



College of Business

**UNDERSTANDING EMPLOYEES' VOLUNTARY
PRO-ENVIRONMENTAL BEHAVIOR IN PUBLIC
ORGANIZATIONS – AN INTEGRATIVE THEORY
APPROACH**

**Presented to
The Academic Faculty**

By

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ID# 1040262

**In partial fulfilment
of the requirements for the degree of
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**College of Business
Abu Dhabi University**

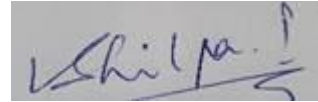
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Understanding employees' voluntary pro-environmental behavior in public organizations – An integrative theory approach

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Abstract

Employee engagement in voluntary environmental behavior in the workplace is reflected in the environmental performance of the organization and contributes to general societal sustainability. The purpose of this study was to investigate the impact of situational factors and internal psychological states on employees' decisions to perform voluntary pro-environmental behavior. It used a model combining the theory of planned behavior, the norm activation model, and the comprehensive action determination model. We sought a thorough understanding of the factors that influence employee intention to engage in voluntary pro-environmental behavior, which may then influence their actual behavior. The proposed constructs were driven by three pro-environmental models: the theory of planned behavior (Ajzen, 1991), the norm activation model (Schwartz, 1977) and the comprehensive action determination model (CADM) (Klo"ckner & Blo"baum, 2010). The study's conceptual model, which included variables such as attitude, perceived behavioral control, personal moral norms, perceived corporate social responsibility, and organizational citizenship behaviors towards the environment, helps to explain a substantial proportion of employees' intentions to perform voluntary pro-environmental behavior. This study focuses on pro-environmental behavior that is practiced regularly enough to become a daily, habitual practice. The study also examined the moderating effect of habit (HAB) on the relationship between intended and actual voluntary pro-environmental behavior.

Four research objectives were proposed in this study to address gaps in knowledge about employee voluntary pro-environmental behavior. Its initial goal was to create a framework for measuring voluntary pro-environmental behavior in public organizations. Second, it investigated the factors that influence voluntary pro-environmental behavior

among employees in public organizations. Third, it searched into the impact of employees' intention on their actual behavior in the public sector. Fourth, it looked at how habit affected the relationship between intended and actual voluntary pro-environmental behavior.

The survey was distributed to public entities in the United Arab Emirates (Abu Dhabi city) in various sectors such as education, environment, oil and gas, energy, and agriculture. Data were collected from 519 completed surveys from public sector employees using a time-lagged design in three waves to eliminate typical technique bias, and data collection took place in three waves at two-week intervals (Podsakoff et al., 2003).

The findings of this research demonstrated that employee perceptions of corporate social responsibility (CSR), like all other variables, had a significant impact on intention to engage in voluntary pro-environmental behavior. Habits (HABs) associated with pro-environmental behavior strengthened the link between intention and actual behavior. These findings can be used by public sector planners, managers, and practitioners to improve their organization's environmental performance by leveraging nonmandated actions. Furthermore, provide opportunities for employees to engage in environmental discussions, and involving managers actively and intentionally in the organization by adopting a strategy that integrates awareness of environmental practices. Employees in organizations with flexible CSR policies and that sponsor social activities to improve public well-being and individual life quality can achieve a better work-life balance. Positive perceptions of corporate social responsibility assist employees in developing social interactions with stakeholders, increasing their involvement in society and decreasing work stress.

The results of this study shed light on the factors that influence employees' voluntary pro-environmental behavior. To the best of the authors' knowledge, this is the first study of its kind to combine these three models in attempting to clarify the variables influencing intent to engage in voluntary pro-environmental behavior at work in the Middle East region and offered new directions for academics to investigate in future. This study focuses on public organizations in a developing country, and therefore contributes to and broadens existing knowledge on voluntary pro-environmental behavior. This approach should enable organizations to improve their environmental performance and therefore probably their long-term sustainability.

List of abbreviations

ADSG	Abu Dhabi School Of Government
AED	Arabic Emirati Dirhams
AGEDI	Abu Dhabi Global Environmental Data Initiative
AVE	Average Variance Extracted
CADM	Comprehensive Action Determination Model
CCS	Carbon Capture And Storage
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
COHS	Creature Of Habit Scale
CSR	Corporate Social Responsibility
IF	Impact Factor
IFI	Incremental Fit Index
IRENA	International Renewable Energy Agency
KMO	Kaiser–Meyer–Olkin Test
NAM	Norm Activation Model
NEP	New Ecological (Environmental) Paradigm
OCB	Organizational Citizenship Behavior
OCB-E	Organizational Citizenship Behavior Toward The Environment
PBC	Perceived Behavioral Control
RMSEA	Root Mean Squared Error Of Approximation
SEM	Structural Equation Modeling
SNIP	Source Normalized Impact Per Paper

SPSS	Statistical Package For The Social Sciences
SRHI	Self-Report Habit Measure
TPB	Theory of Planned Behavior
UAE	United Arab Emirates
UNDP	United Nations Development Program
VPEB	Voluntary Pro-Environmental Behavior

Declaration

I certify that I have read this dissertation and that in my opinion it meets the academic and professional standards required by Abu Dhabi University as a dissertation for the degree of Doctor of Business Administration.

Dedication

“Every challenge is nothing more than a chance to make things better”

This dissertation is dedicated to:

My parents, who never stop giving of themselves in countless ways, especially

my dear mother, who has been my supporter from start to finish,

My beloved children, Hamdan, Mohamed, Rashed, Fatima, and Mouzah,

whom I can't force myself to stop loving.

My beloved brothers and sisters, particularly my dearest sisters Latifa and

Worood, who stand by me when things look bleak,

My dearest friends, Amna, Nancy, Mariam, Daniela, Refaa, Lamya and

Fatima, who encourage and support me,

To all the people in my life who touch my heart, I dedicate this research

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Publication Arising From This Dissertation

During the preparation of this dissertation, the author developed two publications:

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CHAPTER 1: INTRODUCTION

The main purpose of this research was to examine the effect of attributes of voluntary pro-environmental behavior on employees' intention and behavior in the context of public organizations in the United Arab Emirates (UAE). These attributes included both personal factors (e.g., attitude, perceived behavioral control, personal moral norms) and situational factors (e.g., perceived corporate social responsibility, organizational citizenship behavior towards the environment). The study also explored the moderating role of habit on the relationship between intention and actual voluntary pro-environmental behavior. The study was conducted during the COVID-19 pandemic. All estimates and projections are therefore based on literature and data collection constrained by the "new normal" of pandemic-related restrictions.

1.1 An overview of pro-environmental behavior

The United Nations Development Program (UNDP) seeks a balance between people and the environment (Steiner, 2020). In a survey conducted by UNDP and the University of Oxford in 2020, 64% of the respondents believed that climate change was a worldwide emergency (Steiner, 2020). There was also growing recognition that the climate consensus has shifted from crisis to emergency, and it is time to bridge the gap between ambition and action. Amid growing awareness of environmental sustainability, the Middle East region is undergoing changes highlighting the importance of changing economic growth

and development paradigms (Steiner, 2020). Environmental movements have resulted in national governments adopting more ambitious environmental objectives, and increasing global collaboration (Ren et al., 2018).

Business and human activities are the primary contributors to global environmental challenges (Singh & Singh, 2017). There is now complete scientific agreement on anthropogenic global warming, and that human activities have contributed significantly to the rise of greenhouse gases in the atmosphere (Powell, 2019). It is also generally agreed that action is needed from individuals, businesses, and government to address global warming.

The effectiveness of an organization in establishing and implementing an environmental policy is heavily reliant on employees' personal beliefs and behavior (Chou, 2014). Corporate environmental strategy will affect employees' commitment to the organization, their voluntary environmental behavior, and the organization's own environmental performance (Kim et al., 2019). When employees recognize the presence of a sustainable environmentally responsive strategy, they receive a message that the organization supports behavior that promotes the natural environment (Norton et al., 2014). The underlying benefit of a well-informed corporate environmental strategy is the creation of a good organizational climate, which encourages employees to engage in voluntary environmental behavior (Raineri & Paillé, 2016). The development of a corporate environmental strategy is critical for an organization because it allows its employees to be proud of their organization's role in environmental protection. This stimulates both employee commitment to the organization and voluntary environmental behavior, resulting in the stable and successful environmental performance of organizations (Kim et al., 2019).

1.2 Voluntary pro-environmental behavior in the workplace

The environmental performance of organizations is often determined by employees' voluntary engagement in 'greening' programs (Boiral, 2009, Lamm et al., 2013, Tsai et al., 2016). Employees in any organization can voluntarily engage in a variety of environmentally friendly practices, including recycling, carpooling, or using video conferencing instead of traveling. However, in many organizations, these behaviors tend to be limited, and as far as can be ascertained, no studies have specifically examined the factors that affect them. Pro-environmental behaviors are not constant and vary greatly depending on the level of discretion involved (Yuriev et al., 2018). Examples such as recycling, turning off lights and electric appliances, using videoconferences instead of traveling, taking public transport, and drinking from reusable cups and bottles, all contribute to cleaner production and reducing organizations' environmental impact. However, they are not always explicitly included in management systems. These actions may sound minor on an individual level, but they have a major cumulative impact on the organization's overall environmental performance (Tsai et al., 2016). Employees have a critical role in overcoming these issues (Lülfes & Hahn, 2014). Their involvement in voluntary behavior at work will have an impact on environmental performance. It is therefore worth investigating employee behavior in the workplace and its influence on the private sphere. Business approaches must evolve, with governments at all stages of development being exposed to and contributing to environmental deterioration in various ways (Alzaidi & Iyanna, 2021). In general, voluntary pro-environmental behavior can be designed to act either directly or indirectly. It

directly targets environmental challenges such as energy, waste, resource, and emission issues. In an indirect way, voluntary pro-environmental behavior acts as a catalyst for further progress in mitigating climate change (Lülfes & Hahn, 2013).

This study sheds light on individual voluntary pro-environmental behavior that is not prescribed or mandated by the organization, i.e., behavior that is not covered in formal job descriptions, role expectations, or job criteria. This behavior is therefore characterized by being driven by individual choice. The study also focused on behavior that is rooted in the daily tasks of employees within the organization. This behavior is both common and generally short-term (Nesbit et al., 2018). Pro-environmental behavior of this kind is not directly recognized by corporate reward systems because it is not included in formal job descriptions. Instead, it is a decentralized, unstructured form of behavior initiated by individuals (Paillé et al., 2014). It is therefore unlike corporate volunteering, which often comes with formally organized company support for those who wish to volunteer their time and skills in service to the community (Kim et al., 2019).

1.3 The UAE government's efforts toward the environment

Climate change has become an obvious threat to the entire planet in recent years. The United Arab Emirates (UAE) is one of the countries in the world with the highest level of vulnerability to the possible effects of climate change. Climate change is difficult to manage because greenhouse gas emissions do not obey regulations. Governments must work together and take global action to protect the planet (Mfarrej, 2019). A Gulf News investigation estimated that

by 2050, the UAE will see a 2% increase in temperature and a 10% increase in humidity. Energy consumption will rise by 11%, construction costs will rise by \$834 million, the power required to meet the additional demand for electricity will equal 18 solar power plants, and the new demand for energy will produce CO₂ emissions equivalent to one car making 17455 round trips to the moon. This will have significant costs. Emirates Nature-WWF has stated that climate change poses a risk to the business, economics, and social sectors (Baldwin, 2017).

Abu Dhabi's geographic location and climate mean that it is subject to severe weather patterns, with normal temperatures ranging from 23°C to 34.8°C, rising as high as 50°C in the summer (Oxford Business Group, 2020). The emirate recorded just 80.2 mm of rainfall in 2018 (Oxford Business Group, 2020). The low rainfall and high temperatures have resulted in significant increases in water and energy consumption. High rates of per capita resource use, rapid development, and a dramatic population expansion all contribute to the strain. These variables have also resulted in increased waste production and pressure on natural ecosystems (Oxford Business Group, 2020). To address these issues, the Abu Dhabi government's primary policy goals strive to balance social and economic growth with environmental sustainability, making the absolute assumption that environmental wealth and well-being are critical to long-term prosperity (Oxford Business Group, 2020).

Most recently, the UAE has reaffirmed its commitment to addressing climate change by becoming one of the first countries to sign the Paris Agreement in September 2016. The UAE is implementing several energy and water conservation measures to support an ambitious 'nationally determined contribution' to generate 27% national clean energy by 2021 through large-scale

nuclear and renewable energy projects (The UAE Government Portal, 2020). The UAE is attempting to manage greenhouse gas emissions from major sectors, including heavy industries, as part of a national green growth framework known as the Green Agenda 2015–2030 (UAE Ministry of Climate Change and Environment, 2016). The Abu Dhabi government has implemented several environmental programs and projects that have enhanced the quality of the environment. These include:

- (1) The Abu Dhabi Global Environmental Data Initiative (AGEDI) undertook a series of studies and research on the effects of climate change at the local, national, and regional levels.
- (2) Since 2009, Abu Dhabi has hosted the International Renewable Energy Agency (IRENA).
- (3) The government has established a large carbon capture and storage (CCS) project in Abu Dhabi, which will be administered by Al Reyadah Abu Dhabi Carbon Capture Company (The UAE government Portal, 2020).

The UAE's climate change challenge is to promote public awareness of the issue, reduce greenhouse gas emissions, and encourage control of greenhouse gas emissions from other regions across the globe (Mfarrej, 2019). This study involved respondents from Abu Dhabi city's public sector organizations because of the key role that Abu Dhabi's government is playing in managing climate change. The involvement of public sector employees is therefore essential to achieving the ultimate goal of environmental sustainability.

1.4 Problem statement

Several studies have investigated the impact of environmental volunteering on people's pro-environmental behaviors (Büchs et al., 2012; Cooper et al., 2015; Seymour et al., 2018). They have highlighted the importance of investigating these influences over time, as well as considering mediating mechanisms and potential correlations between factors. In recent years, there has been an increase in scholarly interest in investigating employees' discretionary environmental behaviors (Yuriev et al., 2018). This has provided insight that might influence employees' pro-environmental behavior in the workplace. However, despite advances in both academia and business, organizations continue to face significant human resource challenges in delivering sustainability (Achieng Owino, 2016; Mansoor et al., 2021). However, research on workplace pro-environmental behavior predictors is still in its initial phases (Robertson & Barling, 2015).

As a result, little is known about the processes and mechanisms by which these attributes influence employees' behavior, or the circumstances under which their impact is strengthened and/or diminished (Norton et al., 2015). Organizations' actions are a result of their members' decisions, actions, and performance. Understanding, encouraging, influencing, and improving environmental behaviors of employees are therefore critical to organizational environmental sustainability (Dilchert & Ones, 2012).

Three pro-environmental models influenced the proposed constructs: the theory of planned behavior (Ajzen, 1991), the norm activation model (Schwartz, 1977), and the comprehensive action determination model (Klöckner &

Blöbaum, 2010). These models provide a structural framework to investigate the influence of interpersonal and organizational interaction variables, and individual intention, on employee pro-environmental behavior. Extending existing behavioral models to the workplace results in the addition of the organizational context, as well as an emphasis on interpersonal aspects through integrating group dynamics and management support (McDonald, 2014).

This study has shed new light on voluntary pro-environmental behavior in the Middle East region, as well as provided new research directions for academics to explore in the future. It focuses on public organizations in a developing country, so it adds to and broadens existing knowledge on voluntary pro-environmental behavior from a relative point of view. The majority of previous research in this field has been conducted in developed countries. Because of cultural differences, findings from one country may not apply to another where preferences, expectations, and cultural or socioeconomic norms differ. According to cross-cultural studies theories, employees perceive and react differently based on their cultural values (Islam et al., 2018; Mehmood et al., 2022a; Rupp et al., 2013).

1.5 Research objectives

This study proposed four research objectives to address gaps in knowledge about employee voluntary pro-environmental behavior (see Table 1.1). It aimed:

- To develop a framework to measure voluntary pro-environmental behavior in public organizations.
- To examine the factors that influence employees' voluntary pro-environmental behavior in public organizations.

- To investigate the effect of public sector employees' intention to perform voluntary pro-environmental behavior on their actual behavior; and
- To assess the moderating effect of habit on the relationship between intended and actual voluntary pro-environmental behavior.

1.6 Research questions

This study intended to address three research questions and examine seven hypotheses about the relationship between the attributes that influence employee intention and actual voluntary pro-environmental behavior in public organizations. The research questions (see Table 1.1) were:

RQ1: Which factors significantly influence employees' intention to perform voluntary pro-environmental behavior in public sector organizations?

RQ2: To what extent are employees' intended and actual voluntary pro-environmental behavior related in public sector organizations?

RQ3: Does habit moderate the relationship between intended and actual voluntary pro-environmental behavior?

The second section discusses the theoretical framework and literature review, and sets out the research model and hypothesis of this study. The third section goes through the scale development, data collection, and reliability and validity testing. The fourth section describes the hypothesis testing and results analysis. The last section draws conclusions from the study findings.

Table 1. 1 Research Objectives, Questions and Hypotheses

Research Objectives (RO)	Research Questions (RQ)	Research Hypotheses (RH)
RO1: To develop a framework to measure voluntary pro-environmental behavior in public organizations.		Literature Review
RO2: To examine the factors that influence employees' voluntary pro-environmental behavior in public sector organizations.	RQ1: Which factors significantly influence employees' intention to perform voluntary pro-environmental behavior in public sector organizations?	H1. Attitude has a significant positive impact on intention to perform voluntary pro-environmental behavior. H2. Perceived behavioral control has a significant positive impact on intention to perform voluntary pro-environmental behavior. H3. Personal moral norms have a significant positive impact on intention to perform voluntary pro-environmental behavior. H4. Perceived CSR has a significant positive impact on intention to perform voluntary pro-environmental behavior. H5. Organizational citizenship behavior toward the environment has a significant positive impact on intention to perform voluntary pro-environmental behavior.
RO3: To investigate the effect of public sector employees' intention to perform voluntary pro-environmental behavior on their actual behavior.	RQ2: To what extent are employees' intended and actual voluntary pro-environmental behavior related in public sector organizations?	H6. Intention to perform voluntary pro-environmental behavior has a significant positive impact on voluntary pro-environmental behavior in public sector organizations
RO4: To assess the moderating effect of habit on the relationship between intended and actual voluntary pro-environmental behavior.	RQ3: Does habit moderate the relationship between intended and actual voluntary pro-environmental behavior?	H7. Habit moderates the relationship between intention and actual voluntary pro-environmental behavior.

1.7 Research significance

This study makes a number of theoretical contributions in the field of voluntary pro-environmental behavior in the workplace. First, there is a lack of research on employees' pro-environmental behavior that is not linked to formal procedures or organizational rules (Kim et al., 2017). Previous research has examined employee voluntary pro-environmental behavior, but as a way to study the effect of supervisors and managers (Raineri & Paillé, 2016; Robertson & Barling, 2013; Wesselink et al., 2017), the role of an environmental management system (Janmaimool & Khajohnmanee, 2019) or as a part of human resource management (Achieng Owino, 2016; Paillé et al., 2014; Ren et al., 2018). These studies therefore concentrate on the controlled environment of organizational rules, regulations, and management systems. Employees who participate in pro-environmental behavior voluntarily without policies are those who engage in environmentally sustainable practices because they believe it is the right thing to do, and not necessarily because it is mandated by the organization's policies. These employees may be motivated by personal values, a desire to reduce their environmental impact, or a belief that sustainable practices benefit society as a whole. On the other hand, employees who follow environmental policies only inside the organization are those who adhere to the rules and regulations set forth by the organization. They may not necessarily engage in environmentally sustainable practices outside of work, and may not be motivated by personal values or a desire to reduce their environmental impact. This study focused on employees' pro-environmental behavior that is unrelated to formal procedures or organizational

rules.

Second, this study examined the role of corporate social responsibility and cultural aspects within the organization, such as organizational citizenship behavior. It assessed employees' perceptions of these aspects beyond formal procedures or organizational rules. Third, it examined the moderating effect of habit in employees in public organizations. Habits are implicit connections formed between contexts and responses as a result of repeated reward-based learning (Wood & Runger, 2016). When people engage in habit, their actions are automatically prompted by awareness of relevant context signals. This implies that habit acts as a moderator between behavior and predictor. It is hoped that this work will encourage other scholars to examine these issues using structural equation modeling.

Inoue and Alfaro-Barrantes (2015) carried out a review of 17 studies on employee pro-environmental behavior in the workplace. The review offered several prospective directions for study for academics interested in this research issue. The recommendations were divided into four categories: (1) forms of pro-environmental behavior, (2) attributes of pro-environmental behavior, (3) research samples, and (4) theoretical frameworks (Inoue & Alfaro-Barrantes, 2015). This study contributed to the second and fourth of these pillars, understanding the attributes of voluntary pro-environmental behavior, and testing the theoretical frameworks governing the behavior.

From a practical perspective, this study's findings suggest that public sector managers will need to consider voluntary pro-environmental behavior factors when establishing the values and knowledge required to support appropriate initiatives. They may, for example, provide opportunities for

employees to engage in environmental discussions, and involve managers actively and intentionally in the organization by adopting a strategy that integrates awareness of environmental practices. This should enable organizations to improve their environmental performance and therefore probably long-term sustainability.

1.8 Definition of key terms

The study and its conceptual model involve several specific terms. This section provides definitions to help readers to understand those terms in the context of this study.

1.8.1 Voluntary pro-environmental behavior

Pro-environmental behavior defined as “ behavior that consciously seeks to minimize the negative impact of one’s actions on the natural and built world.” (Kollmuss & Agyeman , 2002 , P.240) , in which voluntary means that it is not specified in an official job description (Paille & Boiral, 2013).

1.8.2 Attitude

Attitudes defined as a person's beliefs with regard to the consequences of specific acts (Cordano et al., 2010 , p.466).

1.8.3 Perceived behavioral control

Perceived behavioral “is concerned with judgments of how well one can execute courses of action required to deal with prospective situations” (Bandura, 1982,p.122).

1.8.4 Personal moral norms

Personal moral norms defined as ‘feelings of moral obligation to perform or refrain from specific actions’ (Schwartz & Howard, 1981,p. 191).

1.8.5 Perceived CSR

CSR perception was adopted by Waldman et al. (2006, p. 1703), as “actions on the part of the firm that appear to advance, or acquiesce in the promotion of some social good, beyond the immediate interests of the firm and its shareholders and beyond that which is required by law.”

1.8.6 Organizational citizenship behavior (OCB) toward the environment

Individual actions are usually referred to as organizational citizenship behaviors for the environment (OCBEs): “individual and discretionary social behaviors not explicitly recognized by the formal reward system and contributing to improve the effectiveness of environmental management of organizations” (Boiral, 2009, p. 223).

