshot of solid waste generation in the hospitality industry. The case of a five-star hotel on the island of Malta. *Sustainable Production and Consumption*, 21, 104-119.
- Cheung, G. W., Cooper-Thomas, H. D., Lau, R. S., & Wang, L. C. (2024). Reporting reliability, convergent and discriminant validity with structural equation modeling: A review and best-practice recommendations. *Asia Pacific Journal of Management*, 41(2), 745-783.
- Creutzig, F., Niamir, L., Bai, X., Callaghan, M., Cullen, J., Díaz-José, J., & Ürge-Vorsatz, D. (2022). Demand-side solutions to climate change mitigation consistent with high levels of well-being. *Nature Climate Change*, 12(1), 36-46.
- Dechamps, P. (2023). The IEA World Energy Outlook 2022—a brief analysis and implications. *European Energy & Climate Journal*, 11(3), 100-103.

- Dorce, L. C., da Silva, M. C., Mauad, J. R. C., de Faria Domingues, C. H., & Borges, J. A. R. (2021). Extending the theory of planned behavior to understand consumer purchase behavior for organic vegetables in Brazil: The role of perceived health benefits, perceived sustainability benefits and perceived price. *Food Quality and Preference*, 91, 104191.
- Elia, A. (2022). Interactive effects of citizen trust and cultural values on pro-environmental behaviors: A time-lag study from Indonesia. *Heliyon*, 8(3).
- Fauzi, M. A., Hanafiah, M. H., & Kunjuraman, V. (2024). Tourists' intention to visit green hotels: building on the theory of planned behaviour and the value-belief-norm theory. *Journal of Tourism Futures*, 10(2), 255-276.
- Furlan, M., & Mariano, E. (2022). A confirmatory factor model for climate justice: Integrating human development and climate actions in low carbon economies. *Environmental Science & Policy*, 133, 17-30.
- Franks, B., Ewell, C., & Jacquet, J. (2021). Animal welfare risks of global aquaculture. *Science Advances*, 7(14), eabg0677.
- Farooq, R., Zhang, Z., Talwar, S., & Dhir, A. (2022). Do green human resource management and self-efficacy facilitate green creativity? A study of luxury hotels and resorts. *Journal of Sustainable Tourism*, 30(4), 824-845.
- Frazier, A. M. (2023). Legal Mechanisms for Protecting the Earth from Climate Change: An Analysis of Limitations, Current Trends and Emerging Alternatives.
- Fritz, L., Baum, C. M., Brutschin, E., Low, S., & Sovacool, B. K. (2024). Climate beliefs, climate technologies and transformation pathways: Contextualizing public perceptions in 22 countries. *Global Environmental Change*, 87, 102880.
- Gong, Y., Tian, J., Li, Y., Zhou, J., Pongpiachan, S., Chen, X., & Sun, Y. (2023). Mitigating perceived environment insignificance through Information engagement. *Science Communication*, 45(4), 431-459.
- Govindan, K., Shaw, M., & Majumdar, A. (2021). Social sustainability tensions in multi-tier supply chain: A systematic literature review towards conceptual framework development. *Journal of cleaner production*, 279, 123075.
- Haldorai, K., Kim, W. G., & Garcia, R. F. (2022). Top management green commitment and green intellectual capital as enablers of hotel environmental performance: The mediating role of green human resource management. *Tourism Management*, 88, 104431.
- Haldorai, K., Kim, W. G., Mussina, K., & Li, J. J. (2024). From personal convictions to collective action: Predicting employees' pro-environmental behaviors in public and private spheres. *International Journal of Hospitality Management*, 122, 103864.
- Hampton, S., & Whitmarsh, L. (2023). Choices for climate action: A review of the multiple roles individuals play. *One Earth*, 6(9), 1157-1172.
- He, Z., Zhou, Y., Wang, J., Li, C., Wang, M., & Li, W. (2021). The impact of motivation, intention, and contextual factors on green purchasing behavior: New energy vehicles as an example. *Business Strategy and the Environment*, 30(2), 1249-1269.
- Hoffmann, S. (2022). Challenges and opportunities of area-based conservation in reaching biodiversity and sustainability goals. *Biodiversity and Conservation*, 31(2), 325-352.
- International Air Transport Association (IATA). COVID-19—An Almost Full Recovery of Air Travel in Prospect; IATA: Montreal, QC, Canada, 2021
- Ismael, K., & Duleba, S. (2021). Investigation of the relationship between the perceived public transport service quality and satisfaction: A PLS-SEM technique. *Sustainability*, 13(23), 13018.
- Jiang, T., He, X., Su, B., Havea, P. H., Wei, K., Kundzewicz, Z. W., & Liu, D. (2024). COP 28: Challenge of coping with climate crisis. *The Innovation*, 5(1).
- Karimi, S., Liobikienė, G., & Alitavakoli, F. (2022). The effect of religiosity on pro-environmental behavior based on the theory of planned behavior: A cross-sectional study among Iranian rural female facilitators. *Frontiers in psychology*, 13, 745019.
- Kannan, D. (2021). Sustainable procurement drivers for extended multi-tier context: A multi-theoretical perspective in the Danish supply chain. *Transportation research part E: Logistics and transportation review*, 146, 102092
- Kanwal, N., Meng, C. S., Watabe, M., Zainal, N., & Siew, J. K. K. (2024). Carbon Footprint of Tourism Activities Including Transportation, Accommodation, and Infrastructure: A Critical Analysis. In *The Need for Sustainable Tourism in an Era of Global Climate Change: Pathway to a Greener Future* (pp. 95-120). Emerald Publishing Limited.
- Kock, F., Berbekova, A., & Assaf, A. G. (2021). Understanding and managing the threat of common method bias: Detection, prevention and control. *Tourism Management*, 86, 104330.
- Kumail, T., Mandić, A., Li, H., & Sadiq, F. (2024). Uncovering the interconnectedness of tourism growth, green technological advancements and climate change in prominent Asian tourism destinations. *Tourism Management Perspectives*, 53, 101284.
- Lavuri, R. (2022). Extending the theory of planned behavior: factors fostering millennials' intention to purchase eco-sustainable products in an emerging market. *Journal of Environmental Planning and Management*, 65(8), 1507-1529.
- Legg, S. (2021). IPCC, 2021: Climate change 2021-the physical science basis. *Interaction*, 49(4), 44-45.
- Legrand, W., Chen, J. S., & Laeis, G. C. (2022). Sustainability in the hospitality industry: Principles of sustainable operations. Routledge.
- Leigh, J., Cairncross, G., & Lamont, M. (2021). Training for event volunteers: factors influencing event managers' resource allocation decision-making. *International Journal of Event and Festival Management*, 12(1), 16-35.
- Li, W., Yuan, K., Yue, M., Zhang, L., & Huang, F. (2021). Climate change risk perceptions, facilitating conditions and health risk management intentions: Evidence from farmers in rural China. *Climate Risk Management*, 32, 100283.
- Lin, M. T., Zhu, D., Liu, C., & Kim, P. B. (2022). A systematic review of empirical studies of pro-environmental behavior in hospitality and tourism contexts. *International Journal of Contemporary Hospitality Management*, 34(11), 3982-4006.
- Lu, Y., Zhang, M. M., Yang, M. M., & Wang, Y. (2023). Sustainable human resource management practices, employee resilience, and employee outcomes: Toward common good values. *Human Resource Management*, 62(3), 331-353.
- Memon, M. A., Ramayah, T., Cheah, J. H., Ting, H., Chuah, F., & Cham, T. H. (2021). PLS-SEM statistical programs: a review. *Journal of Applied Structural Equation Modeling*, 5(1), 1-14
- Naaz, F., Naz, F. M., Mumtaz, A., & Abbas, N. (2023). Exploring Awareness about Global Warming Among Prospective Teachers. *Proc. Pakistan Congr. Zool*, 41, 37-41.
- Nazeef, N. M., Hamid, S., & Ahmed, S. (2024). Investigating Factors Influencing Learning Satisfaction in Blended Learning Environments: A PLS-SEM Approach. *Journal of Asian Development Studies*, 13(2), 726-738.
- Nisar, Q. A., Haider, S., Ali, F., Jamshed, S., Ryu, K., & Gill, S. S. (2021). Green human resource management practices and environmental performance in Malaysian green hotels: The role of green intellectual capital and pro-environmental behavior. *Journal of cleaner production*, 311, 127504.
- Nunes, L. J. (2023). The rising threat of atmospheric CO₂: a review on the causes, impacts, and mitigation strategies. *Environments*, 10(4), 66.