1.8.7 Intention to perform behavior

Intention defined as the motivation to adopt a given behavior (Ajzen, 1991, p.181) and is predicted by three factors : attitude, subjective norm, and PBC (Ajzen, 1991).

1.8.8 Habit

Habits can be defined as ‘... learned sequences of acts that have become automatic responses to specific cues, and are functional in obtaining certain goals or end states’ (Verplanken & Aarts, 1999, p.104).

1.9 Overall structure of the research

This dissertation consists of two parts. Figure 1.1 shows the overall structure of this study. The first part developed an instrument to measure public

sector employee perceptions of voluntary pro-environmental behavior. This instrument was designed to be applicable in workplaces in diverse sectors.

The second part focused on testing the influence of this scale in public sector organizations in the UAE. It therefore examined the effects of employees' perceptions of voluntary pro-environmental behavior on their workplace in the UAE. The study also tested the moderating effect of habit on the relationship between intention to perform voluntary pro-environmental behavior and the behavior itself.

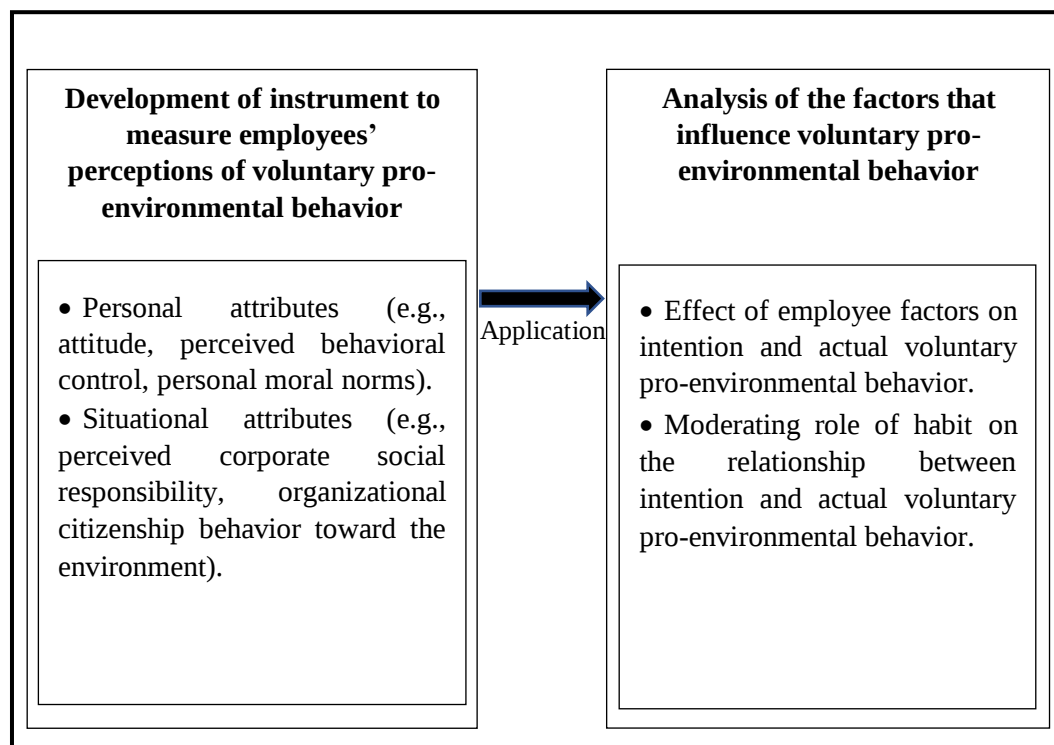


Figure 1. 1 Overall structure of the study

1.10 Research process

This research used a process based on the hypothetic–deductive method proposed by Sekaran and Bougie (2019) (see Figure 1.2). The research process

started with general phenomena, including defining the research problem, research questions and research objectives. The analysis of the literature on voluntary pro-environmental behavior of employees and its factors in the context of public sector organizations exposed a gap, with very few empirical studies on this issue.

This suggested that a deeper understanding was needed of the importance of employees' voluntary pro-environmental behavior in the workplace and its relationship with habits. The literature review focused on analyzing information about the research phenomena. Information was sought on five issues:

- (1) Voluntary pro-environmental behavior definitions, generic models, and relationships with other constructs.
- (2) Pro-environmental behavior theories.
- (3) An integrative model approach.
- (4) The effect of perceived CSR and OCB toward the environment on intention to perform voluntary pro-environmental behavior; and
- (5) The moderating role of habit on the relationship between intention and actual voluntary pro-environmental behavior in public sector organizations (see Chapter 2).

Third, the research framework and hypotheses were created, drawing on the literature review. A theoretical framework was developed, incorporating the most relevant factors for voluntary pro-environmental behavior in public sector organizations, and their relationship with habit. A research instrument was developed from the literature and operationalized using a five-point Likert-type scale (see Chapter 3). Fourth, the reliability and validity of the instrument were

tested on a pilot sample. The questionnaire was distributed to employees of public sector organizations in the UAE. The collected data were analyzed to find which factors influenced employees' perceptions of voluntary pro-environmental behavior in public sector organizations. Structural equation modelling, confirmatory factor analysis, and regression analysis were used to test the hypotheses (see Chapter 4). Fifth, the findings were considered in the context of previous studies, the conceptual framework revised if necessary, theoretical and practical implications were developed (See Chapter 5). Finally, an overview of the study, limitations and suggestions for future studies, and conclusions were provided (see Chapter 6). This phase of the research process shows the features of the deductive approach, along with the theoretical and managerial implications of the study.

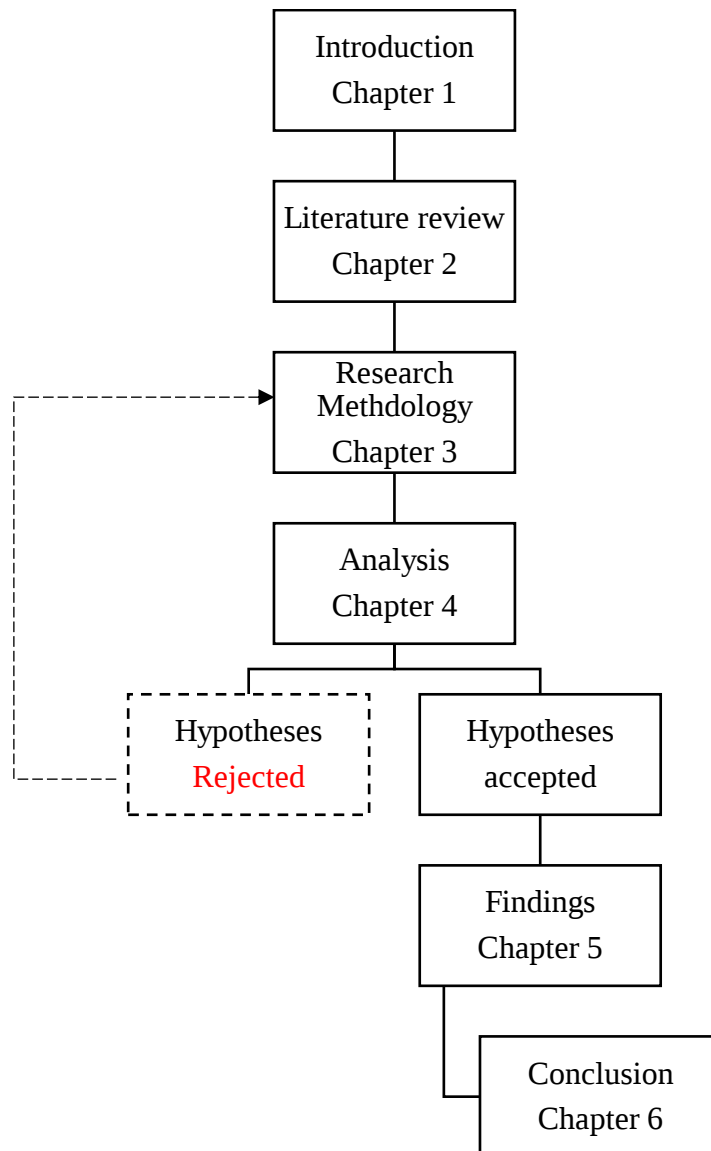


Figure 1. 2 Research process

1.11 Organization of the dissertation

The structure of the dissertation is as follows:

Chapter 1: Introduction. This chapter sets out the background to the problem, the research setting, the problem statement, the purpose of the research, the research questions, significance of the study, definition of key terms, and the study's contribution.

Chapter 2: Literature Review. This chapter explains the purpose of the literature review and describes the review methodology (literature search). It discusses the influencing factors of pro-environmental behavior, and the associated empirical research in public sector workplaces, and develops a research model and hypotheses for testing.

Chapter 3: Research Methodology. This chapter provides a detailed description of the research methodology. It explains the design, questionnaire development, sample description, data collection method, and analytical strategies including descriptive statistics, factor analysis, correlation analysis, regression analysis and moderation analysis.

Chapter 4: Analysis. This chapter describes the findings from the analysis of the quantitative data collected through the survey instrument. It includes the results of reliability and validity testing, and analysis of the relationship between dependent and independent variables, including both direct and indirect relationships.

Chapter 5: Findings. This chapter provides a discussion of the findings in the context of previous research. It also discusses the theoretical and practical implication of the findings.

Chapter 6: Conclusion. This chapter provides a brief summary of the research and discusses how managers and policymakers in public sector organizations could use the findings to promote voluntary pro-environmental behavior through focusing on the most influential aspects of voluntary pro-environmental behavior, especially situational factors. It also describes the study limitations and provides some recommendation for future research.

1.12 Chapter summary

This chapter has set out the background to a study of voluntary pro-environmental behavior among public sector employees. It also set out the problem statement, research objectives, research questions, theoretical and practical contribution of this study, and an overview of the terms used in this study. The next chapter reviews the literature in the field to expand on the ideas outlined in this chapter. It discusses in more detail which employee factors affect voluntary pro-environmental behavior in public organizations. It therefore provides the basis for model construction and hypothesis development.

CHAPTER 2: LITERATURE REVIEW

This chapter reviews the literature on employees' voluntary pro-environmental behavior and its relationship with personal and situational factors in public sector organizations. The main areas discussed include the general factors of employees' voluntary pro-environmental behavior, attitude, perceived behavioral control, personal moral norms, perceived social corporate responsibility, and organizational citizenship behavior toward the environment. The chapter also reviews the literature on the moderating effect of employee habits on the relationship between intention and actual voluntary pro-environmental behavior. Finally, it develops a research model and series of hypotheses for testing.

2.1 Defining and conceptualizing voluntary pro-environmental behavior

Employees' voluntary pro-environmental behavior is a new concept that deserves more development in terms of content and operationalization (Francoeur et al., 2019). Voluntary individual behavior is defined as behavior that is not prescribed or mandated by the organization and is not included in formal role descriptions, role expectations, or job criteria (Lamm et al., 2013). This behavior is therefore a matter of individual choice, despite being rooted in everyday activities. As a result, it is conducted regularly and is typically a short-term activity that is not planned for a lengthy period of time, as is the case with volunteering activities (Rodell et al., 2016). Corporate volunteering is commonly linked with formally organized management support for employees willing to contribute their time and skills in the community (Breitsohl & Ehrig, 2017). Previous empirical studies

suggest that employees' pro-environmental behavior has a significant impact on corporate environmental performance (Kim et al., 2019; Tang et al., 2018) and financial performance (Jaafar et al., 2018). By improving organizational environmental performance, this behavior also enhances the quality of the natural environment (Norton et al., 2015). Employees' voluntary pro-environmental behavior is therefore a major element that may affect the environment through the organization.

2.2 Workplace pro-environmental behaviors

Several terms are used for pro-environmental behaviors, including conservation behaviors, environmentally friendly behaviors, environmentally sustainable behaviors, environmentally significant behaviors, and responsible environmental behaviors. Lülfs and Hahn (2013) used the term “voluntary pro-environmental behavior of employees” to define employee behavior associated with participating in or challenging the organization's environmental policy. McDonald (2014) presented a framework that provides more insights into the attributes of workplace pro-environmental behavior and identified common findings across existing workplace models. Consumers, unlike employees, can monitor their energy use at home or in their transportation options, and change their behavior to obtain immediate returns such as lower energy expenses, which generally encourages the development of habits. The economic aspect of adopting pro-environmental behaviors is a crucial motivation for the general public or customers (Kollmuss & Agyeman, 2002). However, despite the importance of

economic motivation, the ethical normative values approach gives a more robust prediction of pro-environmental behavior (Parzonko et al., 2021; Wells et al., 2015). Most employees are uninterested in their employer's energy use or expenses, and the sharing of facilities and appliances may create challenges to changing behavior (Bedwell et al., 2014). This has been described as a "tragedy of the commons" in which management of a shared resource is transferred to a figure with few options for exercising control (Goulden & Spence, 2015). However, the effect of social and group norms and a perception of community (Deline et al., 2015) may improve motives to save energy at work (Deline et al., 2015). Personal environmental norms are likely to have the greatest influence on employees' environmental behaviors (Chou, 2014). There is considerable debate over whether these pro-environmental behaviors are all voluntary or a blend of voluntary and nonvoluntary actions.

Researchers have provided several definitions of both voluntary and nonvoluntary pro-environmental behaviors. Bissing-Olson et al. (2013) described pro-environmental behavior as both task-related (non-voluntary) and proactive (voluntary) behaviors, including "ecopreneurship". According to Dilchert and Ones (2012), employee green behavior can be classified into five basic categories: avoiding harm, conserving, working sustainably, influencing others, and taking the initiative. Ones and Dilchert stated that these efforts, which include both in-role and extra-role actions, may add to or hinder environmental sustainability. Norton et al. (2015) divided employee green behavior into two categories: mandatory employee green behavior (measurable individual behavior that contributes to environmental

sustainability objectives within the workplace context) and voluntary employee green behavior (personal activities that transcend the firm's expectations). Boiral et al. (2015) agreed that employee environmental behavior includes both voluntary and obligatory behavior that is oriented towards the natural environment.

2.3 The influencing Factors of voluntary pro-environmental behavior in the workplace

This study considered a number of individual and organizational variables, and their impact on employees' environmental behavior. It examined whether the factors that influence employee behavior in general also influence employee behavior within public organizations.

2.3.1 Attitude

Ajzen (1991) stated that attitude toward a particular behavior reveals the extent to which individuals have a favorable or unfavorable evaluation of that behavior. The beliefs about particular behaviors that drive adoption of an action originate from individual beliefs that adopting the action can lead to a specific set of consequences (Fishbein et al., 1980). This determines whether a behavior is considered positively or negatively. Ajzen (1991) defined attitude as a set of beliefs about behavior and an individual's judgement of the outcomes of that behavior. The TPB suggests that if individuals have a positive attitude toward a specific behavior, they are more likely to intend to practice that behavior (Fishbein et al., 1980). Individuals are unlikely to intend to practice actions to which they have an unfavorable attitude.

Many studies have confirmed that positive environmental attitudes lead directly to a decision to engage in pro-environmental behaviors (Paul et al., 2016; Polonsky et al., 2012). The majority of those studies applied the New Ecological (Environmental) Paradigm proposed by Dunlap et al. (2000) to measure individuals' environmental attitudes. Aguot et al. (2018) found that eco-centric concerns could promote individuals' engagement in environmental activism and conservation, a finding supported by Kim et al. (2018). Some research, however, has only found a weak correlation between environmental attitudes and pro-environmental behaviors (Janmaimool & Khajohnmanee, 2019; Soutter & Möttus, 2021), suggesting that environmental attitudes alone are a poor predictor of pro-environmental behaviors. A recent study investigated whether the relationship between general environmental attitudes and pro-environmental behavior is heterogeneous, or if the presence of this correlation is dependent on the strength of environmental attitudes (Casaló & Escario, 2018). It found that pro-environmental behavior is only connected with strong environmental attitudes, such as those that occur when people believe that the environment should be protected even if it is costly. This line of research sounds promising, but the study employed an aggregate measure of pro-environmental behavior, so the results may not be generalizable to all types of behavior.

Dunlap et al. (2000) developed the New Ecological (Environmental) Paradigm (NEP) Scale to assess environmental attitudes. This scale assesses an individual's belief that individuals are a part of nature rather than separate from and

superior to it. The original scale had 12 questions; the updated version contains 15, with three reflecting each of the five key components of an ecological worldview.

2.3.2 Perceived behavioral control

Perceived behavioral control is a person's perception of their ability to carry out a specific behavior (Ajzen, 1991). It results from the subjective degree of control over a behavior and the individual's evaluation of how simple or difficult it would be to carry out that behavior (Ajzen, 2002). Perceived behavioral control might be related to the variables that may impede behavior performance. This definition consists of two parts. The first component is self-efficacy, which is individual belief in personal ability to carry out an action (Bandura, 1977, 1982). The second component is "facilitating conditions," which indicate the availability of resources required to perform the behavior (Triandis, 1977). Skills, abilities, time, and required information all play an important role in predicting and carrying out the behavior. Many studies in various contexts have found a considerable and favorable influence of perceived behavioral control on individuals' behavioral intention (Ajzen, 2015; Wang et al., 2016; Yadav & Pathak, 2017).

Research on the impact of perceived behavioral control on action has had mixed results. A few studies have found a non-significant relationship (Lim et al., 2016; Maes et al., 2014), and others found a significant relationship between perceived behavioral control and actual behavior (de Leeuw et al., 2015; Gao & Bai, 2014; Karimi et al., 2016). Terry and O'Leary (1995) reported that self-

efficacy predicted exercise intentions but not behavior. However, perceived behavioral control predicted behavior but not intentions.

In general, self-confidence is considered equivalent to self-efficacy (Lunenburg, 2011; McCusker et al., 2016). Perceived self-efficacy is an individual's perception of their capabilities to generate outcomes or designated levels of performance that maintain influence over events in their lives (Caprara et al., 2008). Self-confidence is described as a trust or assertion in oneself, and belief in one's ability, and may be both general or in the context of a specific event or activity (Colman & Thompson, 2002). Someone with high self-efficacy is confident in their capacity to deal with challenging tasks, and blames failure on insufficient effort or a lack of knowledge and skills. A person with poor self-efficacy perceives challenging activities as personal threats and gives up fast in stressful situations (Bandura, 1977). Self-efficacy can therefore be seen as an internal component that is predicted to be related to individual perceptions of behavioral control. It is also an important predictor of perceived behavior control (Ajzen, 1991, 2002). Self-confidence is a significant predictor of individual behavior and performance across different settings (Carpentier & Mageau, 2016; Chaouali et al., 2017). A meta-analysis of perceived behavioral control (Cheung & Chan, 2000) categorized research based on the type of items employed. A few studies used only questions about controllability. Most, however, used either self-efficacy questions alone or a combination of self-efficacy and controllability factors. Beyond attitudes and subjective standards, perceived self-efficacy was found to account for a considerable percentage of variance in intentions and behavior. Controllability

substantially increased prediction of behavior but not of intentions, but mixed sets of items significantly improved prediction of intentions but not of behavior. The studies included in the meta-analysis did not seek to investigate the difference between self-efficacy and controllability. Several researchers have investigated this difference explicitly in recent years, exploring its discriminant validity and comparing the predictive validity of self-efficacy and controllability measures in the same study (Ajzen, 2002).

2.3.3 Personal moral norms

Employees are governed by different kinds of norms: social norms and personal norms (Nordlund & Garvill, 2003). Social norms are based on individual social interactions, and broadly describe behavioral rules based on common beliefs about how people should behave in a specific context. They indirectly improve the well-being of a group through informal incentives and penalties linked to organizational expectations. Personal norms are private and internalized norms based on individual beliefs and values. They have an impact on behavior when someone believes that their most essential values are at risk (Steg & Vlek, 2009).

Personal norms are self-expectations that are felt as moral obligations to engage in the relevant behavior (Schwartz, 1977). Individuals who have strong personal norms to be pro-environmental feel morally obligated to do so (van der Werff et al., 2013). Personal norms can be broad, such as the personal norm to participate in pro-environmental behavior, or narrow, such as the personal norm to recycle (Schlegelmilch et al., 2015). Both broader conceptual norms and particular

personal norms promote a wide range of pro-environmental behaviors, such as turning off the tap when brushing one's teeth, willingness to pay higher costs for environmentally friendly food (Onwezen et al., 2013), intention to engage in activities to minimize particulate matter emissions, reduce automobile use, and engage with pro-environmental initiatives in general (van der Werff et al., 2013). Personal norms, however, are not necessarily accurate predictors of behavior. In general, it appears that people are most likely to act on their sense of moral obligation when the behavior is not extremely expensive and there are no substantial challenges to doing so (Zhang et al., 2017). Some people are prepared to incur some personal costs to act on their personal norms and do something "good", such as protecting the environment. However, if the context constrains such behaviors, for example, when the setting inhibits these behaviors or the costs are prohibitively high, individuals may not act on their personal norms (Klöckner, 2013).

Research suggests that personal norms are highly predictive of private-sphere pro-environmental behavior when the context does not significantly hinder this behavior. This means that the setting supports this behavior, and the behavioral costs are not prohibitively high (Liobikienė & Poškus, 2019). Some pro-environmental behaviors at work are very affordable and under employees' control (e.g., turning off lights or computers when leaving the office). Personal norms are therefore likely to predict these pro-environmental behaviors very effectively. However, in other cases, workers may believe that they have little influence over the environmental consequences of their actions at work because many things are

regulated and monitored externally (e.g., automatic air-conditioning, heating, and lighting systems). Individuals may also have competing interests at work and encounter major obstacles to acting on their personal norms in the corporate environment (Unsworth et al., 2013).

As a result, strong personal norms to act pro-environmentally may not always turn into real pro-environmental activities. The NAM and value-belief-norm theory suggest that personal norms are dependent on beliefs. In this case, this is likely to include awareness of the environmental consequences of a particular behavior (such as automobile use) and feelings of responsibility for these issues and their resolution. Value-belief-norm theory also claims that people's understanding of repercussions is determined by their ways of thinking (particularly the New Environmental Paradigm, which reflects their perspective on the link between humans and environment) and their values. These broad predictors may be less strongly associated with individual behaviors than specific beliefs, but they are more effective in predicting a wide variety of environmental behavior (van der Werff et al., 2013). Another study in Russia (Ünal et al., 2019) provides supportive evidence for the value-belief-norm theory. It found that moral and normative considerations influenced support for car use reduction policies in Russia through a process of norm activation similar to that found in other countries and cultures. The findings give strong evidence that people in post-socialist nations support biospheric values, and that they operate as a significant trigger of a norm activation process to support greater acceptance of environmental policies.