- Prakash, S., Sharma, V. P., Singh, R., & Vijayvargy, L. (2023). Adopting green and sustainable practices in the hotel industry operations-an analysis of critical performance indicators for improved environmental quality. *Management of Environmental Quality: An International Journal*, 34(4), 1057-1076.
- Raihan, A., & Tuspekova, A. (2022). The nexus between economic growth, energy use, urbanization, tourism, and carbon dioxide emissions: New insights from Singapore. *Sustainability Analytics and Modeling*, 2, 100009.
- Rao, X., Qiu, H., Morrison, A. M., & Wei, W. (2022). Extending the theory of planned behavior with the self-congruity theory to predict tourists' pro-environmental behavioral intentions: A two-case study of heritage tourism. *Land*, 11(11), 2069.
- Roy, J., Some, S., Das, N., & Pathak, M. (2021). Demand side climate change mitigation actions and SDGs: literature review with systematic evidence search. *Environmental Research Letters*, 16(4), 043003.
- Saeed, B., Tasmin, R., Mahmood, A., & Hafeez, A. (2022). Development of a multi-item Operational Excellence scale: Exploratory and confirmatory factor analysis. *The TQM Journal*, 34(3), 576-602.
- Salamah, M. J. B., Alradi, M. N., Tanni, A. B. A., Alquran, N. M., Alqudah, R. A., Daradkah, A. M., ... & yousef Alshorman, H. (2024). The influence of innovative leadership on teachers' green behavior: The mediating role of psychological capital. *Revista iberoamericana de psicología del ejercicio y el deporte*, 19(3), 364-381.
- Streukens, S., & Leroi-Werelds, S. (2023). Multicollinearity: an overview and introduction of ridge PLS-SEM estimation. *Partial Least Squares Path Modeling: Basic Concepts, Methodological Issues and Applications*, 183-207.
- Troiville, J., Moisesco, O. I., & Radomir, L. (2025). Using necessary condition analysis to complement multigroup analysis in partial least squares structural equation modeling. *Journal of Retailing and Consumer Services*, 82, 104018.
- UNWTO (2020). How are countries supporting tourism recovery? UNWTO briefing note: Tourism and COVID-19. Madrid: United Nations World Tourism Organization.
- Voumik, L. C., Islam, M. A., & Nafi, S. M. (2024). Does tourism have an impact on carbon emissions in Asia? An application of fresh panel methodology. *Environment, development and sustainability*, 26(4), 9481-9499.
- Wang, L., Zhang, Q., & Wong, P. P. W. (2024). Reexamination of consumers' willingness to stay at green hotels: rethinking the role of social identity theory, value-belief-norm theory, and theory of planned behavior. *Journal of Hospitality Marketing & Management*, 33(4), 547-581.
- Williams, R. R. (2024). *The Relative Strength of Populist Attitudes, Religiosity, and Locus of Control in Predicting Climate-Change Denial* (Doctoral dissertation, Walden University).
- Xue, M., Zhao, Y., Wang, Z., & Zhang, B. (2021). Behavioural determinants of an individual's intention to adapt to climate change: Both internal and external perspectives. *Environmental impact assessment review*, 91, 106672.
- Yang, D., Law, K. S., & Tang, G. (2025). To Be or Not to Be Green? The Double-Edged Sword of Pro-Environmental Pressure in the Workplace. *Human Resource Management*.
- Yin, X., & Xu, Z. (2022). An empirical analysis of the coupling and coordinative development of China's green finance and economic growth. *Resources Policy*, 75, 102476.
- Yeh, S. S., Guan, X., Chiang, T. Y., Ho, J. L., & Huan, T. C. T. (2021). Reinterpreting the theory of planned behavior and its application to green hotel consumption intention. *International Journal of Hospitality Management*, 94, 102827.
- Yli-Panula, E., Jeronen, E., Koskinen, S., & Mäki, S. (2022). Finnish University Students' views on climate change education and their own ability to act as climate educators. *Education Sciences*, 12(3), 169.
- Zhang, W., Zhang, W., & Daim, T. U. (2023). The voluntary green behavior in green technology innovation: The dual effects of green human resource management system and leader green traits. *Journal of Business Research*, 165, 114049.