2.3.4 Perceived corporate social responsibility

CSR is defined as an organization's actions and policies that take into account stakeholders' expectations and the triple bottom line of economic, social, and environmental performance (Aguinis & Glavas, 2012). An employee's impression of CSR is their overall perception of all the CSR activities undertaken by their company (El Akremi et al., 2018). It captures how employees view their company's CSR efforts, rather than the company's view of its CSR involvement (Ng et al., 2019). Employee perceptions of their employer's CSR have a more direct and greater impact on their future responses than actual corporate behaviors, of which individuals may or may not be aware (Rupp et al., 2013). Both objective and perceived CSR are relevant, and perceived CSR is built on objective CSR. However, perceived CSR is a better predictor than objective CSR of various work outcomes such as job satisfaction, organizational engagement, and organizational citizenship behavior (Glavas & Godwin, 2013). It can therefore be considered the most effective independent variable to investigate employees' responses to CSR practices (De Roeck & Maon, 2018; Gond et al., 2017).

Understanding employee perceptions is critical, because they may have a significant impact on workplace attitudes, behaviors, and performance (Choi & Yu, 2014; Glavas & Kelley, 2014; Ng et al., 2019). Perceptions of organizational policies and practices are frequently investigated in the context of how employees are directly influenced, rather than employee perceptions of how the firm treats others. Perceived organizational support is concerned with employees' perceptions

that the organization appreciates their effort and cares about their well-being (Kurtessis et al., 2017).

Studies have shown that CSR has a significant impact on workplace behaviors and attitudes. CSR has been proved to be positively associated with employee commitment, and to lead to more enjoyable job activities and higher employee pride in the corporation (Zafar & Ali, 2016). Boğan and Dedeoğlu (2020) investigated how perceived image or prestige affects employees, and found that CSR had a greater impact on organizational identity than perceived market and financial performance. Brammer et al. (2015) found that prospective employees identified more strongly with a corporation when they believed it was more socially responsible. Similarly, Trivellas et al. (2019) showed that CSR has an influence on retention, in-role performance, and organizational citizenship behaviors. However, the processes through which employee perceptions of CSR influence work behaviors and attitudes are not well understood.

Another related topic is corporate environmental influence, and the drivers of firm environmental performance (Angelia & Suryaningsih, 2015). Research has most frequently focused on the cost-cutting aspects of environmental performance (Thongrawd et al., 2019), effects on reputation (Šontaitė-Petkevičienė, 2015), improved organizational capabilities such as innovation and product quality (Halkos & Skouloudis, 2018), sustainability (Kucharska & Kowalczyk, 2019), and the natural environment (Halme et al., 2020).

2.3.5 Organizational citizenship behavior toward the environment

Organizational citizenship behavior (OCB) is a discretionary behavior that is not part of an employee's work responsibilities (Wahyu Ariani, 2013) or individual volunteer activities that are not rewarded by employers (Boiral & Paillé, 2012). The concept of organizational citizenship behavior for the environment is based on OCB. OCB toward the environment can therefore be considered as individual discretionary pro-environmental behavior that is not explicitly mandated in the reward system and contributes successfully to the environmental improvement of the firm (Boiral, 2009). Some green workplace behaviors are influenced by the job description. An environmental manager's job description, for example, is likely to include environmental preservation duties (Ramus, 2002). Many other habits, however, cannot be forced. Internal environmental regulations, for example, usually require employees to switch off computers when they complete their workdays, or to recycle waste (Yuriev et al., 2020). These individual actions are generally regarded as organizational citizenship behaviors toward the environment, defined as "individual and discretionary social behaviors not clearly recognized by the official reward system and able to contribute to the effectiveness of organizational environmental management" (Boiral, 2009, p.223).

Apart from a few recent studies (Boiral, 2009; Lülfs & Hahn, 2013; Ramus & Killmer, 2007), few studies have examined employee pro-environmental participation as a possible type of OCB. Employee engagement has always been seen as a basic criterion that is favorably associated with the effectiveness of a variety of corporate greening practices (ElTayeb et al., 2010; Jiang & Bansal,

2003). Corporate greening behaviors are often based on unrewarded and extra-role behaviors that contribute to both collective wellbeing and organizational effectiveness (Ramus & Killmer, 2007). These greening behaviors are seldom given priority and are frequently forced to compete with intra-role behaviors that are more likely to be addressed in performance assessments. This is because they are likely to be difficult, time-consuming, and unrecognized.

To better understand the nature and extent of OCB towards the environment, Boiral (2009) used the six major OCB categories defined by Organ et al. (2006): (1) helping; (2) sportsmanship; (3) organizational loyalty; (4) organizational compliance; (5) individual initiative; and (6) self-development. He found that OCB toward the environment can be focused on helping and altruism inside the workplace, such as encouraging other employees to act more pro-environmentally, assisting in the resolution of environmental issues, or cooperating with other departments. Environmental sportsmanship may also be considered as a type of OCB toward the environment because it includes tolerance for challenges associated with environmental initiatives and acceptance of the time and effort necessary to carry out environmental actions. Support for the organization's environmental policies, involvement in pro-environmental activities that involve the organization, and presenting a positive image of the organization in public debates are all pro-environmental examples of organizational loyalty. Compliance with explicit or implicit organizational values and norms linked to environmental issues might be considered organizational compliance. Individual initiatives might be focused on internal involvement and participation in environmental activities

such as giving recommendations, exchanging information, and reducing waste. Finally, self-development may include the acquisition of personal knowledge that will assist in the integration of environmental concerns inside the company. There are very few publications on the influence of a green organizational culture on OCB toward the environment, but Paillé et al. (2013) suggested that when employees perceive that the organization supports them to engage in pro-environmental behavior by giving appropriate resources, they are motivated to make more effort. Employees are more willing to behave eco-actively in the workplace when organizations have an environmentally oriented management strategy and supportive policies in place (Paillé et al., 2014). When green policies are communicated to all individuals and there is organizational support for strong environmental performance, individual organizational commitment increases, which improves eco-behavior in the organization (Temminck et al., 2015). Chan and Lai (2017) proposed that top managers should communicate their green message to employees to raise awareness and emphasis on environmental protection.

2.3.6 Intention to perform voluntary pro-environmental behaviors

Intentions are defined by social psychology experts as cognitive states that occur just before a choice to act (Ajzen, 1991; Fishbein et al., 1980). Behavioral intentions have been recognized as the most direct predictor of actual behaviors across various behaviors (Armitage & Conner, 2001). However, not all intentions are followed through. Conceptual and empirical research of the intention–behavior

connection has indicated that the ‘gap’ between intention and action may be attributed mostly to people who plan to act but do not act on their intentions (Henderikx et al., 2017; Kruse et al., 2019). However, there is a large body of evidence from other fields indicating a high level of intention–behavior correlation (Ajzen, 2020; Shirokova et al., 2016).

Both the theory of reasoned action and the TPB rely heavily on the concept of intention. Intentions are believed to represent the motivating variables that influence behavior and demonstrate how hard individuals are willing to work or how much effort they would put in to execute the behavior (Ajzen, 1991). Employees must develop and advocate corporate environmental sustainability initiatives (Gattiker & Carter, 2010). However, an individual’s personal beliefs and intentions may affect their behavior and drive them to disregard organizational goals about an ambiguous and/or contentious matter such as environmental sustainability.

Intention is important in anticipating actual behavior because it reflects the motivating variables that influence behavior (Armitage & Conner, 2001). However, intention does not always reflect actual behavior (Ajzen, 1991). Meta-analyses have confirmed the intention–behavior relationship in the TPB (Armitage & Conner, 2001). Several correlational studies have also found that intentions predict behavior. For example, Sheeran (2002) carried out a meta-analysis of ten previous meta-analyses and observed a “large” sample-weighted average correlation (the confidence interval [CI] is the range of values $[-R, +R]$, $+R = 0.53$) between intentions measured at one time-point and measures of behavior taken at a later

time-point. In correlational studies, intention was a better predictor of actual behavior than other concepts such as (explicit and implicit) attitudes, norms, self-efficacy, perceptions of risk and severity (e.g., McEachan et al., 2011; Sheeran et al., 2014) or personality factors (e.g., Chiaburu et al., 2011; Poropat, 2009). These results suggest that intending to change is critical if individuals are to initiate new behaviors or change courses of action that are no longer considered desirable. Several variables determine whether or not intentions are achieved, including those that direct intention formation. Intentions based on personal beliefs about the results of action (attitudes) better predict behavior than intentions influenced by social pressure to act (norms) (Sheeran & Orbell, 1999), which is consistent with self-determination theory (Deci & Ryan, 2000).

2.3.7 The moderating effect of habit

Habits are the way in which behavioral decisions are made, rather than the frequency with which they are made (Wood et al., 2002). Aarts and Dijksterhuis (2000) developed a response-frequency measure of general habit strength based on the idea that targets immediately activate mental representations of habitual choices. This measure focuses on how choices are made, and is therefore significantly more accurate than just asking individuals how frequently they engage in a specific behavior. The measure has been successfully used in different studies on environmental behavior (e.g., Aarts & Dijksterhuis, 2000; Aarts et al., 1998; Klöckner et al., 2003). There are three fundamental aspects of habits. First, they need to drive the achievement of a goal. Second, if the outcomes are generally

favorable, the same course of action is likely to be repeated. Third, mental processes mediate habitual reactions (Verplanken & Orbell, 2003). When people regularly perform in the same way in the same scenario, that situation becomes psychologically connected with the appropriate goal-directed behavior. As this happens more often, the link becomes stronger and more accessible, and it is also more probable that the individual will react in the same way. Habitual behavior is therefore prompted by a cognitive structure that individuals learn, store, and retrieve from memory when they encounter a particular scenario. Misperceptions and selective attention may occur as a result of habitual behavior: people prefer to focus on information that validates their decisions, and ignore information that contradicts their normal behavior. Generally, habits are reconsidered only when the context dramatically changes. It is essential to study how habits are developed, reinforced, and maintained to design successful interventions to improve habitual environmental behavior (Jager & Mosler, 2007).

There have been several studies on the intricate, diverse structure of human cognitive and motivational processes. It has become evident that the concept of habit offers a distinct perspective on explaining, predicting, and directing repeated actions. Habits are implicit linkages formed between contexts and responses as a result of repeated reward learning (Wood & Rünger, 2016). When people act out of habit, the reaction is prompted automatically by awareness of relevant context signals. Habits are varied in major areas from goals and attitudes. People are motivated to act on a goal by a desire to reach a certain target or purpose (Locke & Latham, 2002).

Habits and other slow-to-change dispositions are unsuitable for experimental designs that assess the immediate effects of a manipulation (Bless & Burger, 2016). In the study of psychology, habits and goals have been considered as alternative explanations for behavior (Wood et al., 2022). However, a few social psychologists accepted habit-like phenomena. Bem (1972) developed self-perception theory to explain the conclusions that individuals make about their behaviors when internal cues are weak, uncertain, or uninterpretable, reflecting his study in radical behaviorism.

Features of performance contexts that influenced behaviors and rewards in the past usually receive attention (Anderson, 2016). With more experience, behaviors are no longer linked to a single cue at a certain time and place, but to other, related cues associated with rewards. However, if individuals frequently engage in the same habit, alternative responses become less accessible (Gong & Li, 2014; Infanti et al., 2015). With frequent retrieval of alternatives, the accessibility of a particular response reduces (Danner et al., 2007). Individuals may also add intentionality to their habits, misattributing externally evoked cognitions to their own internal preferences and wishes, which contributes to habit performance (Loersch & Payne, 2011). Stress, distraction, and willpower loss also decrease the ability to make decisions about how to act, placing more emphasis on habits (Neal et al., 2013).

This study conducted a comprehensive analysis of existing measurements of habits to assess their strengths and weaknesses. The Self-Report Habit Index (Verplanken & Orbel, 2003) and the Creature of Habit Scale are two well-

established instruments for assessing habits (Ersche et al., 2017). To represent their claim that “habit is a psychological construct, rather than just past behavioral frequency”, Verplanken and Orbell (2003, p.1314) developed the Self-Report Habit Index (SRHI), a twelve-item self-report index of habit strength. The SRHI tries to focus on habitual features such as a history of repetition, automaticity, and expressing personal identity. The Creature of Habit Scale, or COHS, is a recent scale for measuring behaviors (Ersche et al., 2017). It has two major subscales: routine and automaticity, which indicate two distinct aspects of habits. Using habits that were unique to each participant ensured that the behaviors were relevant, but this is a time-consuming strategy that would be impractical in many study designs. The behaviors were also considered to be habitual because of their frequency and regularity, which appears to contradict the authors’ claim that habit is not solely dependent on past behavioral frequency.

2.4 Pro-environmental behavior theories and models

Pro-environmental behavior, often known as environmentally responsible behavior or green behavior, is a term that has been commonly used to describe behavior that protects the environment (Choong et al., 2020). Every individual activity that reduces the negative environmental impact of human activities or contributes to improved environmental quality is considered pro-environmental behavior (Kim et al., 2018).

Voluntary environmental behaviors have been extensively researched in non-business contexts. However, management experts have only recently

attempted to consider the attributes of voluntary environmental behavior in the business environment (Kim et al., 2017). This behavior requires individual initiative and extends above and beyond expectations as a way to improve the sustainability of the natural environment (Norton et al., 2014).

The broad concept of voluntary environmental behavior at work refers to behavior that is intentionally demonstrated by employees at any organizational level. This behavior must be aimed at conserving and/or improving the natural environment by minimizing resource consumption, improving energy efficiency, preventing waste production, recycling, and/or saving water (Ciocirlan, 2017; Norton et al., 2015). It encompasses rational eco-friendly behavior that is not included in the job description. This corporate environmental citizenship behavior promotes the organization's environmental sustainability. However, it is outside the scope of any formal environmental management system (Kim et al., 2017). Several factors, such as perceived environmental concern, perceived support from authority, attitude, perceived behavioral control, and subjective norms, have been found to predict voluntary environmental behavior in a recent study using the extended theory of planned behavior (Lin et al., 2017).

Das and colleagues (2019) studied corporate environmental strategy and psychological green climate, using an approach that integrated goal-setting theory, social identity theory, and social learning theory to build their model of employees' voluntary pro-environmental behavior. Biswas and colleagues (2021) investigated voluntary environmental behavior using an approach that integrated the theories of corporate environmental behavior and social identity to study corporate strategy

and psychological green climate, taking into account the role of organizational size and employee age (see Table 2.1).

Table 2. 1 Previous studies on attributes of voluntary pro-environmental behaviors

Reference	Attributes	Theory and Model
Lin et al. (2017)	• Perceived environmental concern • Perceived authority support • Attitude • Subjective norms • Perceived behavioral control • Behavior intention	Extended theory of planned behavior (TPB)
Das et al. (2019)	• Corporate environmental strategy • Psychological green climate	An integrated model incorporating goal-setting theory, social identity theory, and social learning theory
Tian & Robertson (2019)	• Perceived corporate social responsibility • Organizational identification • Empathy	Social identity theory
Biswas et al. (2021)	• Corporate environmental strategy • Psychological green climate • Employee's age • Organizational size	An integrated model of corporate environmental behavior and social identity theory.

Scholars have proposed several conceptual models of voluntary pro-environmental behavior of employees. These suggest that organizational context and individual determinants, perceived behavioral control, personal norms, attitudes, intentions, and habits are the most important predictors of pro-environmental behavior in the workplace (Lülfes & Hahn, 2013). Drawing on previous research, this study's model combined several primary theories, including the theory of planned behavior (TPB) (Ajzen, 1991), the norm activation model (NAM) (Schwartz, 1977) and the comprehensive action determination model (CADM) (Klöckner & Blöbaum, 2010). The next section provides more information about these theories and how they were developed to study pro-environmental behavior.

2.4.1 The theory of planned behavior (TPB)

According to the TPB ,behaviors are influenced by individual intention and perceived behavioral control (PBC). Intention, defined as “indicators of how hard people are willing to try... to perform the behavior” (Ajzen, 1991, p. 181), it depends on three predictors: attitude, subjective norm, and PBC. Attitude is defined as an individual’s favorable or unfavorable evaluation of the behavior; subjective norm refers to the perceived social pressure towards the behavior; and PBC defined as a person's evaluation of whether a behavior can actually be carried out in a particular situation. (Ajzen, 1991). The TPB proposes three indirect predictors which intention are influenced by , they are behavioral, normative, and control beliefs. Behavioral beliefs is the perceived advantages and disadvantages of performing a particular behavior; normative beliefs are “a person’s subjective probability that a particular normative referent wants the person to perform a given behavior” (Ajzen, 2012, p. 441); and control beliefs are related to different factors (cost, time, available infrastructures, etc.) that either encourage or hinder a behavior.

The TPB incorporates three qualities in its framework: attitude, subjective norms, and perceived behavioral control. These are generally measured using a set of specified and verified statements (Ajzen, 2002). Beliefs differ from one context to another, and therefore assessing indirect predictors (behavioral, normative, and control beliefs) requires a qualitative investigation of the factors that influence a specific behavior (Ajzen, 2015). Once the beliefs linked with a certain behavior are found, researchers can conduct statistical studies to assess the significance of each belief. Studies typically include three components: evaluation of variables that affect behavior (in contexts where behavior is

measured); assessment of direct predictors of intention; and evaluation of indirect predictors (beliefs) for significant direct predictors (Ajzen, 2002).

The TPB is recognized as one of the most successful models for developing behavioral interventions (Riebl et al., 2015; Timm & Deal, 2016). For example, Riebl et al. (2015) examined the effects of three TPB-based interventions that addressed unhealthy food habits in young people and determined that all of them had positive outcomes in terms of changing harmful behaviors.

The TPB is also well-known for its adaptability. The original model is based on three direct predictors, but researchers occasionally use an expanded theory that includes additional variables, including past behavior (Richetin et al., 2012), moral norms (Wan et al., 2017), and self-identity (Mannetti et al., 2004). Some of these variables are derived from concepts that are widely used in combination with the original TPB model, especially the NAM (Schwartz, 1977), value-belief-norm theory (Stern et al., 1999), and the theory of interpersonal behavior (Triandis, 1977).

Scholars have also identified several limitations linked to the TPB. For example, the theory is only appropriate for investigating one behavior at a time. It can determine specific factors that influence one action in terms of particularly desirable (e.g., physical exercise, recycling, energy-saving) or harmful (e.g., drug use, smoking, alcohol intake) behaviors. However, this approach ignores the complexities of serious debate. For example, corporate environmental performance is dependent on many behaviors of employees. A single TPB-based study is unlikely to result in the development of an intervention that takes into account the diversity of employees and their roles. Such conditions necessitate

theoretical models that account for goals and insufficient resources (Presseau et al., 2013; Sniehotta et al., 2014).

Second, the questionnaires employed in TPB-based research are customized to the target group, and the results of TPB-based studies are therefore seldom generalizable (Ajzen, 2002, 2011). This necessitates the creation of unique lists of questions, because individuals from different cultures, communities, and organizations are influenced by different sets of ideas. According to some critics of the theory (Sniehotta et al., 2014), the limited application of the results raises doubts about the TPB's effectiveness.

Some researchers have also questioned the validity of the fundamental assumptions of the theory, such as the idea that beliefs predict only intention, not behavior. Many studies have shown that beliefs may outperform intentions as behavioral predictors (Araujo-Soares et al., 2013; Conner et al., 2013). The TPB's original direct and indirect variables also do not include many of the factors that might affect behavior, such as emotions (Rapaport & Orbell, 2000), affect (Wolff et al., 2011), and socioeconomic status (Sniehotta et al., 2013).

Finally, TPB-based research, like research based on other behavioral theories, usually uses self-reported measurements of actual behavior. This may result in biased answers and unreliable results (de Leeuw et al., 2015). In a recent study on measures of pro-environmental behaviors, Lange and Dewitte (2019) emphasized the significance of designing and verifying assessment instruments based on the contextual and psychometric features of the actions being studied. Similar recommendations were made by Francoeur et al. (2019), who carried out a comprehensive literature analysis of items used to assess employees' environmental behavior. Given the increased interest in the TPB for

investigating pro-environmental behaviors, as well as the theory's strengths and limitations, it seemed appropriate to examine the contexts in which it has been used, how it has been used, and the findings it has produced.

Shih and Fang (2004) studied internet banking adoption using the decomposed TPB and TPB approaches. In line with previous findings (Venkatesh & Davis, 2000), they found that subjective norms have a significant influence on behavioral intention to use in a mandatory environment, but the effect is insignificant in a voluntary environment. According to Ajzen and Fishbein (1975), subjective norms are individual perceptions that the majority of individuals who are important to them believe they should or should not undertake a particular behavior. In both the theory of reasoned action (Ajzen & Fishbein, 1975) and the subsequent TPB, subjective norms are included as a direct predictor of behavioral intention (Ajzen, 1991). The rationale for subjective norms having a direct impact on intention is that individuals may choose to perform a particular behavior even if they do not personally favor the behavior or its implications, provided they believe that one or more important referents believe they should, and are sufficiently motivated to comply with that belief. Hartwick and Barki (1994) identified a backup idea that might explain the conflicting results about subjective norms. After separating their respondents into mandatory and voluntary usage contexts, they found that subjective norms had a significant effect on intention only in mandatory settings, not voluntary ones. The psychological mechanism driving this impact is compliance. The direct compliance impact of subjective norms on intention is considered to act whenever individuals feel that another social actor wants them to carry out a particular behavior, and that social actor has the power to reward or penalize non-compliance (Bolman & Deal, 2017; Kahn & Kahn, 2010). Based on previous research on subjective norms and

the focus of this study (voluntary pro-environmental behavior), this study therefore excluded subjective norms, to examine individual personal choice rather than the influence of others. The study therefore focused on the other two aspects of the TPB, attitude and perceived behavioral control.

2.4.2 The norm activation model (NAM)

Schwartz introduced the norm activation model (NAM) in 1977, as a way to make accurate predictions of public environmental behavior. This theoretical model has been used to anticipate a variety of prosocial and environmentally friendly behaviors, such as energy use (van der Werff & Steg, 2015), citizens' environmental complaint behavior (Zhang et al., 2017), sorting household waste (Wang et al., 2019), using public transportation (He & Zhan, 2018), and individual energy conservation (Rasool et al., 2019). The NAM contains three key variables: awareness of consequence, ascription of responsibility, and personal norms (Schwartz, 1977). Awareness of consequence (AC) is defined as the belief that failing to do a particular action may have negative consequences for others. Ascription of responsibility (AR) is defined as the individual's perception of responsibility for the consequences of failing to fulfil a particular action. Personal norms (PN) are defined as individuals' perceptions of their own moral duties to engage in a particular action (Schwartz, 1977).

Previous research has shown that an individual's moral values have a considerable influence on environmental behavior (Wang et al., 2011; Zibenberg et al., 2018). Studies have also demonstrated that personal norms have a significant direct impact on environmental intention and behavior (Kim et al., 2019; Moon et al., 2015; Zhang et al.,

2017, 2018). The NAM suggests that individuals who engage in specific environmental behaviors that may have a harmful impact on society or others will believe they have created bad implications, and will feel their own responsibility and develop their own moral obligations. This should mean that they are more willing to adopt environmentally friendly practices (Fang et al., 2019; Zhang et al., 2017). Personal norms are a type of self-expectation that reflects an individual's sense of responsibility for carrying out certain actions (Schwartz, 1977). They predict environmental behavior better than other psychological factors (e.g., personal values, environmental concerns) or social demographic features (Doran & Larsen, 2016).

Awareness of consequences and ascription of responsibility were identified in previous environmental research (e.g., Van Liere & Dunlap, 1978; Vining & Ebreo, 1992) as factors that have a direct impact on behavior. These are known as activators. Personal norms seem to regulate the impact of situational activators on behavior, corroborating the NAM (Harland et al., 2007). Earlier NAM-based environmental research appears to have concentrated only on two situational activators: awareness of consequence and ascription of responsibility (Hopper & Nielsen, 1991; Stern et al., 1985). However, these two activators may not give a comprehensive understanding of norm activation in relation to moral (pro-environmental) behavior. Harland et al. (2007) investigated how personal norms influence the effect of activators on volunteering. When they controlled for the influence of activators, personal norms were significantly related to volunteering (Harland et al., 2007). This study therefore used personal norms to measure personal attributes of individuals who voluntarily engage in pro-environmental behavior.

The broad use of TPB and NAM in the field of environmental protection has generated a comprehensive understanding of individual environmental behavior. Existing research has used a combination of the two theories to explain environmental behavior. Studies have also shown that models that incorporate both TPB and NAM can better predict and explain individual environmental behavior than models based on either theory alone (Park & Ha, 2014; Zhang et al., 2017). However, there is a contradiction: the TPB claims that environmental behavior comes from the individual's own expectations and wellbeing, whereas the NAM emphasizes the individual's altruistic behavior and moral norms. Internal factors in the two theories influence each other, and eventually, individual intention to participate in environmental behavior (Zhang et al., 2017).

2.4.3 The value-belief-norm (VBN) theory

A model that focuses on how moral or normative considerations can influence behavior is the Value-Belief-Norm theory of environmentalism (VBN theory; Stern et al., 1999). According to the VBN theory, the activation of personal norms, which are based on individual values, leads to pro-environmental behaviors. Values refer to what individuals prioritize as their guiding principles in life (Schwartz, 1992). Because values influence attitudes, beliefs, norms, and preferences, values influence attitudes and, ultimately, behaviors. (Feather, 1995; Steg et al., 2014a; Steg et al., 2014b). Stern and colleagues (e.g., Stern, 2000; Stern et al., 1999) used a modified version of Schwartz's (1973; 1977) moral norm activation theory to develop and test their value-belief-norm (VBN) theory of environmentalism. This is a conceptual framework to explain pro-environmental behaviors. The theory suggests that these behaviors arise from acceptance of specific personal values, beliefs that things important to those values are under threat, and beliefs that actions

initiated by the individual can help to overcome the threat and restore the values (Stern et al., 1999).

2.4.4 The ipsative theory of behavior

The ipsative theory of behavior is based on Frey and Heggli's (1989) economic theory. The theory suggests that there is an objective set of possibilities that is determined by objective situational constraints and opportunities. There is also an ipsative set of possibilities that individuals consider relevant to their behavioral decisions. A limited range of visible alternatives reduces perceived behavioral control, so the ipsative set of possibilities is related to perceived behavioral control. The ipsative theory of behavior therefore describes objective and subjective characteristics of situations as predictors of behavior. However, it completely ignores intentional, habitual, or normative processes. Despite early attempts to combine selected models (e.g., the work of Bamberg & Möser, 2007 combining the TPB and the NAM), no comprehensive structured framework exists (Klößner & Blöbaum, 2010).

2.4.5 The comprehensive action determination model (CADM)

The comprehensive action determination model (Klößner & Blöbaum, 2010) incorporates the TPB, the NAM, and the ipsative theory (Frey & Heggli, 1989). The CADM integrates these variables with habitual processes, which are established sequences of actions that have become automatic responses to certain triggers and are effective in achieving specific goals or end states (Verplanken & Aarts, 1999). The model therefore suggests that environmental behavior is the result of four processes: (1) normative processes (social norms, awareness of consequences, awareness of need, and personal

norms), (2) habitual processes (habits), (3) intentional processes (intentions and attitudes), and (4) situational processes (objective and subjective constraints). Different adaptations of the concept have been proven to be effective in explaining sustainable paper consumption (Sopha, 2013), recycling behavior (Ofstad et al., 2017), energy saving behavior (van den Broek et al., 2019), and reducing personal clothing consumption behavior (Joanes et al., 2020).

This study examined voluntary pro-environmental behavior of employees in the private domain (the workplace). It is therefore important to consider the four relevant processes from the CADM. The situational processes most closely related to voluntary pro-environmental behavior in the workplace were identified as perceived corporate social responsibility (CSR) and organizational citizenship behavior towards the environment. Previous studies showed a substantial association between employees' perceptions of employer CSR and their future responses to actual corporate behaviors (Raza et al., 2021). Perceived CSR was therefore included (De Roeck & Maon, 2018; Gond et al., 2017; Rupp et al., 2013). Employee engagement has always been seen as a basic criterion that is positively associated with the effectiveness of a variety of corporate greening practices (ElTayeb et al., 2010; Jiang & Bansal, 2003). Employees are more willing to undertake pro-environmental behaviors in the workplace when organizations have an environmentally oriented management strategy and supportive policies (Khan et al., 2021; Paillé et al., 2014). This therefore suggested that organizational citizenship behavior toward the environment might also be important.

2.4.6 Extending the TPB

The fundamental strength of the CADM in examining pro-environmental and individual behavior is the merging of three well-established theories, the NAM, TPB, and the value-belief-norm theory (Stern et al., 1999). The TPB (Ajzen, 1985, 1991) fails to account for personal norms. Individual pro-environmental behavior is motivated by a combination of moral and personal norms and self-interest (Turaga et al., 2010; van Riper & Kyle, 2014). This is a concept that is widely used in norm-based research. In turn, the NAM and the value-belief-norm theory neglect non-normative factors. The CADM (Klößner & Blöbaum, 2010) incorporates both normative and non-normative variables. It suggests that environmental behavior is the outcome of a complex interrelationship of normative, intentional, habitual, and situational processes. The core principle of the CADM is that intention, perceived behavioral control, and habit all directly predict behavior. Several researchers have combined theories to investigate behavior. For example, a study on the purpose of carpooling to reduce car use among employees in Sweden used the TPB and NAM (Olsson et al., 2018). Similarly, Li et al. (2020) investigated the energy-saving habits of residents of Hefei, China, and Kopaei et al. (2021) examined home composting intentions and behaviors in Isfahan, Iran.

2.4.7 The necessity of having an integrative view on psychological theories

Against this background, Cordano et al. (2011) argued for “a unique synthesis of a combination of the variables in these theories” (p. 648) to combine the TPB’s predictive power with the NAM’s comprehensive inclusion of factors such as personal norms. Klößner and Blöbaum (2010) recognized the importance of integrating the assumptions

from the TPB and NAM with the theoretical concept of habit (Triandis, 1977). Their CADM therefore integrates these four theories. All four theories are empirically proven to be significant in explaining private pro-environmental behavior (e.g., Botetzagias et al., 2015 and Greaves et al., 2013 for the TPB; Onwezen et al., 2013 and Tang et al., 2019 for the NAM; Ceresia et al., 2017; Klöckner, 2013; Lülfs & Hahn, 2014; and van den Broek et al., 2019 for the inclusion of habit; and Tanner, 1999 for the ipsative theory of behavior).

This study focused on individual pro-environmental behavior in organizations, which is distinguished by two main factors. First, outside the private domain, there are generally no explicit financial incentives for individuals who behave in a sustainable manner. Second, organizational behavior is affected not just by personal values, beliefs, and norms, but also by contextual factors such as organizational culture or organizational structure, and collective features such as social norms and peer influence (Andersson et al., 2005).

Previous studies have attempted to investigate employee pro-environmental behavior using either the theory of planned behavior or the norm activation model (Park & Ha, 2014; Zhang et al., 2017). However, it is now evident that one theory alone is insufficient to explain pro-environmental behavior (Hamzah & Tanwir, 2021; He & Zhan, 2018; Liu et al., 2017; Zhang et al., 2018). The explanatory value of these studies is also limited because they did not account for the probability that employees' pro-environmental behavior may change over time, as the conditions change (Wang et al., 2018). They also did not fully account for all factors. For example, the theory of planned behavior is based on an assumption of rationality. However, environmentally friendly behavior cannot be understood simply as the outcome of rational choice. Unplanned, spontaneous, or

emotional factors should also be taken into account (Wang et al., 2018). The norm activation model has been criticized for focusing solely on self-interest, and not including external considerations such as resources, time, and social environment (He & Zhan, 2018; Shi et al., 2017). Research also suggests that environmental behavior is frequently predicted by habit (Klößner & Blöbaum, 2010; Tang et al., 2019; van den Broek et al., 2019). The comprehensive action determination model (CADM) proposed by Klößner and Blöbaum (2010) recognized the importance of integrating the assumptions from the theory of planned behavior and the norm activation model with the theoretical concept of habit (Triandis, 1979), because behavior can become automatic or habitual with regular repetition. They also added the ipsative theory of behavior (Frey & Heggli, 1989), which distinguishes between perceived behavioral barriers and objective conditions that inhibit pro-environmental behaviors. This study was therefore designed to combine three theories: the theory of planned behavior, the norm activation model, and the comprehensive action determination model, into one theoretical framework to clarify voluntary pro-environmental behavior in the workplace.

2.5 Research model and hypotheses

This part describes the process of developing an instrument to measure voluntary pro-environmental behavior. It derives the conceptual framework for the study by highlighting the hypotheses and potential relationships among the constructs.

2.5.1 Development of voluntary pro-environmental behavior conceptual model

A substantial body of research on workplace pro-environmental behavior behaviors has begun to develop (Alzaidi & Iyanna, 2021; Inoue & Alfaro-Barrantes, 2015; McDonald, 2014; Wesselink et al., 2017; Yuriev et al., 2018, 2020). Pro-environmental workplace behavior has positive results for organizations, and studies have therefore concentrated on understanding the attributes of this behavior. Some of this research has associated individual-level attributes such as attitude, emotions, ethics and subjective norms with voluntary pro-environmental behavior of employees (Aziz et al., 2021; Huber et al., 2020; Janmaimool & Khajohnmanee, 2019). Other studies have looked at the impact of organizational characteristics, such as perceived organizational environmental support (El Akremi et al., 2018; Testa et al., 2020), green human resource management practices (Kim et al., 2019; Tang et al., 2018), perceived managerial environmental commitment (Erdogan et al., 2015; Stritch & Christensen, 2016), supporting behaviors of leaders (Fatoki, 2020; Mansoor et al., 2021), and environmental infrastructure (Kim et al., 2018; Yasir et al., 2021). All these factors were found to predict pro-environmental behavior in the workplace. Researchers have also examined whether the perceived presence of a corporate environmental policy influences employees' participation in environmentally responsible behavior. For example, Raineri and Paillé (2016) reported that when individuals have weak rather strong personal ecological values, corporate environmental policy is more likely to affect their degree of environmental commitment. Norton et al. (2014) found that employee workplace perceptions have a significant normative role in promoting the effectiveness of organizational sustainability policies on environmental green behavior. This study adds

to the emerging understanding of the factors that drive employees to engage in voluntary pro-environmental behavior.

2.5.2 Hypothesis development

This study developed seven hypotheses, including six to test the direct relationships in the model, and one to examine the moderating role of habit on the relationship between intention and actual voluntary pro-environmental behavior.

Several researchers have suggested that factors structure need to be investigated for each research setting. It is also essential to study the proposed predictors, including personal factors such as attitude, perceived behavioral control, and personal moral norms (Bai & Bai, 2020; Janmaimool & Khajohnmanee, 2019; Yu & Yu, 2017), and situational or external factors (Islam et al., 2019; Pandur & Albulescu, 2016; Yuriev et al., 2020). The literature suggested that the proposed set of voluntary pro-environmental behavior Factors in this study (attitude, perceived behavioral control, personal moral norms, organizational citizenship behavior toward the environment, and perceived corporate social responsibility) would fit the study context of employee voluntary pro-environmental behavior in public sector organizations.

This section discusses the literature on voluntary pro-environmental behavior, and how different factors may influence employees' voluntary pro-environmental behavior in the workplace. It also investigates the relationships between the factors. Habit is examined as a moderator in the relationship between intention and actual voluntary pro-environmental behavior.

Relationship between attitude and intention to perform voluntary pro-environmental behavior

According to the TPB, individuals who have a positive attitude toward a specific behavior are more likely to intend to practice that behavior (Fishbein et al., 1980). It was clear that attitudes are important predictors of pro-environmental business behavior. Environmental attitudes do not always translate into pro-environmental behavior or practices, but they frequently have an indirect impact on behavior (Janmaimool & Khajohnmanee, 2019). According to Lülfs and Hahn (2013), attitude is a person's overall assessment of the advantages and disadvantages of engaging in a specific behavior. The studies emphasize the concept that attitudes influence behavioral intentions to engage in pro-environmental behavior across organizations (Chin et al., 2018; Kim & Yun, 2019; Yu & Yu, 2017; Yuriev et al., 2020). Furthermore, researchers have examined whether attitudes are positive or negative toward specific constructs in various contexts, such as organic viticulture (Rojas-Méndez et al., 2015), pollution prevention as a waste management goal (Abera, 2017), conservation and pollution (Aznar-Daz et al., 2019), recycling (Osman et al., 2015), and key contemporary environmental management issues (Ibáñez et al., 2020). As a result, the following hypothesis was proposed in this study:

Hypothesis 1. Attitude is positively associated with intention to perform voluntary pro-environmental behavior.

Relationship between perceived behavioral control and intention to perform voluntary pro-environmental behaviors

Perceived behavioral control is related to a person's belief in their ability to perform a specific behavior (Ajzen, 1991). It is the result of an individual's subjective

degree of control over a behavior and their assessment of how simple or difficult it would be to carry out that behavior (Ajzen, 2002). Internal and external factors of perceived behavioral control were distinguished by Ajzen (1991). Internal control factors include employee dispositional aspects such as the amount of information they obtain and their skills or abilities. External behavioral control factors exist outside of the individual and either support or hinder behavior performance.

So far, research has concentrated on internal control factors such as self-efficacy, decision-making knowledge, skills, and abilities (Vamvaka et al., 2020). A person with high self-efficacy is confident in their ability to deal with difficult tasks and learn new skills. A person with low self-efficacy, on the other hand, perceives difficult activities as personal threats and quits quickly in stressful situations. As a result, self-efficacy can be viewed as an internal component that is predicted to be related to perceptions of behavioral control (Khatimah & Halim, 2016).

When an organization is identified as environmentally friendly, it reinforces the external perceived behavioral control for employees who seek to engage in pro-environmental behavior. As a result, corporate environmental performance is probably influencing employees' intentions to act pro-environmentally (Yasir et al., 2021). This study therefore hypothesized:

Hypothesis 2. Perceived behavioral control is positively associated with intention to perform voluntary pro-environmental behavior.

Relationship between personal moral norms and intention to perform voluntary pro-environmental behavior

Personal norms are internalized norms based on personal beliefs and values. They have an effect on behavior when someone believes that their most important values are under threat (Steg & Vlek, 2009). When three key requirements (awareness of need, awareness of consequences, and perceived behavioral control) are met, a personal norm is formed (Schwartz, 1977). Individuals must be aware that action is required to resolve a problem (awareness of need); that their actions are linked to the problem (awareness of consequences); and that they are capable of acting (perceived behavioral control). Several studies have found that moral norms can explain pro-environmental behavior such as energy conservation (Yeboah & Kaplowitz, 2016), recycling (Huber et al., 2020), and pro-environmental purchasing (Schlegelmilch et al., 2015).

Personal predispositions have a significant influence on voluntary and discretionary behavior (Yuriev et al., 2018). Chiang et al. (2019) assumed that individuals who have a personal predisposition for pro-environmental behavior will likely transfer that behavior to their workplace and engage in voluntary pro-environmental behavior. This study therefore hypothesized:

Hypothesis 3. Personal moral norms are positively associated with intention to perform voluntary pro-environmental behavior.

Relationship between organizational citizenship behavior toward the environment and intention to perform voluntary pro-environmental behavior

OCB is the foundation for the concept of organizational citizenship behavior for the environment. Individual discretionary pro-environmental behavior that is not clearly mandated in the reward system and successfully contributes to the corporation's environmental improvement can therefore be defined as OCB toward the environment

(Boiral, 2009). Organizational citizenship behavior (OCB) is defined as voluntary behavior that is not part of an employee's job duties (Wahyu Ariani, 2013) or individual volunteer activities which are not rewarded by organizations (Boiral & Paillé, 2012).

Individuals base their decisions about sustainability on their perceptions of the organization's support for these behaviors. Employees are more likely to engage in OCB toward the environment if they believe their employer values their contributions to sustainability. As a result, it is reasonable to assume that OCB toward the environment is conceptually similar to OCB in general (Lamm et al., 2013).

Several insightful theoretical studies have looked into how OCBs might have an impact on the environment (Erdogan et al., 2015; Stritch & Christensen, 2016; Testa et al., 2020). Individual job descriptions are unlikely to include OCB toward the environment, and these behaviors are also unlikely to be formally rewarded (Lamm et al., 2013). They do, however, have a positive impact on the organization. This study therefore hypothesized:

Hypothesis 4. Organizational citizenship behavior toward the environment is positively associated with intention to perform voluntary pro-environmental behavior.

Relationship between perceived corporate social responsibility and intention to perform voluntary pro-environmental behavior

An employee's impression of CSR is their overall perception of all of their company's CSR activities (El Akremi et al., 2018). It reflects how employees perceive their company's CSR efforts, rather than how the company perceives its CSR involvement (Ng et al., 2019). Employee perception of an organization's discretionary activities to enhance the welfare of its internal and external stakeholders is referred to

as perceived CSR (Glavas & Godwin, 2013; Vlachos et al., 2014). Employee perceptions of their employer's CSR have a greater and more direct impact on their future responses than actual corporate behaviors, which individuals may or may not be aware of (Rupp et al., 2013).

Employees' in-role and extra-role workplace behaviors, such as job performance (Korschun et al., 2014), have been shown to be influenced by perceived CSR (Farooq et al., 2017). Vlachos et al. (2014) expanded on the notion that employees react positively to CSR by claiming that perceived CSR influences employees' participation in CSR-specific extra-role behavior. They concluded that when employees perceive their company to be socially and environmentally responsible, they are more inspired to contribute to and participate in the execution of their company's overall CSR program.

This study proposed that employees' voluntary pro-environmental behavior is a type of extra-role behavior associated with corporate social responsibility activity. The study therefore hypothesized:

Hypothesis 5. Perceived corporate social responsibility is positively associated with intention to perform voluntary pro-environmental behavior.

Relationship between intention and actual voluntary pro-environmental behavior

The concept of intention is crucial to both the theory of reasoned action and the TPB. Intentions are assumed to be the motivating variables that influence behavior, illustrating how hard people are willing to work or how much effort they would put in to carry out the behavior (Ajzen, 1991). Because it reflects the motivating variables that influence behavior, intention is important in anticipating actual behavior (Armitage & Conner, 2001).

The findings of studies on the relationship between intention and behavior are mixed. Recent research on ethical decision-making makes a valuable contribution supporting evidence to the notion that intention is an important predictor of behavior (Aziz et al., 2021; Jafarkarimi et al., 2016). Several meta-analyses (Bird et al., 2015; Hagger et al., 2016; Vesely et al., 2021) have also identified a significant relationship between intentions and behavior. Bergquist (2020) observed that the connection between intention and behavior for pro-environmental behavior is stronger than average. Assuming that intentions are a direct predictor of pro-environmental behavior, this study hypothesized:

Hypothesis 6. Intention to perform voluntary pro-environmental behavior is positively associated with actual voluntary pro-environmental behavior.

Moderating effect of habit on the relationship between intention and actual voluntary pro-environmental behavior

Habits and goals have been considered as alternative explanations for behavior in the study of psychology (Wood et al., 2022). A few social psychologists, however, accepted habit-like phenomena. Bem (1972) developed self-perception theory to explain the conclusions that people draw about their own behaviors when internal cues are weak, uncertain, or uninterpretable, as a result of his research in radical behaviorism. Habits are the approach by which behavioral decisions are made, not the frequency with which they are made (Wood et al., 2002). When people consistently perform in the same manner in the same situation, that situation becomes psychologically linked with the appropriate goal-directed behavior. Empirical evidence (Agag & El-Masry, 2016; Chiu & Huang, 2015) supports the conclusion that habit acts as a moderator in the relationship between intention and behavior.

It is now obvious that the concept of HAB provides a unique perspective on explaining, predicting, and directing repeated actions. HABs are implicit connections formed between contexts and responses as a result of repeated reward-based learning (Wood & Runger, 2016). When people engage in HAB, their actions are automatically prompted by awareness of relevant context signals. This suggests that HAB plays a moderating role between behavior and predictor, and we hypothesized as a result. This study therefore hypothesized:

Hypothesis 7. Habit moderates the relationship between intention and actual voluntary pro-environmental behavior.

2.6 Conceptual framework

All three theories have been empirically demonstrated to be useful in explaining private pro-environmental behavior [Botetzagias et al. (2015) and Greaves et al. (2013) for the theory of planned behavior; Onwezen et al. (2013) and Tang et al. (2019) for the norm activation model; Ceresia et al.(2017), Kloßckner (2013), Lußlfs and Hahn (2014) and van den Broek et al. (2019) for the inclusion of HAB; and Tanner (1999) for the ipsative theory of behavior]. The factors in this study were chosen from previous work as they were suitable for developing a comprehensive model for studying the voluntary pro-environmental behavior of public sector employees.

AT and PBC have previously been studied using the theory of planned behavior. Based on previous research on subjective norms and the type of pro-environmental behavior required in this study (voluntary behavior), we excluded the subjective norms aspect in order to investigate personal individual choices rather than the influence of

others. Instead, we concentrated on the other two components, AT and PBC. Subjective norms have a significant influence on behavioral intention in a mandatory context, but not in a voluntary context (Venkatesh & Davis, 2000; Shih & Fang, 2004).

The norm activation model was used to select personal moral norms (PMN). Harland et al. (2007) investigated how personal norms influence activators' effect on volunteering.

The situational processes most closely related to voluntary pro-environmental behavior in the workplace, perceived CSR and OCB toward the environment, were studied. Previous research (Farouk & Jabeen, 2018) found a strong link between employee perceptions of their employer's CSR and future responses to actual corporate behaviors. When organizations have an environmentally oriented management strategy and supportive policies, employees are more willing to behave eco-actively in the workplace (Khan et al., 2022; Paille et al., 2014). As a result, OCB toward the environment could be important as well.