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ETHIC APPROVAL AND CONSENT TO PARTICIPATE

Not applicable.

CONSENT FOR PUBLICATION

Not applicable.

AVAILABILITY OF DATA AND MATERIAL

All data generated or analysed during this study are included in this published article.

COMPETING INTERESTS

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AUTHORS' CONTRIBUTIONS

The authors confirm their contribution to the paper as follows: study conception and design: data collection; analysis and interpretation of results; draft manuscript preparation; Author; Mohammad Ammalluddin Ramli.

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Razširjena teorija načrtovanega vedenja za razumevanje okolju prijaznega vedenja hotelskih menedžerjev v procesu nabave: Trajnostno pridobivanje virov za ublažitev globalnega segrevanja

Izvleček – Ravnanje in odločanje hotelskih menedžerjev pomembno vpliva na porabo energije v hotelih, stroške poslovanja in okoljska vprašanja. Spodbujanje okolju prijaznega ravnanja med hotelskimi menedžerji je ključnega pomena za trajnostni razvoj v hotelskem in turističnem sektorju. Ta študija želi razumeti dejavnike, ki hotelske menedžerje spodbujajo k sprejemanju trajnostnih praks, zlasti v upravljanju oskrbovalne verige, za boj proti globalnemu segrevanju. Razvit je bil razširjen model, ki temelji na teoriji načrtovanega vedenja in vključuje elemente, kot so zavest o globalnem segrevanju, ukrepi za ublažitev globalnega segrevanja, čustvene reakcije in različne stroške oskrbe. Izvedena je bila spletna anketa med 479 hotelskimi menedžerji, vključenimi v proces nabave v oskrbovalni verigi. Pri analizi podatkov so bile uporabljene tehnike modeliranja strukturnih enačb z delnimi najmanjšimi kvadratnimi vrednostmi, ki so pokazale, da zavest o globalnem segrevanju močno vpliva na odnos menedžerjev in njihovo namero, da se vključijo v trajnostne prakse. Spodbujanje ukrepov za zmanjšanje globalnega segrevanja prav tako pozitivno vpliva na te namene. Poleg tega so predvidene čustvene reakcije, kot je kesanje, ključne za oblikovanje vedenjskih namenov. Ugotovitve kažejo tudi, da osebna stališča, subjektivni družbeni standardi in zaznana samokontrola nad prizadevanji za trajnost vplivajo na namene menedžerjev pri izvajanju trajnostnega upravljanja virov. Zlasti različne ravni izdatkov za preskrbo s hrano in pijačo zmerno vplivajo na sedem od devetih predlaganih hipotez. Ta raziskava ugotavlja znatno vrzel v sedanji literaturi glede razmerja med trajnostnimi praksami hotelskih menedžerjev in globalnim segrevanjem v hotelskem in turističnem sektorju. Z uporabo razširjenega okvira teorije načrtovanega vedenja ta raziskava pomembno prispeva k nenehnim prizadevanjem za izboljšanje trajnosti v hotelskem in turističnem sektorju, zlasti v Maleziji..

Ključne besede – Okolju prijazno ravnanje, Razširjena teorija načrtovanega ravnanja, Ravnanje hotelskih menedžerjev, Hotelski in turistični sektor, Malezija