In general, intention precedes actual behavior, including environmental workplace behavior (Razak & Sabri, 2019). For most cases, intent is linked to future behavior. Understanding the factors influencing employees' intended workplace behaviors can thus assist organizations in enabling pro-environmental behaviors among their employees.

Drawing on the literature, this study developed a research model that combines the TPB, NAM, and CADM and focuses on the impact of OCB toward the environment and perceived CSR on employee intentions to carry out pro-environmental behavior (Figure 2.1). The dependent variable in the research was voluntary pro-environment behavior. The

variables were drawn from several theories, including attitude (AT), perceived behavioral control (PBC), and intention to perform behavior (INT) from the TPB, and personal moral norms (PMN) from the NAM. The other key factors were OCB toward the environment and perceived CSR. The CADM was used to develop the moderator (habit). The study hypothesized that employee factors would be positively associated with the intention to perform voluntary pro-environmental behavior.

All selected variables suit the topic of this study because they connect voluntary behavior with personal perceived factors. The emphasis is therefore on personal moral norms rather than subjective norms. There is a difference between a subjective norm in the TPB and personal norms in the NAM. Subjective norms in the TPB are primarily the pressures or feelings that a person acquires from the community or people around them. Personal norms in the NAM place more emphasis on the individual. The factors were hypothesized to be positively connected to intention to perform voluntary pro-environmental behavior, and the mediator was hypothesized to be positively correlated with this behavior. Employee habits are related to the moderator role.

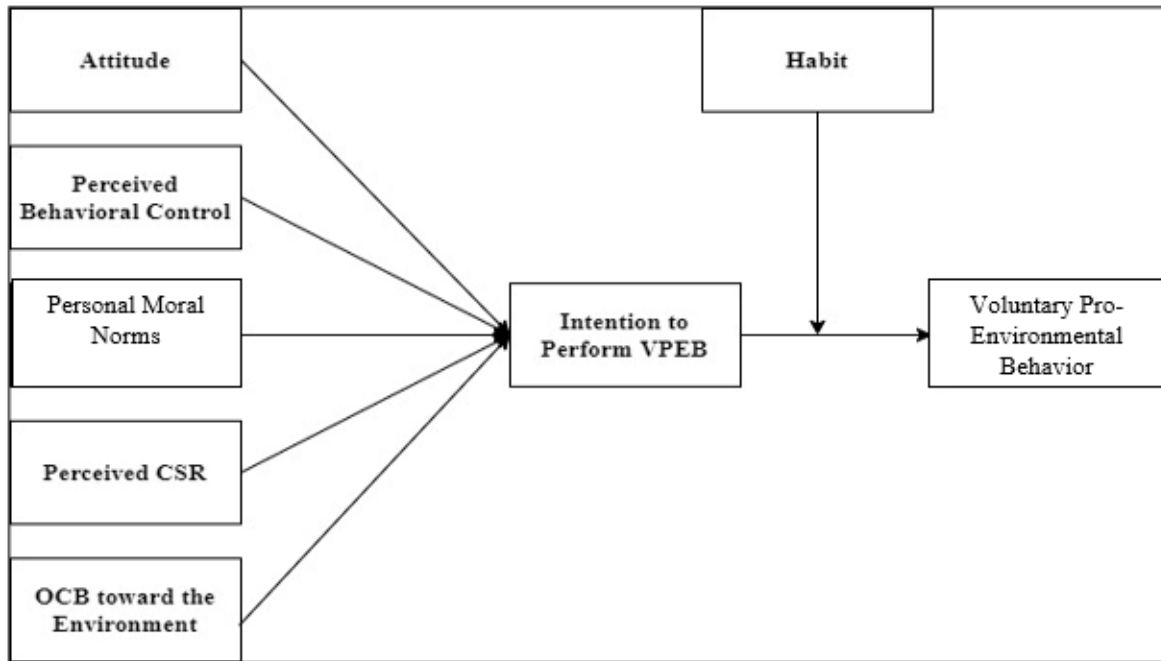


Figure 2. 1The conceptual model

2.7 Chapter summary

The literature search found many empirical studies on the importance of personal and organizational factors in pro-environmental behavior at work. These studies investigated the influence of several variables, including attitude, perceived behavioral control, personal moral norms, and organizational citizenship behavior toward the environment, as well as employees' perceptions of the organization's corporate social responsibility. However, few studies have been conducted in public sector organizations, or combined factors from three theories and examined the moderating role of habit .

Table 2. 2 The identified gaps

Gaps identified from the literature	Sources
Gap1. Multiple theories are required to fully account for the influencing factors and explain pro-environmental behavior.	Hamzah and Tanwir (2021) , He and Zhan (2018) , Liu et al.(2017) , Zhang et al.(2018).
Gap 2. Research indicates that habit (HAB) frequently predicts environmental behavior.	Klo"ckner and Blo"baum (2010), Tang et al.(2022) , van den Broek et al. (2019).
Gap 3. When studying employee environmental behavior, consider the role of OCB toward the environment.	Khan et al.(2022) , Paille et al. (2014).
Gap 4. Previous research found a strong link between employee perceptions of their employer's CSR and future responses to actual corporate behaviors.	Farouk and Jabeen (2018) , De Roeck and Maon (2018) , Gond et al. (2017) , Rupp et al.(2013).

Identified gaps in research refer to areas in which there is little or no existing knowledge, or where existing knowledge is insufficient to provide a comprehensive understanding of a particular topic. Some of the gaps that have been identified are listed in (table 2.2), which encompasses Gap 1. this study addressed the importance of using more than one theory to investigate employee pro-environmental behavior and its influencing factors by combining the three theories with other variables.

Gap2. The CADM proposed by Klo"ckner and Blo"baum (2010),recognized the importance of integrating the assumptions from the theories TPB and NAM with the theoretical concept of HAB (Triandis, 1979), because behavior can become automatic or habitual with regular repetition. Furthermore, by examining the two variables, gaps 3 and 4 demonstrated the importance of cultural aspects in the workplace. The study focuses on perceived PCR and OCB towards the environment because there is a strong link between employee perceptions of their employer's CSR and OCB towards the environment and future responses to actual corporate behaviors.

This study therefore aimed to address that need. Managers, experts, and practitioners have emphasized the importance of these Factors in creating an appropriate environment for promoting voluntary pro-environmental behavior among employees. It is therefore essential to investigate the impact of personal and organizational variables. Finally, no study has been found that considered all the proposed variables and their impact on intention to perform voluntary pro-environmental behavior in public sector organizations, or investigated whether habit has a moderating role in the relationship between intention and actual voluntary pro-environmental behavior. This chapter has described the theoretical foundation for this research, and the study constructs. It has introduced the conceptual model, and developed seven testable hypotheses. The next chapter describes the methodology used to test the conceptual model empirically, and investigate the relationships between the influencing factors of voluntary pro-environmental behavior in public sector organizations, perceived CSR, and OCB toward the environment, and the moderating effect of habit on the relationship between intention and actual voluntary pro-environmental behavior.

CHAPTER 3: RESEARCH METHODOLOGY

This chapter discusses the research methodology used to meet the study's objectives. It explains the sampling design for both the pilot study and the main survey, including the sample population, sample size, survey sites, data gathering procedure, survey development, and statistical analysis.

3.1 Research Design

The research design is a plan for achieving the study's objectives (Frazer & Lawley, 2000). Cooper et al. (2006) noted that choosing an appropriate study design can be challenging because there are so many possible methodologies, techniques, procedures, protocols, and sampling plans. However, the research design is the glue that binds a research project together (Trochim, 2006). The research design must structure the study and guarantee that all the major components of the research project (e.g., the sample, measurements, and assignment techniques) work together to address the key research questions and objectives (Trochim, 2006).

The initial phase in this study was to identify a public sector organization in the UAE as a sample to assess the factors influencing employees' perceptions of the factors of voluntary pro-environmental behavior. Second, the literature was used to develop an appropriate questionnaire. Third, a self-administered questionnaire was deemed an adequate method of data collection for this study. Fourth, before distributing the questionnaire to study participants, the questionnaire was validated, and its reliability was assessed using a pilot sample. Finally, the data were analyzed to address the study questions and test the hypotheses.

3.2 Population, sample, and sample size

3.2.1 Population

O’Leary (2017) defined the study population as all members of a specific class of people, objects, or events. He stated that before sampling, it is critical to have a well-defined population in mind. The participants in this study were employees of public sector organizations in Abu Dhabi. The purpose of population analysis is to collect data from everyone in the population. However, unless the population is a small, well-defined, and easily accessible cluster, this can be impractical (O’Leary, 2017). Public sector organizations employ thousands of people, and it is impractical to collect data from all of them. Sampling techniques were therefore used to ensure that the sample accurately represented the study population.

3.2.2 Sample and sample size

Sampling is the process of selecting subgroups of a population to participate in a research study. Samples should be representative, which means that the distribution and characteristics of the sample allow results to be generalized to the whole population (O’Leary, 2017). Sampling is then the process of selecting a sample that is representative of the population. Sampling has several advantages over whole-population studies, including lower costs, more accurate results, and faster data collection (Cooper et al., 2006).

The sample size is determined by the number of measurement variables used for each construct. Hair et al. (2018, p. 102) gave a rule of thumb for sample size of a

minimum of five times as many observations as the set of variables to be analyzed. For example, if there are 40 measurement items, the minimum sample size is 200. Table 4.1 shows that the number of proposed items in the questionnaire was 47, so the minimum sample size was 235. However, a small sample size may cause issues with the planned method of analysis (structural equation modelling). Hair et al. (2018) noted that large samples create more reliable results and reduce sampling error, although this may be constrained by the study's time and budget. This study used Hair et al.'s (2018) rule of thumb for sample size, but also investigated previous studies that used on-site surveys in the UAE to determine sample size. A sample size of 988 hotel employees was deemed sufficient to examine the impact of CSR on employee green behavior in the UAE (AlSuwaidi et al., 2021), and a sample of 297 to investigate employees' environmental values (Al-Hawari et al., 2021). Azar and Al Ansari (2017) investigated the motivation and energy conservation actions of people in individual or groups of buildings in the UAE using a sample size of 227 campus users or residents. This study therefore settled on a sample size of 519 employees from Abu Dhabi public sector organizations, both male and female, taken between May and August 2021. Following approval from Abu Dhabi University's IRB team (Appendix A), an online survey was developed to reach potential respondents.

The study also included only employees with at least one year of work experience. Employees with less than one year of work experience were excluded from the sample because it was considered that they might not have had enough time to become familiar with the organizational environmental culture, participate in corporate social responsibility initiatives and programs, and experience pro-environmental

behavior at work, and therefore might not have enough knowledge to answer all the survey questions.

The research was exploratory in nature, with an online survey-based questionnaire being used. To achieve the study's objectives, we distributed the survey to public entities in the United Arab Emirates (Abu Dhabi city) in various sectors such as education, environment, oil and gas, energy, and agriculture. Starting on May 17, 2021, a web-link to the survey was emailed to participants at all career levels with at least one year of work experience, along with a cover letter explaining the purpose of the study and stating that participation in the survey was entirely voluntary. To maintain confidentiality, respondents' identities were kept anonymous.

The time-lag technique is commonly used in research because it enables researchers to conduct multiple surveys on a single topic (Mehmood et al., 2020; Yu et al., 2021). Researchers can collect data from multiple sources using this method, which eliminates the possibility of common source bias. The method also allows data collection over multiple time periods, which reduces the possibility of common method bias. Finally, it allows participants to evaluate and improve their performance before providing their final response (Detert & Edmondson, 2011). Three waves of data collection were conducted at two-week intervals to eliminate typical technique bias (Podsakoff et al., 2003). The first survey (T1) was sent to 700 people, and 637 completed surveys were returned (91% response rate). The second-wave survey (T2) was conducted two weeks later, with the survey sent to all 637 respondents of the first survey. There were 559 valid responses returned (87.75% response rate). T3 was sent to 559 respondents from T2, and 519 valid responses were received.

3.3 Research instrument development

The questionnaire used scales adapted from previous studies to measure key constructs and demographic features. These scales were mostly originally developed in English. However, the study was conducted in the UAE, where Arabic is the first language, and the questionnaire was therefore translated into Arabic to avoid language-related errors in the analysis. Consistency was confirmed between the Arabic and English versions of the questionnaire. The respondents were asked to rate their degree of agreement with each statement on a five-point scale (1 = strongly disagree; 5 = strongly agree). A nine-section prototype questionnaire was developed using relevant measurement items. The first section included demographic information from respondents. Respondents were asked to rate items related to five factors of voluntary pro-environmental behavior (attitude, perceived behavioral control, personal moral norms, perceived CSR, and OCB towards the environment) in public sector organizations in Sections A–F. In section G, respondents assessed their levels of routine behavior as a work habit. The questionnaire's final section (H) assessed the employee's perceptions of voluntary pro-environmental behavior.

A structured survey in both English and Arabic was made available via an online survey system that collects responses and interfaces with the Statistical Package for the Social Science (SPSS). The survey web-link was emailed to participants on May 17, 2021, with a cover letter explaining the purpose of the study and stating that participation in the survey was entirely voluntary. Participants were able to complete the survey in the language of their choice (see Appendix B for the bilingual English and Arabic version of the questionnaire). The questionnaire constructs and variables are

summarized in Table 3.1 and in the next few sections.

3.3.1 attitude

This study examined employees' attitude using a five-item scale, developed by Wesselink et al. (2017). Sample items include I'm in favor of behaving pro-environmentally in the workplace, I think it's a good idea when an employer supports pro-environmental behavior in the workplace, and A pro-environmental attitude in the workplace is important to me. Attitude of employees in public sector organizations was assessed using a five-item scale ($\alpha = 0.881$), drawn from Wesselink et al. (2017). Respondents evaluated all five items on a five-point Likert-type scale where 1 = strongly disagree and 5 = strongly agree.

3.3.2 Perceived behavioral control

Perceived behavioral control can be examined directly by asking questions about a person's ability to perform a behavior, or indirectly by beliefs about capacity to deal with certain interfering or facilitating factors. Belief-based measures provide insight into the cognitive foundation supporting perceptions of behavioral control, but the direct approach has been used in the great majority of studies to date (Ajzen, 2002). The instrument used in this study for employees assessed their perceived behavioral control on a two-item measure, advanced by Wesselink et al. (2017). Sample items included If I wanted to, I could easily behave pro-environmentally in the workplace, and Whether I perform pro-environmentally is entirely up to my. To measure employees' perceived behavioral control, the study used a two-item scale ($\alpha = 0.736$) also developed by Wesselink et al. (2017). Respondents evaluated both items on a five-point Likert-type scale from 1 = strongly disagree to 5 = strongly agree.

3.3.3 Personal moral norms

The norm activation theory contains three main variables, personal norms, awareness of consequences, and ascription of responsibility. In this study, personal moral norms of employees were evaluated by the ratings of employees on a four-item scale (Steg & de Groot, 2010). Sample items included I feel morally obliged to act pro-environmentally at work, I feel guilty if I do not act pro environmentally at work, and I feel proud when I act pro-environmentally at work. The study used a four-item scale ($\alpha = 0.936$) developed by Steg and de Groot (2010) to measure personal moral norms. Respondents rated all four items on a five-point Likert-type scale where 1 = strongly disagree and 5 = strongly agree.

3.3.4 Perceived CSR

In this study, perceived CSR was assessed through employees' ratings on a five-item scale developed and validated by Rupp et al. (2018). The items were Our business supports employees' education, Flexible company policies enable employees to better coordinate work and personal life, Our business gives adequate contributions to charities, A program is in place to reduce the amount of energy and materials wasted in our business, and We encourage partnerships with local businesses and schools. A five-item scale ($\alpha = 0.902$) was used to measure perceived CSR, adapted from Rupp et al. (2018). Respondents evaluated all five items on a five-point Likert-type scale where 1 = strongly disagree and 5 = strongly agree.

3.3.5 OCB towards the environment

In this study, OCB towards the environment was measured by a seven-item scale

developed by Raineri and Paillé (2016). Sample items included I encourage my colleagues to adopt more environmentally conscious behaviors, I suggest new practices that could improve the environmental performance of my company, and I volunteer for projects or activities that address environmental issues in my company. A seven-item scale ($\alpha = 0.905$) was adapted from Raineri and Paillé (2016) to measure OCB toward the environment. Respondents evaluated all seven items on a five-point Likert-type scale where 1 = strongly disagree and 5 = strongly agree.

3.3.6 Intention to Perform Voluntary Pro-Environmental Behavior

In this study, three items were used to assess the intention to perform voluntary pro-environmental behavior (Yuriev et al., 2020). The first assessed planning (“I plan/intend to behave more pro-environmentally in the coming months”), the second evaluated the physical willingness to carry out the action (“I will try to behave more pro-environmentally in the coming months”), and the third assessed willingness (“I want to behave more pro-environmentally in the coming months”). Intention was measured on a scale from 1 = strongly disagree to 5 = strongly agree. A low score means the respondent has a low intention and a high score means there is a high intention to show pro-environmental behavior. Intention properties studies look at more than just the direction and strength of an intention; they also look at accessibility, certainty, and temporal stability (e.g., the within-participants correlation between measures of intention collected at two time periods) (Cooke & Sheeran, 2013). Several studies suggest that intention stability, rather than accessibility or certainty, is a better predictor of intention strength. Intention stability moderates the intention–behavior relationship more effectively than the other indicators (Cooke & Sheeran, 2013; Sheeran & Wells,

2016). The study used a three-item scale ($\alpha = 0.880$) to measure intention to perform voluntary pro-environmental behavior. This was developed by Yuriev et al. (2020). Respondents evaluated the three items on a five-point Likert type scale where 1 = strongly disagree and 5 = strongly agree.

3.3.7 Habit

This study accepted Verplanken and Orbell's idea that habit is a psychological construct that comprises behaviors with a history of repetition, automaticity, and expressing personal identity. Habit was measured using their twelve-item scale (Verplanken & Orbel, 2003). Sample items included Voluntary pro-environmental behavior is something I do frequently, Voluntary pro-environmental behavior is something I do automatically, and Voluntary pro-environmental behavior is something I do without thinking. To assess habit, a twelve-item scale ($\alpha = 0.942$) was used, drawn from Verplanken and Orbel (2003). Respondents evaluated all twelve items on a five-point Likert-type scale where 1 = strongly disagree and 5 = strongly agree.

3.3.8 Voluntary Pro-Environmental Behavior

To measure voluntary pro-environmental behavior, the study used a nine-item scale ($\alpha = 0.896$) developed by Wesselink et al. (2017). Respondents evaluated the nine items on a five-point Likert type scale where 1 = strongly disagree and 5 = strongly agree.

3.4 Demographic Information

The demographic section asked about respondents' personal characteristics, including gender, age, marital status, level of education, nationality, average monthly income in AED, and years of work experience. Categorical scales were used to assess demographic data.

Table 3. 1 Details of the constructs used in the study

Construct/Variable	Description	Reference	Journal	Scopus Index/Rank
Attitude	AT1: I'm in favor of behaving pro-environmentally in the workplace. AT2: I think it's a good idea when an employer supports pro-environmental behavior in the workplace. AT3: A pro-environmental attitude in the workplace is important to me. AT4: I think too much attention is paid to pro-environmental behavior in the workplace. AT5: I think it is good when colleagues show pro-environmental behavior.	Wesselink et al. (2017)	<i>Journal of Cleaner Production</i>	SNIP = 2.475
Perceived behavioral control	PBC1: If I wanted to, I could easily behave pro-environmentally in the workplace. PBC2: Whether I perform pro-environmentally is entirely up to me.	Wesselink et al. (2017)	<i>Journal of Cleaner Production</i>	SNIP = 2.475
Personal moral norms	PMN1: I feel guilty if I do not act pro environmentally at work. PMN2: I feel morally obliged to act pro-environmentally at work. PMN3: I feel proud when I act pro-environmentally at work. PMN4: I would violate my principles if I would not act pro-environmentally at work.	Steg and de Groot (2010)	<i>Energy Research & Social Science</i>	SNIP = 2.024
Perceived corporate social responsibility	PCSR1: Our business supports employees' education. PCSR2: Flexible company policies enable employees to better coordinate work and personal life. PCSR3: Our business gives adequate contributions to charities. PCSR4: A program is in place to reduce the amount of energy and materials wasted in our business. PCSR5: We encourage partnerships with local businesses and schools.	Rupp et al. (2018)	<i>Journal of Organizational Behavior</i>	IF = 8.174

Organizational citizenship behavior towards the environment	OCB-E1: I suggest new practices that could improve the environmental performance of my company.	Raineri and Paillé (2016)	<i>Journal of Business Ethics</i>	IF = 6.43
	OCB-E2: I encourage my colleagues to adopt more environmentally conscious behaviors.			
	OCB-E3: I stay informed of my company's environmental efforts.			
	OCB-E4: I make suggestions about ways to protect the environment more effectively.			
	OCB-E5: I volunteer for projects or activities that address environmental issues in my company.			
	OCB-E6: I spontaneously give my time to help my colleagues take the environment into account.			
	OCB-E7: I undertake environmental actions that contribute positively to my company's image.			
Intention to perform voluntary environmental behavior	INT1: I plan/intend to behave more pro-environmentally in the coming months	Yuriev et al. (2020)	<i>International Journal of Manpower</i>	IF = 1.75
	INT2: I will try to behave more pro-environmentally in the coming months			
	INT3: I want to behave more pro-environmentally in the coming months			
Habit	HAB1: Voluntary pro-environmental behavior is something I do frequently.	Verplanken and Orbel (2003)	<i>Journal of Applied Social Psychology</i>	IF = 2.122
	HAB2: Voluntary pro-environmental behavior is something I do automatically.			
	HAB3: Voluntary pro-environmental behavior is something I do without having to consciously remember.			
	HAB4: Voluntary pro-environmental behavior is something that makes me feel weird if I do not do it.			
	HAB5: Voluntary pro-environmental behavior is something I do without thinking.			
	HAB6: Voluntary pro-environmental behavior is something I would require effort not to do it.			
	HAB7: Voluntary pro-environmental behavior is something that belongs to my (daily, weekly, monthly) routine.			
	HAB8: Voluntary pro-environmental behavior is something I start doing before I realize I'm doing it.			

	HAB9: Voluntary pro-environmental behavior is something I would find it hard not to do. HAB10: Voluntary pro-environmental behavior is something I have no need to think about doing. HAB11: Voluntary pro-environmental behavior is something that's typically 'me'. HAB12: Voluntary pro-environmental behavior is something I have been doing for a long time			
Voluntary environmental behavior	pro-VPEB1: I recycle as much as possible VPEB2: I use scrap paper rather than new paper for notes VPEB3: If I lived close to work, I would go to work by bicycle (or walking) rather than by car VPEB4: I turn off the lights when I am the last to leave the office VPEB5: I turn off the lights in empty rooms when I pass them VPEB6: I turn off all my electronic devices at the end of the day VPEB7: If it was offered in our canteen, I would choose organic food and beverages VPEB8: I use a new paper/plastic cup for each cup of coffee/tea VPEB9: I take care to turn off or down the cooling outside office hours.	Wesselink et al. (2017)	<i>Journal of Cleaner Production</i>	SNIP = 2.475

3.5 Validity and Reliability of the research instrument

In any empirical study, the validity and reliability of survey instruments must be tested (Lai, 2015). Validity measures the level of systematic errors, and reliability the level of random errors (O’Leary, 2017). To ensure that the survey instrument was valid and reliable, a pilot test was conducted, and experts were consulted.

3.5.1 Validity

A valid instrument measures what it is supposed to measure. This implies that there should be no systematic influences on the responses (Vavra, 1997). This study examined both content and construct validity. The content validity of the questions is whether they are relevant to the measured construct and cover the entire construct (Vavra, 1997). Construct validity defines how much the question relates directly to constructs other than the one being measured (Vavra, 1997). To ensure the instrument’s validity, two academic experts with experience in environmental behavior were asked to comment on the survey instrument’s meaningfulness, relevance, and clarity. They agreed that the survey instrument’s content and design were valid and relevant to employees at work.

3.5.2 Reliability

A reliable instrument has few random errors. It therefore consistently produces the same response (Vavra, 1997). Reliability ensures that the questionnaire scores accurately reflect the underlying construct. It is evaluated using internal consistency tests, such as Cronbach’s alpha. This determines how closely each item or question in the instrument is related to others (Vavra, 1997). A pilot test was used to test Cronbach’s

alpha for each of the constructs. The pilot test was conducted with 50 randomly selected employees from various public sector organizations in Abu Dhabi. Table 3.2 shows that the Cronbach's alpha values for each construct were all greater than or equal to 0.716. Nunnally (1978) noted that any value greater than 0.7 is acceptable. It is therefore reasonable to argue that the instrument used in this research is highly reliable.

Table 3. 2 Cronbach's alpha of the questionnaire, evaluated through pilot testing

Construct	Number of items	Cronbach's alpha (α)
Attitude	5	0.887
Perceived behavioral control	2	0.716
Personal moral norms	4	0.940
Perceived CSR	5	0.984
OCB towards the environment	7	0.926
Intention to perform voluntary pro-environmental behavior	3	0.823
Habit	12	0.907
Voluntary pro-environmental behavior	9	0.856

3.6 Data Collection Procedure

3.6.1 IRB Approval

All research activities involving human participants conducted by ADU faculty, staff, or students must be reviewed and approved by the ADU Institutional Review Board (IRB). The completed application, which included the original signatures of the researcher and advisors, as well as the proposal, questionnaire, and informed consent/assent forms, was submitted to the office on March 18, 2021, and approved on April 20, 2021 (Appendix A).

3.6.2 Data Collection

The study was exploratory in nature, and used an online survey-based

questionnaire. Respondents' identities were kept anonymous to maintain confidentiality. To achieve the objectives of this study, the researchers targeted public sector entities in the United Arab Emirates (Abu Dhabi city) to disseminate the survey. The Abu Dhabi government has implemented several environmental programs and projects that have enhanced the quality of the environment, including a series of studies and research on the effects of climate change at the local, national, and regional levels undertaken by the Abu Dhabi Global Environmental Data Initiative (AGEDI). Since 2009, Abu Dhabi has hosted the International Renewable Energy Agency (IRENA). A large carbon capture and storage project is being established in Abu Dhabi, which will be administered by Al Reyadah Abu Dhabi Carbon Capture Company (The UAE government portal, 2020). The involvement of public sector organization employees is therefore essential to achieving the ultimate goal of environmental sustainability.

The author approached the Abu Dhabi School of Government (ADSG) formally and requested that it distributed the electronic questionnaires to all Abu Dhabi governmental organizations (Appendix C, E). ADSG is the central governmental institution that plans and oversees the development of government employees through high-quality programs based on global best practices. The structured survey was developed and made available through Survey Monkey. A link to the online survey was emailed to participants, along with a cover letter.

The time-lagged method was used to collect data at three time intervals. Respondents were asked to provide demographic information and responses to three sets of questions that were distributed over a period. The second and third sets of questions were distributed two weeks and four weeks after the first set, and only to employees who had responded to the previous wave. The first wave (T1) questionnaire asked about

attitudes, perceived behavioral control, personal moral norms, perceived CSR, organizational citizenship behavior toward the environment, and intention to perform voluntary pro-environmental behavior. The second wave (T2) questionnaire asked about habits. Finally, the third wave (T3) questionnaire asked about voluntary pro-environmental behavior. The data collection period lasted 12 weeks in total, from May 17 to August 17, 2021.

The time-lagged technique is widely used in research because it allows researchers to conduct several surveys for a specific topic (Mehmood et al., 2020; Yu et al., 2021). Researchers may collect data from several sources, eliminating the likelihood of common source bias. The method also allows data to be gathered at multiple time periods, reducing the possibility of common method bias. Finally, it allows participants to assess and improve their behavior before giving their final response (Detert & Edmondson, 2011). To eliminate usual technique bias, three waves of data collection were undertaken at two-week intervals (Podsakoff et al., 2003). The first survey was distributed to 700 respondents (T1), and 637 completed surveys were returned (91% response rate). The second-wave survey (T2) was conducted two weeks later, with the survey sent to all 637 respondents of the first survey. The total number of valid responses returned was 559 (87.75% response rate). The third wave (T3) was sent to the 559 respondents from T2, and 519 valid responses were collected. The study sample included 310 (59.7%) men and 209 (40.3%) women. The average age of the respondents ranged from 35 to 44 years old, with 44.1% holding a bachelor's degree and 41.0% holding a master's degree. Participants had a minimum of one year of work experience, and 42.8% had more than 15 years of experience.

3.7 Statistical Data Analysis

Sulek and Hensley (2004) defined data analysis as the process of reducing collected data to a reasonable size, summarizing it, searching for patterns, and employing statistical techniques. The analysis in this study was designed to answer the research questions and test the study hypotheses through statistical techniques using the Statistical Package for Social Science (SPSS) version 26. The study used both comprehensive descriptive and inferential statistical analyses. Creswell (2011) stated that descriptive statistics reveal general tendencies in data (the spread of scores or a comparison of how one score relates to others), and inferential statistics examine data from a sample to draw conclusions about the population.

Before the descriptive and inferential analysis, the data were checked for missing values. The Kaiser–Meyer–Olkin (KMO) test and Bartlett’s test of sphericity were used to determine the suitability of the collected data. The KMO test evaluates sample adequacy, and Bartlett’s test investigates the identity of the correlation matrix. A KMO value of 0.5 or greater indicates that the sample is adequate (Child, 2006). A value of 0.05 for Bartlett’s test of sphericity indicates that the data are suitable for factor analysis (Field, 2017).

3.7.1 Descriptive Statistical Analysis

Descriptive statistics were used to consolidate data to determine the mean and standard deviation of the attributes of employees’ voluntary pro-environmental behavior (attitude, perceived behavioral control, personal moral norms, perceived CSR, and OCB towards the environment), habit, and intention to perform voluntary pro-environmental behavior. The distribution of respondents’ demographic information, including gender, age,

education, and work experience, was examined using frequency analysis.

3.7.2 Inferential Statistics

Inferential statistics were used to answer the research questions and test hypotheses. This study used structural equation modeling (SEM), regression analysis, and model goodness of fit.

Confirmatory factor analysis (CFA) was used to assess how well the measured variables represented the construct. As a cutoff, a minimum factor loading of 0.5 was used (Hair et al., 2016). The CFA confirmed that the individual constructs were unidimensional (Hair et al., 2016). The CFA results were used to evaluate the measure's validity and reliability. Two types of validity were evaluated: convergent and discriminant validity.

Convergent validity exists when the scale correlates positively with other measures of the same construct (Malhotra, 2019) and shares a high proportion of variance (Hair et al., 2016). The strength of the factor loadings (i.e., t-value) of each observed variable on the latent construct was used to assess convergent validity. Convergent validity is assumed to exist when the observed variables' factor loadings for the underlying latent constructs are high and statistically significant (Bagozzi et al., 1991). Factor loadings should ideally be greater than 0.7 (Malhotra, 2019).

When a measure does not correlate with other constructs from which it is supposed to differ, it has discriminant validity (Malhotra, 2019). This indicates that the construct is distinct from other constructs (Hair et al., 2016). To examine discriminant validity, the average variance was used (Fornell & Larcker, 2016). The squared correlation between two constructs must be less than the average variance extracted

(AVE) for each construct for the variance extracted test to be valid.

Composite reliability (CR) represents the relationship between true and total score variance (Malhotra, 2019). It is therefore the variance shared by a set of observed variables that measure an underlying construct (Fornell & Larcker, 2016). The CFA results were used to assess composite reliability. Estimates of 0.6 to 0.7 were considered acceptable if the model validity estimates were good (Malhotra, 2019).

These analyses were used to validate the measurement model and ensure its suitability for SEM. This technique was then applied to investigate the relationships between variables including multiple relationships and latent variables (Schumacker & Lomax, 2010). SEM was used to determine the relationship between the factors of voluntary pro-environmental behavior of employees in public sector organizations (attitude, perceived behavioral control, personal moral norms, perceived CSR, OCB towards the environment) and intention to perform voluntary pro-environmental behavior. A multi-group analysis was used to examine the moderating effect of habit on the relationship between intention and actual voluntary pro-environmental behavior.

Several indices were used to assess whether the hypothesized relationships fit the data, including chi-squared ($\chi^2 = \text{CMIN}/\text{df}$), root mean square error of approximation (RMSEA), comparative fit index (CFI), and incremental fit index (IFI). Chi-squared is a basic fit index used in SEM that measures the difference between observed and estimated covariance matrices. A chi-squared value of 1 to 5 is considered a good fit (Hair et al., 2016). The RMSEA is the difference between the actual and predicted variance (Hair et al., 2016). It is scaled to account for degrees of freedom and sample size. If the RMSEA value is less than or equal to 0.08, the model is considered acceptable (Malhotra, 2019). CFI considers degrees of freedom for model complexity,

but is negatively influenced by sample size (Malhotra, 2019). CFI values range from 0 to 1, with 0.90 being considered a good fit (Malhotra, 2019). Finally, the variance between the chi-squared values of the independent model (with uncorrelated variables) and the target model was calculated. The difference between the chi-squared value and the target model's degrees of freedom was then calculated (Moss, 2016). This ratio is IFI. Values range from 0 to 1, with 0.90 indicating a good fit (Hair et al., 2016).

3.8 Assumptions

Several crucial assumptions were made in this study. First, it was assumed that respondents answered questions truthfully about both their own characteristics and their workplace practices and behavior regarding environmental issues. The researcher also assumed that the employees chosen for the study represented all demographic groups of all public sector employees.

3.9 Ethical Issues

According to de Vaus (2001), all social research must follow four ethical principles: voluntary participation, informed consent, no harm to participants, and confidentiality. In carrying out this study, steps were taken to ensure that these standards were met. The IRB approved the research protocol used in the study to fulfill the research requirement at Abu Dhabi University. This is the institutional body at Abu Dhabi University that reviews research protocols for the university community (faculty, staff, and students) to ensure that research participants' rights and safety are protected. Participants were required to have at least one year of work experience. Before beginning the survey, participants were shown a letter in which they were informed that

their participation was entirely voluntary and that their anonymity would be strictly protected (see Appendix B). To maintain confidentiality, data were collected using Survey Monkey and no computer IP addresses were collected. The survey responses were saved on a flash drive in electronic format. In line with de Vaus's (2001) recommendation, the data will be permanently deleted after three years.

3.10 Chapter Summary

This chapter discussed the study instrument, which was developed following a review of the literature. It described how the instrument was tested on a pilot basis, and its reliability was determined using Cronbach's alpha and an internal consistency test. The rationale for selecting the population, sample size, and sampling strategy were also discussed. The chapter concluded with a discussion of data collection, data analysis, study assumptions, and ethical concerns. The next chapter will present the study's findings and provide answers to the research questions.

CHAPTER 4: ANALYSIS

This chapter provides the results of the statistical analysis used to test the hypotheses developed in Chapter 2. The chapter begins with a description of the characteristics of the respondents, including demographic information, and then presents the findings of the confirmatory factor analysis (CFA) used to validate the constructs, and the results of the structural equation modeling (SEM). It then considers the study hypotheses in the light of all these findings. Finally, it discusses the analysis investigating the moderating effect of habit.

4.1 Demographic characteristics

The demographic characteristics of respondents to the main survey (n = 519) are shown in Table 4.1, including their gender, age, marital status, education level, nationality, average monthly income, and years of work experience. Overall, 59.7% of the respondents were men and 40.3% were women. Most respondents were 35 to 44 years old (51.1%), 75.7% were married, 19.3 % were single, 4.8% divorced and 0.2% widowed. Approximately 3.5% of the respondents had only high school or equivalent degree, 44.1% had a bachelor's degree, 41.0% a master's degree, and 9.8% held a doctoral degree. The majority of respondents, 79.8%, were Emiratis (UAE nationals). A total of 54.1 % of the respondents reported an average monthly income of 11,000–50,000 AED. The majority of participants (42.8%) had more than 15 years of work experience.

Table 4. 1 Demographic characteristics of respondents

Variable	Frequency	Percentage (%)
<i>Gender</i>		
Male	310	59.7
Female	209	40.3
<i>Age</i>		
20–24 years	14	2.7
25–34 years	150	28.9
35–44 years	265	51.1
45–54 years	74	14.3
Over 55 years	16	3.1
<i>Marital status</i>		
Single	100	19.3
Married	393	75.7
Divorced	25	4.8
Widowed	1	0.2
<i>Education level</i>		
High school or equivalent	18	3.5
Bachelor's degree	229	44.1
Master's degree	213	41.0
Doctoral degree	51	9.8
Others	8	1.5
<i>Nationality</i>		
Emirati	414	79.8
GCC national	4	0.8
Arab	69	13.3
Asian	18	3.5
European	5	1.0
American and others	9	1.7
<i>Monthly income (AED)</i>		
5,000–10,000 AED	32	6.2
11,000–50,000 AED	281	54.1
51,000–100,000 AED	156	30.1
Over 100,000 AED	50	9.6
<i>Years of work experience</i>		
1–5 years	63	2.1
6–10 years	100	19.3
11–15 years	134	25.8
More than 15 years	222	42.8

4.2 Confirmatory factor analysis (CFA)

SEM includes two main components, the measurement model (CFA), and the structural/path model (SEM). Hair et al. (2018) stated that the measurement model integrates several indicators for a variable. In this study, the measurement model was analyzed using CFA before carrying out the path analysis of the structural model. CFA was applied to the data set ($n = 519$) to confirm the underlying factors and items extracted, and guide the model specification (Anderson & Gerbing, 1988). The model fit in CFA must be examined to identify how well the proposed measurement model fits the data (Kline, 2015). The chi-squared ($\chi^2 = \text{CMIN}/\text{df}$) statistic, root mean square error of approximation (RMSEA), comparative fit index (CFI), and incremental fit index (IFI) were used to examine the model fit (Hair et al., 2018; Malhotra, 2019). Chi-squared determines the difference between the assessed covariance matrices to test the null hypothesis that the observed sample and SEM-estimated covariance matrices are equal (Hair et al., 2018). The model's fit is good when the two metrics are not significantly different. However, chi-squared is sensitive to the sample size because significance value is reduced when the sample size increases (Hair et al., 2018). Other fit indices are therefore often examined in CFA. Two of the 12 items of habit and two of the nine items of voluntary pro-environmental behavior were dropped at this stage because of poor factor loadings and/or evidence of cross-loadings (Table 4.2).

Table 4. 2 Items removed from the CFA

Construct	Items	Standardized factor loading
Habit	HAB11: Voluntary pro-environmental behavior is something that's typically 'me'.	0.448
	HAB12: Voluntary pro-environmental behavior is something I have been doing for a long time	0.381
Voluntary pro-environmental behavior	VPEB8: I use a new paper/plastic cup for each cup of coffee/tea	0.441
	VPEB9: I take care to turn off or down the cooling outside office hours	0.394

The factor loadings of the remaining items (λ : cut-off criteria greater than 0.6 and $p < 0.001$) were greater than 0.612 (see Table 4.3), and all items examined demonstrated significant loadings on their related factors. CFA in SPSS 26 was used to investigate the convergent and discriminant validity of the variables (Anderson & Gerbing, 1988). The cut-off criteria of Hu and Bentler (1999) were applied (i.e., χ^2/df less than 2; CFI more than 0.9, and RMSEA less than 0.07), as shown in Table 4.4. Several item variables were used for the CFA on individual-level data to ensure data validity. The study also investigated the average variance extracted (AVE; cut-off criteria > 0.5) and composite reliability (CR; cut-off criteria > 0.8), which supported the presence of convergent validity. The suggested model was therefore appropriate for hypothesis testing. Table 4.4 shows the findings of the CFA analysis. When compared to alternative models, the eight-factor model was a good fit with the data ($\chi^2/df = 982.887/780 = 1.260$; CFI = 0.986; Tucker–Lewis Index [TLI] = 0.984; and RMSEA = 0.022).

Table 4. 3 The reliability and convergent validity for the study variables

Variables	Item code	λ	CR	AVE
Attitude (Time 1)			.885	.608
	AT1	.751		
	AT2	.783		
	AT3	.891		
	AT4	.730		
	AT5	.733		
Perceived behavioral control (Time 1)			.884	.816
	PBC1	.845		
	PBC2	.692		
Personal moral norms (Time 1)			.937	.787
	PMN1	.849		
	PMN2	.965		
	PMN3	.850		
	PMN4	.878		
Perceived CSR (Time 1)			.907	.663
	PCSR1	.819		
	PCSR2	.776		
	PCSR3	.846		
	PCSR4	.852		
	PCSR5	.738		
OCB toward the environment (Time 1)			.906	.581
	OCBE1	.612		
	OCBE2	.634		
	OCBE3	.750		
	OCBE4	.838		
	OCBE5	.760		
	OCBE6	.789		
	OCBE7	.755		
Intention to perform voluntary pro-environmental behavior (Time 1)			.881	.713
	INT1	.891		
	INT2	.797		
	INT3	.844		
Habit (Time 2)			.943	.625
	HAB1	.645		
	HAB2	.703		
	HAB3	.709		
	HAB4	.816		
	HAB5	.806		
	HAB6	.863		
	HAB7	.788		
	HAB8	.853		
	HAB9	.782		

Voluntary pro-environmental behavior (Time 3)	HAB10	.780		
			.898	.559
	VPB1	.672		
	VPB2	.706		
	VPB3	.876		
	VPB4	.858		
	VPB5	.740		
	VPB6	.614		
	VPB7	.694		

Notes: All factor loadings are significant at $p < .001$, $N = 519$; λ = factor loadings, AVE = average variance extracted, CR = composite reliabilities, CSR = corporate social responsibility, OCB = organizational citizenship behaviors, VPEB = voluntary pro-environmental behavior

Table 4. 4 Results of the confirmatory factor analysis

Model	χ^2	df	χ^2/df	$\Delta\chi^2$ (Δdf)	TLI	CFI	RMSEA
Eight-factor model: baseline model	982.887	780	1.260		0.984	0.986	0.022
Seven-factor model: combining INT, HAB and VPB	1079.211	802	1.345	96.324 (22)	0.823	0.865	0.081
Six-factor model: combining OCBE, INT, HAB and VPB	1693.569	802	2.111	710.682 (22)	0.756	0.712	0.092
Five-factor model: combining PCSR, INT, and VPB	2129.789	802	2.655	1146.902 (22)	0.633	0.687	0.101
Four-factor model: combining PMN, OCBE, PCSR, and INT	2539.856	856	2.967	1556.969 (76)	0.598	0.611	0.128
Three-factor model: combining PBC, PMN, OCBE, and PCSR	3124.588	856	3.650	2141.701 (76)	0.418	0.489	0.130
Two-factor model: combining AT, PBC, PMN, OCBE, and PCSR	4334.542	859	5.046	3351.655 (79)	0.387	0.399	0.133
One-factor model: combining all into one factor	9512.932	860	11.061	8530.045 (80)	0.311	0.325	0.139

Notes: AT = attitude, PBC = perceived behavioral control, PMN = personal moral norms, PCSR = perceived corporate social responsibility, OCBE = organizational citizenship behaviors toward the environment, INT = intention to perform voluntary pro-environmental behavior, HAB = habit, VPEB = voluntary pro-environmental behavior, TLI = Tucker–Lewis index; CFI = comparative fit index, RMSEA = root mean square error of approximation

4.3 Validity and reliability of measurement model

Construct validity measures the “extent to which a set of measured variables actually represents the theoretical latent construct they are designed to measure” (Hair et al., 2018, p. 606). Convergent and discriminant validity were investigated during the CFA to assess construct validity. Convergent validity is the “degree to which indicators of a specific construct converge or share a high proportion of variance in common” (Hair et al., 2018, p. 606). Three methods were used to assess convergent validity:

- (1) Standardized factor loading should be greater than 0.5 (Hair et al., 2018);

(2) Average variance extracted (AVE) should be greater than 0.5 (Hair et al., 2018); and

(3) Composite reliability (CR) should be greater than 0.7 (Hair et al., 2018).

Hair et al. (2018, p. 606) defined discriminant validity as the “degree to which a construct is truly distinct from other constructs, both in terms of how much it correlates with other constructs and how clearly measured variables represent only this single construct”. The extent to which the variance of a measured variable is explained by a latent variable is measured by squared multiple correlation (Hair et al., 2018). Discriminant validity is achieved when the estimated AVE for each construct is greater than the highest squared multiple correlation coefficients for the corresponding construct (Fornell & Larcker, 1981).

The correlations between constructs, AVE values, composite reliability (CR) values, means, and standard deviations are shown in Table 4.5. All of the observed variables measuring the construct had standardized factor loadings that were greater than 0.5 (Hair et al., 2018), ranging from 0.5 to 0.942. The AVE values were greater than the critical value of 0.5 (Hair et al., 2018). This suggests the presence of convergent validity. All constructs also showed discriminant validity. The composite reliability of each variable was greater than 0.7 (Hair et al., 2018), confirming the measurement model’s reliability.

Table 4. 5 Descriptive statistics, reliabilities, and correlation matrix.

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Gender	1.40	.49												
2. Age	2.86	.80	.206**											
3. Education	2.62	.77	.057	.201**										
4. Experience	2.99	1.05	.289**	.189**	.206**									
5. Attitude	3.77	.88	.078	.019	.066	.037	(.881)							
6. Perceived behavioral control	2.01	.83	.053	.028	.085	.006	.188**	(.736)						
7. Personal moral norms	2.89	1.37	.060	.030	.003	.019	.140**	.247**	(.936)					
8. Perceived CSR	4.02	.74	.105*	.050	.003	.024	.107*	.183**	.128*	(.902)				
9. OCB toward the environment	2.10	.68	.038	.052	.042	.045	.123**	.312**	.264**	.391**	(.905)			
10. Intention to perform VPEB	3.07	1.30	.048	.053	.001	.006	.361**	.177**	.201**	.129**	.318**	(.880)		
11. Habit	3.81	.70	.061	.069	.016	.072	.226**	.354**	.205**	.325**	.634**	.324**	(.942)	
12. VPEB	4.02	.78	.031	.092*	.048	.067	.322**	.194**	.134**	.249**	.430**	.210**	.397**	(.896)

Notes: ** $p < 0.01$, * $p < 0.05$; $N = 519$; CSR = corporate social responsibility; OCB = organizational citizenship behaviors; VEPB = voluntary pro-environmental behavior

4.4 Structural equation modeling (SEM)

The conceptual model was examined using structural equation modeling (SEM), which has also been extensively used in previous studies (Ramkissoon et al., 2013; Rampedi & Ifegbesan, 2022). The fit indices showed that the proposed model had an adequate fit ($\chi^2 = 766.170$, $df = 460$, $\chi^2/df = 1.666$, $TLI = 0.966$, $CFI = 0.970$, $RMSEA = 0.036$) (Figure 4.1).

4.4.1 Hypothesis testing

Six direct path-to-path relationships were investigated. The results of the analysis were then used to investigate the moderating effect of habit. To test the six hypotheses, the direct regression paths among the seven constructs were examined (see Table 4.6). Figure 4.1 shows the overall structural model. At the 0.05 or 0.001 level, five of the six estimated path coefficients were statistically significant.

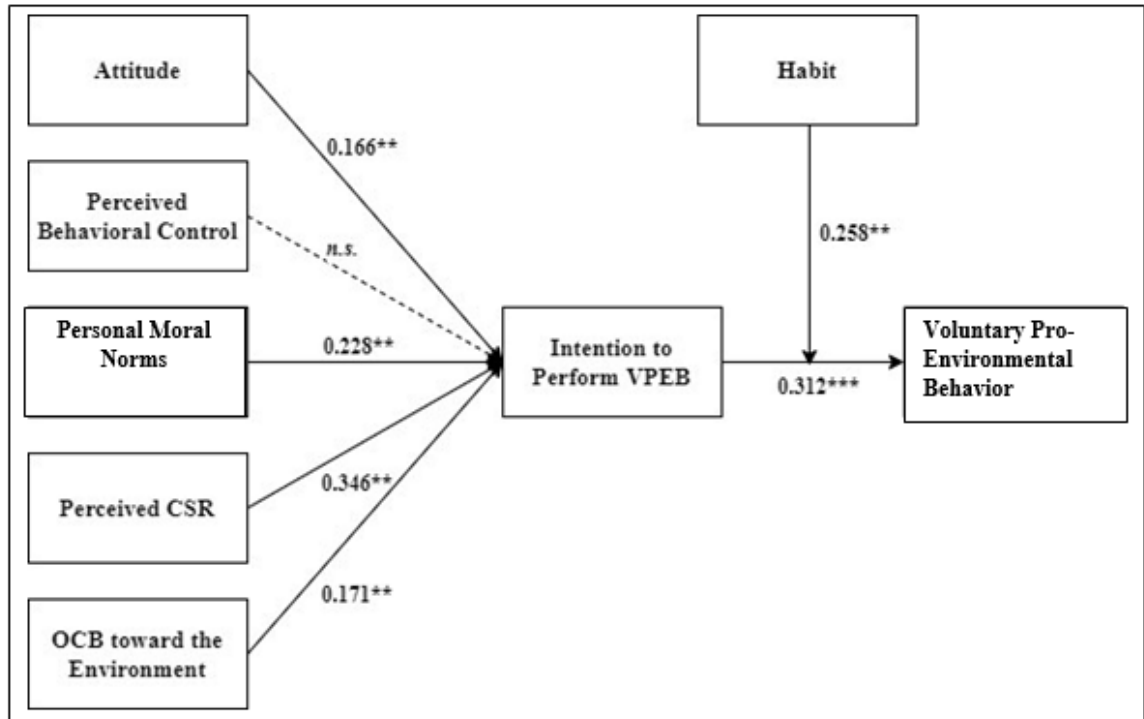


Figure 4. 1 Path analysis

Note: $\chi^2 = 766.170$, $df = 460$, $\chi^2/df = 1.666$, $TLI = 0.966$, $CFI = 0.970$, $RMSEA = 0.036$; dotted lines show non-significant (*n.s.*) relationship, *** $p < 0.001$; ** $p < 0.01$.

Table 4. 6 Results of hypothesis testing

Hypothesis	Path	β	SE	p	Supported (Yes/No)
H1	AT→INT	0.166	0.051	< .01	Yes
H2	PBC→INT	0.083	0.107	> .01	No
H3	PM→INT	0.228	0.049	< .01	Yes
H4	OCBE→INT	0.346	0.049	< .001	Yes
H5	PCSR→INT	0.171	0.032	< .01	Yes
H6	INT→VPEB	0.312	0.044	< .0001	Yes

Notes: $\chi^2 = 766.170$, $df = 460$, $\chi^2/df = 1.666$, $TLI = 0.966$, $CFI = 0.970$, $RMSEA = 0.036$;

β = path coefficients ,SE = standard error, AT = attitude; PBC = perceived behavioral control; PMN = personal moral norms; PCSR = perceived corporate social responsibility, OCBE = organizational citizenship behaviors toward the environment, INT = intention to perform voluntary pro-environmental behavior = INT, HAB = habit, VPEB = voluntary pro-environmental behavior.

Hypothesis 1 proposed that attitude significantly influences intention to perform voluntary pro-environmental behavior. The path analysis (Figure 4.1) showed that this was the case in the sample ($\beta = 0.166$, $p < .01$), supporting Hypothesis 1. Respondents with a favorable attitude towards pro-environmental behavior in public organizations are therefore more likely to intend to perform voluntary pro-environmental behavior.

Hypothesis 2 proposed that perceived behavioral control significantly influences intention to perform voluntary pro-environmental behavior. However, the path analysis showed that there was no significant relationship between these two ($\beta = 0.083$, $p > .01$), and Hypothesis 2 was therefore unsupported.

Hypothesis 3 proposed that personal moral norms significantly influenced intention to perform voluntary pro-environmental behavior. This was again supported by the findings ($\beta = 0.228$, $p < .01$). This means that respondents with personal moral norms that support voluntary pro-environmental behavior are more likely to intend to participate in this behavior.

Hypothesis 4 proposed that perceived CSR significantly influenced intention to perform voluntary pro-environmental behavior. The findings supported this hypothesis ($\beta = 0.346$, $p < .001$). Respondents with a favorable perception of their organization's CSR are therefore more likely to intend to engage in voluntary pro-environmental behavior.

Hypothesis 5 suggested that organizational citizenship behavior toward the environment would significantly influence intention to perform voluntary pro-environmental behavior. The findings supported this hypothesis ($\beta = 0.171$, $p < .01$). Organizational citizenship behavior toward the environment was therefore

associated with stronger intention to engage in voluntary pro-environmental behavior.

Hypothesis 6 stated that intention to perform voluntary pro-environmental behavior would significantly influence actual behavior of this kind. The findings again supported this hypothesis ($\beta = 0.312$, $p < .0001$). Respondents who expressed a stronger intention to perform voluntary pro-environmental behavior were more likely to engage in this behavior in the workplace.

4.4.2 The moderating role of habit

Hypothesis 7 set out that habit would enhance the positive effect of intention to perform voluntary pro-environmental behavior on actual behavior. This relationship would therefore be stronger for employees with stronger habits. Table 4.7 shows that there was a significant interaction between intention to perform voluntary pro-environmental behavior and habit, and this affected actual behavior of this kind among employees ($\beta = 0.258$, $t = 5.586$, $p = 0.001$). This supported Hypothesis 7.

The pattern of the moderating effect was also assessed visually, following the method of Aiken et al. (1991) to plot the interaction. Figure 4.2 shows that the relationship between intention and actual voluntary pro-environmental behavior of employees becomes stronger at higher levels of habit, supporting Hypothesis 7.

Table 4. 7 Results of moderation analysis

Habit						
	β	t	p	LLCI	ULCI	Moderation (Yes/No)
H7: INT→VPEB	0.258	5.586	0.001	0.1128	0.3296	Yes

Notes: β = path coefficients, INT = intention to perform voluntary pro-environmental behavior, VPEB = voluntary pro-environmental behavior.

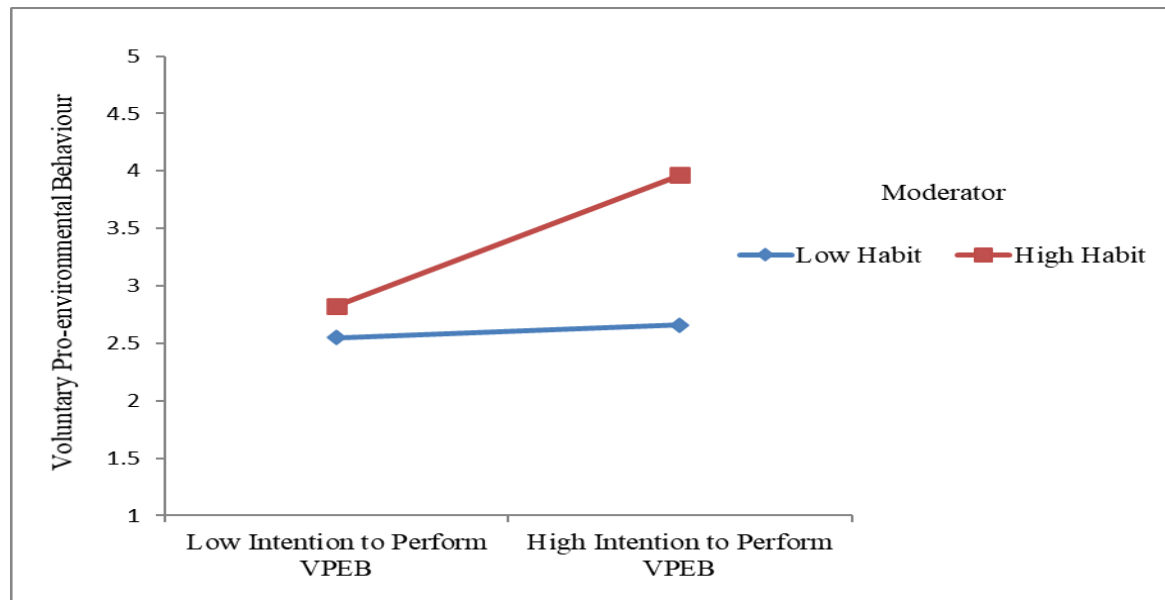


Figure 4. 2 Interactive effects of intention to perform voluntary pro-environmental behavior and habit on actual voluntary pro-environmental behavior. Note: VPEB = voluntary pro-environmental behavior

4.5 Chapter summary

This chapter presents the results of the statistical analysis, including descriptive statistics, confirmatory factor analysis, and structural equation modeling, and the outcome of the testing of the hypotheses proposed in Chapter 2. The following chapter will discuss these findings and their theoretical and managerial implications.

CHAPTER 5: FINDINGS

This chapter revisits the research objectives of this study and discusses how they have been addressed. It also discusses the study's theoretical and practical implications.

5.1 Research objectives

5.1.1 The first objective: developing a framework to measure voluntary pro-environmental behavior

The first research objective was to develop a framework to measure voluntary pro-environmental behavior among public sector employees. An instrument to measure voluntary pro-environmental behavior among this group was developed following an extensive literature review about the possible factors of this behavior, and was then tested and validated. The instrument contains five factors: attitude, perceived behavioral control, personal moral norms, perceived CSR, and organizational citizenship behavior toward the environment.

Attitude was measured using five items, perceived behavioral control by two items, personal moral norms by four items, perceived CSR by five items and OCB toward the environment by seven items. The mean score was highest for perceived CSR (4.02), followed by attitude (3.77), and personal moral norms (2.89). The mean score for OCB toward the environment was 2.10, and that for perceived behavioral control was 2.01.

Previous studies suggested that perceived CSR is an important factor of employees' voluntary pro-environmental behavior, which was supported by this study's results (Choi & Yu, 2014; Glavas & Kelley, 2014; Ng et al., 2019). Personal moral norms emphasize private and internalized norms based on

beliefs and values. This study supported previous research findings that certain beliefs influence personal norms, most notably awareness of the environmental consequences of a particular behavior and feelings of responsibility for these issues and their resolution. It seems likely that people's understanding of consequences is influenced by their ways of thinking and the values they hold (Ünal et al., 2019; Unsworth et al., 2013; van der Werff et al., 2013).

The findings of this study on OCB toward the environment were also consistent with previous studies (Chan & Lai, 2017; Paillé et al., 2013; Temminck et al., 2015). Previous research has found that when organizations have an environmentally oriented management strategy and supportive policies in place, employees are more willing to behave eco-actively in the workplace (Paillé et al., 2014). This is referred to as organizational commitment, which improves employees' voluntary pro-environmental behavior.

The fourth factor of voluntary pro-environmental behavior identified from the literature was attitude. The results support the idea from previous studies that positive environmental attitudes lead directly to a decision to engage in pro-environmental behaviors (Paul et al., 2016; Polonsky et al., 2012). Environmental concern may therefore promote individuals' engagement in environmental activism and conservation (Kim et al., 2018).

Finally, the study results on perceived behavioral control contradicted many previous research findings (Khatimah & Halim, 2016; Vamvaka et al., 2020). However, they were consistent with a few studies that have found a non-significant relationship for this factor (Lim et al., 2016; Maes et al., 2014). These differences may be because of the factors used in each study. Ajzen (1991) distinguished between internal (skills or abilities) and external (individual characteristics that

support or inhibit behavior performance) components of perceived behavioral control. Factors can also either help or hinder the performance of the behavior. Control factors include required skills and abilities, the availability or lack of time, money, other resources, and other people's cooperation. Control beliefs are the subjective judgement of the likelihood that a given facilitating or inhibiting factor will be present. Each control belief contributes to perceived behavioral control in interaction with the factor's perceived ability to facilitate or obstruct behavioral performance. Perceived behavioral control is a cumulative measure, and therefore includes several different factors, with an overall value given by the total scores calculated for them all. It can therefore be affected by each factor individually. Employees are expected to be able to act on their intentions to the extent that they have control over how the behavior is performed. When knowledge about actual behavioral control is limited, perceived behavioral control can be used as a substitute to assist in behavior prediction, assuming that perceived control reflects actual control reasonably well (Ajzen, 2020). It is possible that in this study, perceived control did not reflect actual control. Further work would be needed to verify this.

5.1.2 The second objective : examining the influencing factors of voluntary pro-environmental behavior

The second research objective was to examine the factors that influence employees' voluntary pro-environmental behavior in public sector organizations. Five hypotheses were developed. The study found that attitude, personal moral norms, perceived CSR and OCB toward the environment all significantly and positively affected intention to perform voluntary pro-environmental behavior among employees of public sector organizations in the UAE. However, perceived behavioral control did not influence intention to perform voluntary pro-environmental behavior.

Hypothesis 1 proposed that attitude significantly influences intention to perform voluntary pro-environmental behavior. The path analysis (Figure 4.1) showed that this was the case among the sample ($\beta = 0.166$, $p < .01$), supporting Hypothesis 1. Several previous studies have shown that employee attitude, a factor drawn from the theory of planned behavior, has a significant impact on employees' voluntary pro-environmental behavior. This study's findings support previous research on the positive relationship between attitude and intention to perform environmental behavior (Chin et al., 2018; Kim & Yun, 2019; Yu & Yu, 2017; Yuriev et al., 2020).

Hypothesis 2 proposed that perceived behavioral control significantly influences intention to perform voluntary pro-environmental behavior. However, the path analysis showed no significant relationship between these two ($\beta = 0.083$, $p > .01$), and Hypothesis 2 was therefore unsupported. This contradicts previous research findings (Khatimah & Halim, 2016; Vamvaka et al., 2020). This could be due to the factors used in this study. Internal (skills or abilities) and external (individual characteristics that support or inhibit behavior performance) components of PBC were distinguished by Ajzen (1991). Factors can also help or hinder the behavior's performance. Control factors include the availability or lack of time, money, and other resources, as well as the cooperation of others. Control beliefs are subjective assessments of the likelihood of a specific facilitating or inhibiting factor being present. Each control belief makes a significant contribution to PBC in interaction with the factor's perceived ability to facilitate or obstruct behavioral performance.

As explained above, employees are expected to be able to act on their intentions to the extent that they have control over how the behavior is carried out. When knowledge about actual behavioral control is limited, PBC can be used to assist in

behavior prediction, assuming that perceived control accurately reflects actual control (Ajzen, 2020). It is possible that perceived control did not reflect actual control in this study. More research would be needed to prove this

Hypothesis 3 proposed that personal moral norms significantly influenced intention to perform voluntary pro-environmental behavior. This was again supported by the findings ($\beta = 0.228$, $p < .01$), which are consistent with previous studies. This factor was drawn from the NAM, and showed a substantial association with intention to perform voluntary pro-environmental behavior. It seems likely that participants who have a personal tendency towards pro-environmental behavior also tend to transfer that behavior to their job, and therefore engage in voluntary pro-environmental behavior (Chiang et al., 2019). It is also known that personal predispositions have a significant impact on voluntary and discretionary behavior (Yuriev et al., 2018). Voluntary pro-environmental behavior is usually not supported by structured formal programs, and therefore personal predispositions are vital in this context.

Hypothesis 4 proposed that perceived CSR significantly influenced intention to perform voluntary pro-environmental behavior, and this study's findings supported this hypothesis ($\beta = 0.346$, $p < .001$). This influence was also consistent with earlier studies (Farooq et al., 2017; Glavas & Godwin, 2013; Korschun et al., 2014; Vlachos et al., 2014). This study's findings therefore extend the concept that employees respond positively to perceptions of CSR. They suggest that when employees perceive their organization to be socially and environmentally responsible, they are more engaged and committed to these issues.

Hypothesis 5 was about organizational citizenship behavior towards the environment. This concept also significantly influenced intention to perform

voluntary pro-environmental behavior ($\beta = 0.171, p < .01$), which supported this hypothesis. This is consistent with previous research that suggests that individuals make sustainability decisions based on their perception of the institution's support for the behaviors (Lamm et al., 2013).

5.1.3 The third objective : investigating the effect of employee's intention on actual behavior

The third research objective was to investigate the effect of public sector employees' intention to perform voluntary pro-environmental behavior on their actual behavior. **Hypothesis 6** was that intention to perform voluntary pro-environmental behavior significantly influenced actual behavior of this kind. The study findings supported this hypothesis ($\beta = 0.312, p < .0001$). There was a significant positive association between the intention to perform voluntary pro-environmental behavior and the behavior itself, which is consistent with previous research (Bird et al., 2015; Hagger et al., 2016; Vesely et al., 2021) on the strong link between intentions and behavior.

Intention generally precedes actual behavior, including for environmental workplace behavior (Razak & Sabri, 2019). In most cases, intention is associated with future behavior. Understanding the factors related to employees' intended behaviors in the workplace can therefore help organizations to enable pro-environmental behaviors among their employees.

5.1.4 The fourth objective : examining the moderating effect of habit

The fourth research objective was to examine the moderating effect of habit on the relationship between intended and actual voluntary pro-environmental behavior. **Hypothesis 7** set out that habit would enhance the positive effect of intention on actual voluntary pro-environmental behavior,

such that this relationship would be stronger for employees with stronger habits. There was a significant interaction between intention to perform voluntary pro-environmental behavior and habit, which affected actual behavior of this kind among employees ($\beta = 0.258$, $t = 5.586$, $p = 0.001$). This supported Hypothesis 7. The pattern of the moderating effect was also assessed visually (Aiken et al., 1991) by plotting the interaction. Figure 4.2 shows that the relationship between intention and actual voluntary pro-environmental behavior of employees becomes stronger at higher levels of habit. This therefore suggests that habit strengthens the link between intention and actual voluntary pro-environmental behavior: the relationship was stronger in people with stronger habits associated with these behaviors. These findings are consistent with previous empirical studies (Agag & El-Masry, 2016; Chiu & Huang, 2015), which concluded that habit acts as a moderator in the relationship between intention and behavior. This therefore provides deeper knowledge of the factors that influence voluntary pro-environmental behavior in the workplace.

5.2 Contribution of the study

This study offers valuable and significant implications for both academics and practitioners.

5.2.1 Theoretical implications

This study's findings provide significant theoretical contributions to the literature on voluntary pro-environmental behavior. First, the study combined the TPB, NAM, and CADM to investigate how individual and organizational factors affect employees' pro-environmental behavior. As far as can be ascertained, this is the first study of its kind to combine these three models to explain the variables affecting intent to perform voluntary pro-environmental

behavior in the workplace. Previous research on voluntary pro-environmental behavior in corporations has mostly focused on perceived environmental concern and perceived authority support (Lin et al., 2017), corporate environmental strategy, and psychological green climate (Biswas et al., 2021; Das et al., 2019). The proposal of a novel model to analyze the influencing factors of pro-environmental behavior in a developing market like the UAE constitutes the theoretical contribution of this study. This means going beyond the most comprehensive model presented so far (the CADM) by empirically confirming the important role of intention in the adoption of environmentally responsible behaviors.

Second, this study used perceived CSR and organizational citizenship behaviors towards the environment to expand the integrated models and enhance the body of knowledge about voluntary pro-environmental behavior. Our findings corroborated earlier research that suggested that employees' voluntary pro-environmental behavior is influenced by their perceptions of corporate social responsibility (CSR) (Choi & Yu, 2014; Glavas & Kelley, 2014; Ng et al., 2019). In other words, perceived CSR predicts voluntarily pro-environmental behavior. the findings of this study on OCBs toward the environment were in line with earlier studies (Chan & Lai, 2017; Paille et al., 2013; Temminck et al., 2015). According to previous studies, employees are more likely to engage in eco-active behavior at work when their organizations have environmental management strategies and supportive policies in place (Paille et al., 2014). Organizational commitment, which increases staff members' voluntarily pro-environmental behavior. Therefore, the study's findings primarily address attributes of voluntary pro-environmental behavior.

They contribute to the existing body of knowledge about the key factors that influence voluntary pro-environmental behavior.

Third , Our study also continues to advance the understanding of the relationship between employees' intentions and their actual voluntary pro-environmental behavior by demonstrating how this relationship strengthens as HAB levels are high. Thus, the relationship between intention and actual voluntary pro-environmental behavior was stronger in those with stronger HABs associated with these behaviors. These outcomes are in line with earlier empirical studies that concurred that HAB serves as a moderator in the relationship between intention and behavior (Agag & El-Masry, 2016; Chiu & Huang, 2015)

Finally , this study has shed new light on voluntary pro-environmental behavior in the Middle East region and offered new directions for academics to investigate in future. This study contributes to and broadens the body of knowledge on voluntary pro-environmental behavior from a relative perspective since it focuses on public organizations in a developing country. The majority of earlier research in this area was conducted in developed countries. Since different cultures have different preferences, expectations, and cultural or socioeconomic norms, findings from one culture may not be applicable to another (Irwin & Berigan, 2013).

5.2.2 Practical implications

The empirical results of this study provide key insights for organizations committed to encouraging voluntary environmental behavior that is unofficial and unrewarded, but morally valued. First, organizations should consider flexible CSR policies and supporting social activities that improve public well-

being. These allow employees to balance work and personal life more effectively (Asante Boadi et al., 2020; Tarigan et al., 2020). Organizations that care about respecting and protecting the environment will encourage employees to use resources like electricity, water, and waste efficiently, encouraging voluntary pro-environmental behavior. Our findings also have implications for the economy because conserving resources and increasing environmental awareness can result in significant financial savings.

Second, according to Mehmood et al. (2022b), employee moral norms have a significant impact on employee behavior . This result underlines the significance of organizations establishing policies and initiatives at the highest organizational levels and actively involving employees in creating personal norms around environmentally friendly behaviors. Meetings, workshops, and seminars can be held by organizations to increase public awareness of their environmental initiatives.

Third , the findings emphasize the significance of employees' pro-environmental attitudes in facilitating pro-environmental behavior in the workplace. To encourage positive attitudes among employees, top management must create efficient ways to show the advantages of pro-environmental behavior, including its environmental impact, such as regular campaigns. This should help to achieve long-term attitude changes among employees (Razak & Sabri, 2019).

Fourth , formalizing environmental practices can have a positive impact on more informal initiatives such as organizational citizenship toward the environment. OCBs for the environment should be highlighted as they encourage employees' voluntarily pro-environmental behavior. A variety of

management strategies can be used by organizations, including stating their environmental strategy, encouraging volunteerism for initiatives or events that deal with environmental issues, and developing an incentive scheme to raise OCBs for the environment among staff members. Environmental awareness, for example, should have a positive impact on organizational citizenship behaviors toward the environment by fostering the values and knowledge required to support appropriate environmental initiatives.

Furthermore , perceived CSR, HAB strength, and PMN are the main predictors of intentions to engage in pro-environmental behavior. Therefore, this study may support public organization planners, managers, and practitioners in developing strategies, actions, and policies to inspire their employees' pro-environmental behavioral intention. We suggest that managers and planners in the public sector should prioritize improving employees' personal norms.

Finally , there may also be a social implication. Employees who are recognized for their voluntary pro-environmental efforts in the workplace are more likely to engage in pro-environmental behavior outside the workplace (Alzaidi & Iyanna, 2021). This may have a knock-on effect among their friends and families, especially if it involves developing habits that can be repeated anywhere, not just at work (Alzaidi & Iyanna, 2021). This may, in turn, have wider societal implications for sustainability.

5.3 Chapter summary

This study emphasizes the importance of understanding employees' voluntary pro-environmental behavior in the context of public sector organizations. The findings suggest that four factors (attitude, personal moral

norms, perceived CSR, and OCB toward the environment) had a significant impact on intention to perform voluntary pro-environmental behavior. Intention, in turn, had a significant impact on actual behavior. The ability of organizations to encourage employee participation in voluntary pro-environmental behavior in the workplace through the development and implementation of appropriate CSR initiatives and programs may be beneficial to the organization's overall performance. This should, in turn, lead to the further encouragement of voluntary pro-environmental behavior.

CHAPTER 6: CONCLUSION

This chapter draws conclusions about the study. It also sets out the limitations of the research and makes suggestions for future research.

6.1 Overview of the study

This study aimed to investigate the impact of situational factors and internal psychological states on employees' decisions to perform voluntary pro-environmental behavior. It used a model combining the TPB, NAM, and CADM, tested among public sector organizations in the UAE.

Few studies have examined employees' voluntary pro-environmental behavior and its relationship with habit, especially the relationship between the separate factors that may affect voluntary pro-environmental behavior, and intention to perform this behavior. Previous studies have not constructed models for the relationship between the factors affecting voluntary pro-environmental behavior (situational factors and internal psychological states) and habit, nor empirically tested the relationships between the constructs. This study aimed to fill these gaps by addressing clear research objectives:

- (1) To develop a framework to measure voluntary pro-environmental behavior among employees of public sector organizations.
- (2) To examine the factors that influence employees' voluntary pro-environmental behavior in public sector organizations.
- (3) To investigate the effect of public sector employees' intention to perform voluntary pro-environmental behavior on their actual behavior; and
- (4) To examine the moderating effect of habit on the relationship between intended and actual voluntary pro-environmental behavior.

The literature review showed that there was likely to be a link between the factors of voluntary pro-environmental behavior, intention to perform voluntary pro-environmental behavior, and habit. It also showed the importance of evaluating employees' perceptions of voluntary pro-environmental behavior, because culture and geographical area can both influence perceptions in the context of public sector organizations. The study set out a conceptual framework and seven hypotheses, including six about direct relationships and one about a moderating effect. Five factors of voluntary pro-environmental behavior were proposed to positively affect intention to perform voluntary pro-environmental behavior. Intention to perform voluntary pro-environmental behavior was hypothesized to positively affect the actual behavior of employees in public sector organizations in the UAE. Finally, habit was proposed to have a moderating effect on the relationship between intention and actual voluntary pro-environmental behavior. The study included respondents from public sector organizations in Abu Dhabi Emirate in the UAE.

The study instruments were generated from the literature, to cover the factors of voluntary pro-environmental behavior, intention to perform the behavior, and habit. The sampling design, including sample size, survey sites, data collection process, data analysis method of the instrument and the procedures used for the statistical analysis, were carefully selected to enable the study to answer the research questions. In total, 700 potential respondents who satisfied the screening criteria were sent emails inviting them to complete the questionnaire. The time-lagged method was used to collect data in this study at three time intervals. Data were also collected from several sources, eliminating the likelihood of common source bias. The first wave (T1) questionnaire asked

about attitudes, perceived behavioral control, personal moral norms, perceived CSR, organizational citizenship behavior toward the environment, and intention to perform voluntary pro-environmental behavior. The second wave (T2) questionnaire asked about habits. Finally, the third wave (T3) questionnaire asked about voluntary pro-environmental behavior. In total, 519 questionnaires were returned and considered suitable for analysis. The results of the CFA were satisfactory, so SEM was used to test the proposed hypotheses. Four of the five paths specified in the structural model for the direct relationships were statistically significant, with only perceived behavioral control not being significant. Habit moderated the relationship between intention and actual voluntary pro-environmental behavior. These findings have some significant theoretical and practical implications for academics and the top management of public sector organizations. The study has therefore successfully developed a measurement model for understanding voluntary pro-environmental behavior in public sector organizations, and confirmed the hypothesized outcomes in the final model.

6.2 Limitations and suggestions for future research

This study contributes to understanding of voluntary pro-environmental behavior in public sector organizations. However, it also had several limitations that could lead to some interesting future research. This section discusses these limitations and makes suggestions for future research in the area of environmental performance and sustainability.

First, the study was limited by its sampling frame. The data were gathered from public sector entities in Abu Dhabi, United Arab Emirates, and are therefore not necessarily applicable to other sectors or countries. Future

research should consider focusing on specific high-carbon-footprint sectors, such as oil and gas companies, to add to the body of knowledge in that critical sector. The study was designed to test a combined model, so convenience sampling was considered suitable as a basis for further research. However, caution must be used when generalizing the results of this study. Future studies should consider using a more systematic approach such as probability sampling to better represent the target population.

Second, the study data were obtained from employees in public sector organizations. This is an appropriate way to obtain information about employee contributions to environmental performance at work in the public sector. However, future studies may broaden this focus to include different geographical areas, cultures, or times to increase the model's generalizability. Future cross-cultural studies would be interesting. Employees perceive and react differently based on their cultural values, according to cross-cultural studies theories (Islam et al., 2018; Mehmood et al., 2022a; Rupp et al., 2013). An assessment of perceptions of employees' voluntary pro-environmental behavior in the private sector could also add to knowledge about voluntary pro-environmental behavior.

Finally, the study concentrated on the determinants of voluntary pro-environmental behavior. It therefore did not consider the potential effects of this behavior at either individual or corporate level. Research on corporate volunteering and OCB suggests that potential effects of voluntary pro-environmental behavior at the individual level could include gaining or improving job-related skills (Basil et al., 2009). At the corporate level, the study assumed that employees' voluntary pro-environmental behavior

contributes to corporate environmental sustainability. However, the relationship between voluntary pro-environmental behavior and corporate environmental performance needs to be further developed theoretically and empirically validated. Organizations can implement a variety of management measures, such as declaring their environmental strategy, encouraging community engagement for projects or activities that address environmental issues, and developing an incentive program to increase employees' OCBs toward the environment.

6.3 Conclusion

Pro-environmental behavior in the workplace is recognized to establish requirements that employees will positively affect the company's environmental image among its stakeholders (Afsar et al., 2016). It is also non-mandatory, discretionary, and voluntary. This behavior may therefore have a positive influence on businesses by establishing good corporate values in the eyes of the public. Organizations have the capacity to establish and shape environmental responsibility, and may also influence employee behavior through the corporate environment (Aguilera et al., 2007). Encouraging employee engagement in addressing environmental issues and participation in pro-environmental behaviors is seen as a successful way for organizations to become environmentally responsible and promote environmental performance (Djellal & Gallouj, 2016; Kangasniemi et al., 2014). This study has addressed its four research objectives. It has examined the relationships between the factors of voluntary pro-environmental behavior, intention to perform the behavior, and habit among employees of public sector organizations. It has also developed a valid and reliable measurement instrument for voluntary pro-environmental

behavior incorporating both personal and situational factors.

All the voluntary pro-environmental behavior factors except perceived behavioral control had a positive effect on employees' intention to perform voluntary pro-environmental behavior in public sector organizations. This, in turn, positively affected employees' actual voluntary pro-environmental behavior. These findings could help public sector managers to improve their environmental initiatives and programs.

This study emphasizes the significance of CSR and organizational citizenship behaviors toward the environment in shaping employee extra-role behavior, particularly pro-environmental behavior, in the UAE's public sector. The study highlighted the moderating role of habit, implying that voluntary pro-environmental behavior can be promoted through organizations without the implementation of formal policies and rules. The study aimed to highlight the role of employees in reducing organizational environmental footprint through their pro-environmental behavior in the workplace. The study particularly confirmed the role of CSR initiatives and activities, emphasizing the importance of encouraging environmental volunteering. This sector therefore has potential to demonstrate better and more environmentally friendly behavior, leading to a more sustainable, climate-friendly future for the country.

REFERENCES

- Aarts, H., & Dijksterhuis, A. (2000). Habits as knowledge structures: Automaticity in goal-directed behavior. *Journal of Personality and Social Psychology*, 78(1), 53–63. <https://doi.org/10.1037/0022-3514.78.1.53>
- Aarts, H., Verplanken, B., & Van Knippenberg, A. (1998). Predicting behavior from actions in the past: repeated decision making or a matter of habit? *Journal of Applied Social Psychology*, 28(15), 1255–1274.
- Abera, T. (2017). Assessment of knowledge attitude and practice towards solid and liquid waste management among Addis and Kometa Kebele Community, Mizan-Aman Town, Bench – Maji Zone, Snnpr, South Waste Ethiopia, 2017. *Biomedical Journal of Scientific & Technical Research*, 1(5), 1346–1352. <https://doi.org/10.26717/bjstr.2017.01.000434>
- Achieng Owino, W. (2016). Influence of selected green human resource management practices on environmental sustainability at Menengai Oil Refinery Limited Nakuru, Kenya. *Journal of Human Resource Management*, 4(3), 19. <https://doi.org/10.11648/j.jhrm.20160403.11>
- Afsar, B., Badir, Y., & Kiani, U. S. (2016). Linking spiritual leadership and employee pro-environmental behavior: The influence of workplace spirituality, intrinsic motivation, and environmental passion. *Journal of Environmental Psychology*, 45(December), 79–88. <https://doi.org/10.1016/j.jenvp.2015.11.011>
- Agag, G., & El-Masry, A. A. (2016). Understanding the determinants of hotel booking intentions and moderating role of habit. *International Journal of Hospitality Management*, 54, 52–67. <https://doi.org/10.1016/j.ijhm.2016.01.007>
- Aguilera, R. V., Rupp, D. E., Williams, C. A., & Ganapathi, J. (2007). Putting the S back in corporate social responsibility: A multilevel theory of social change in

- organizations. *Academy of Management Review*, 32(3), 836–863.
- Aguinis, H., & Glavas, A. (2012). What we know and don't know about corporate social responsibility: A review and research agenda. *Journal of Management*, 38(4), 932–968.
- Aguot, F., Abun, D., Lalaine, S., Foronda, G., Agoot, F., Luisita, M., Belandres, V., & Magallanez, T. (2018). Measuring environmental attitude and environmental behavior of senior high school students of Divine Word Colleges in Region I, Philippines. *EPH-International Journal of Educational Research*, 2, 100–114.
- Aiken, L. S., West, S. G., & Reno, R. R. (1991). *Multiple regression: Testing and interpreting interactions*. Sage.
- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckman (Eds.), *Action-control: From cognition to behavior*. Springer.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179–211.
- Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology*, 32(4), 665–683.
<https://doi.org/10.1111/j.1559-1816.2002.tb00236.x>
- Ajzen, I. (2011). The theory of planned behaviour: Reactions and reflections. *Psychology and Health*, 26(9), 1113–1127.
<https://doi.org/10.1080/08870446.2011.613995>
- Ajzen, I. (2015). Consumer attitudes and behavior: the theory of planned behavior applied to food consumption decisions. *Italian Review of Agricultural Economics*, 70(2), 121–138. <https://doi.org/10.13128/REA-18003>
- Ajzen, I. (2020). The theory of planned behavior: Frequently asked questions. *Human Behavior and Emerging Technologies*, 2(4), 314–324.

<https://doi.org/10.1002/hbe2.195>

Ajzen, I., & Fishbein, M. (1975). A Bayesian analysis of attribution processes.

Psychological Bulletin, 82(2), 261–277. <https://doi.org/10.1037/h0076477>

Al-Hawari, M. A., Quratulain, S., & Melhem, S. B. (2021). How and when frontline employees' environmental values influence their green creativity? Examining the role of perceived work meaningfulness and green HRM practices. *Journal of Cleaner Production*, 310, 127598.

AlSuwaidi, M., Eid, R., & Agag, G. (2021). Understanding the link between CSR and employee green behaviour. *Journal of Hospitality and Tourism Management*, 46, 50–61.

Alzaidi, S. M., & Iyanna, S. (2021). Developing a conceptual model for voluntary pro-environmental behavior of employees. *Social Responsibility Journal*, 18(2), 441–452. <https://doi.org/10.1108/SRJ-11-2020-0477>

Amoroso, D., & Lim, R. (2017). The mediating effects of habit on continuance intention. *International Journal of Information Management*, 37(6), 693–702. <https://doi.org/10.1016/j.ijinfomgt.2017.05.003>

Anderson, B. A. (2016). The attention habit: How reward learning shapes attentional selection. *Annals of the New York Academy of Sciences*, 1369(1), 24–39. <https://doi.org/10.1111/nyas.12957>

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, 103(3), 411–423. <https://doi.org/10.1037/0033-2909.103.3.411>

Andersson, L., Shivarajan, S., & Blau, G. (2005). Enacting ecological sustainability in the MNC: A test of an adapted value-belief-norm framework. *Journal of Business Ethics*, 59(3), 295–305.

- Angelia, D., & Suryaningsih, R. (2015). The effect of environmental performance and corporate social responsibility disclosure towards financial performance (case study to manufacture, infrastructure, and service companies that listed at Indonesia Stock Exchange). *Procedia - Social and Behavioral Sciences*, 211(September), 348–355. <https://doi.org/10.1016/j.sbspro.2015.11.045>
- Araujo-Soares, V., Rodrigues, A., Presseau, J., & Sniehotta, F. F. (2013). Adolescent sunscreen use in springtime: A prospective predictive study informed by a belief elicitation investigation. *Journal of Behavioral Medicine*, 36(2), 109–123. <https://doi.org/10.1007/s10865-012-9415-3>
- Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behaviour: A meta-analytic review. *British Journal of Social Psychology*, 40(4), 471–499. <https://pdfs.semanticscholar.org/ab83/87ae29317c651a129efc7a2297bc5f348a95.pdf>
- Asante Boadi, E., He, Z., Bosompem, J., Opata, C. N., & Boadi, E. K. (2020). Employees' perception of corporate social responsibility (CSR) and its effects on internal outcomes. *The Service Industries Journal*, 40(9-10), 611-632.
- Azar, E., & Al Ansari, H. (2017). Framework to investigate energy conservation motivation and actions of building occupants: The case of a green campus in Abu Dhabi, UAE. *Applied Energy*, 190, 563–573.
- Aziz, F., Rami, A. A. M., 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 (Switzerland)*, 13(13), 7062. <https://doi.org/10.3390/su13137062>
- Aznar-Díaz, I., Hinojo-Lucena, F. J., Cáceres-Reche, M. P., Trujillo-Torres, J. M., & Romero-Rodríguez, J. M. (2019). Environmental attitudes in trainee teachers in

- primary education. The future of biodiversity preservation and environmental pollution. *International Journal of Environmental Research and Public Health*, 16(3), 362. <https://doi.org/10.3390/ijerph16030362>
- Bagozzi, R. P., Yi, Y., & Phillips, L. W. (1991). Assessing construct validity in organizational research. *Administrative Science Quarterly*, 36(3), 421–458.
- Bai, G., & Bai, Y. (2020). Voluntary or forced: Different effects of personal and social norms on urban residents' environmental protection behavior. *International Journal of Environmental Research and Public Health*, 17(10), 3525. <https://doi.org/10.3390/ijerph17103525>
- Baldwin, D. (2017). Climate change will hit UAE sectors. *Gulf News*. <http://m.gulfnews.com/%0Anews/uae/environment/climate-change-will-hit-uae-sectors-saysreport-1.2001267%0A>
- Bamberg, S., & Möser, G. (2007). Twenty years after Hines, Hungerford, and Tomera: A new meta-analysis of psycho-social determinants of pro-environmental behaviour. *Journal of Environmental Psychology*, 27(1), 14–25.
- Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191.
- Bandura, A. (1982). The assessment and predictive generality of self-percepts of efficacy. *Journal of Behavior Therapy and Experimental Psychiatry*, 13(3), 195–199.
- Basil, D. Z., Runte, M. S., Easwaramoorthy, M., & Barr, C. (2009). Company support for employee volunteering: A national survey of companies in Canada. *Journal of Business Ethics*, 85(2), 387–398.
- Bedwell, B., Leygue, C., Goulden, M., McAuley, D., Colley, J., Ferguson, E., Banks, N., & Spence, A. (2014). Apportioning energy consumption in the workplace: a review

- of issues in using metering data to motivate staff to save energy. *Technology Analysis and Strategic Management*, 26(10), 1196–1211.
<https://doi.org/10.1080/09537325.2014.978276>
- Bem, D. J. (1972). Self-perception theory. In L. Berkowitz (Ed.), *Advances in Experimental Social Psychology Volume 6*. Academic Press (pp. 1–62).
https://doi.org/10.1007/978-94-007-0753-5_103738
- Bergquist, M. (2020). Most people think they are more pro-environmental than others: a demonstration of the better-than-average effect in perceived pro-environmental behavioral engagement. *Basic and Applied Social Psychology*, 42(1), 50–61.
<https://doi.org/10.1080/01973533.2019.1689364>
- Bird, B., Bergmann, H., Honig, B., & McNally, J. J. (2015). Implementing entrepreneurial ideas: The case for intention. *International Review of Entrepreneurship*, 13(3), 143–168.
- Bissing-Olson, M. J., Iyer, A., Fielding, K. S., & Zacher, H. (2013). Relationships between daily affect and pro-environmental behavior at work: The moderating role of pro-environmental attitude. *Journal of Organizational Behavior*, 34(2), 156–175.
<https://doi.org/10.1002/job.1788>
- Biswas, S. R., Dey, M., Bhattacharjee, S., & Uddin, M. A. (2021). How does corporate environmental strategy contribute to voluntary environmental behavior? Influence of psychological green climate, firms' size, and employees' age. *SAGE Open*, 11(1), 21582440211006054. <https://doi.org/10.1177/21582440211006054>
- Bless, H., & Burger, A. M. (2016). A closer look at social psychologists' silver bullet: Inevitable and evitable side effects of the experimental approach. *Perspectives on Psychological Science*, 11(2), 296–308.
- Boğan, E., & Dedeoğlu, B. B. (2020). Hotel employees' corporate social responsibility

- perception and organizational citizenship behavior: Perceived external prestige and pride in organization as serial mediators. *Corporate Social Responsibility and Environmental Management*, 27(5), 2342–2353.
- Boiral, O. (2009). Greening the corporation through organizational citizenship behaviors. *Journal of Business Ethics*, 87(2), 221–236.
<https://doi.org/10.1007/s10551-008-9881-2>
- Boiral, O., & Paillé, P. (2012). Organizational citizenship behaviour for the environment: measurement and validation. *Journal of Business Ethics*, 109(4), 431–445. <https://doi.org/10.1007/s10551-011-1138-9>
- Boiral, O., Paillé, P., & Raineri, N. (2015). The nature of employees' pro-environmental behaviors. In J. L. Robertson & J. Barling (Eds), *The Psychology of Green Organizations* (pp. 12–32). Oxford University Press.
<https://doi.org/10.1093/acprof:oso/9780199997480.003.0002>
- Bolman, L. G., & Deal, T. E. (2017). *Reframing Organizations: Artistry, Choice and Leadership*. Wiley. <https://doi.org/10.1002/9781119281856>
- Botetzagias, I., Dima, A. F., & Malesios, C. (2015). Extending the Theory of Planned Behavior in the context of recycling: The role of moral norms and of demographic predictors. *Resources, Conservation and Recycling*, 95(99294), 58–67.
<https://doi.org/10.1016/j.resconrec.2014.12.004>
- Brammer, S., He, H., & Mellahi, K. (2015). Corporate social responsibility, employee organizational identification, and creative effort: the moderating impact of corporate ability. *Group and Organization Management*, 40(3), 323–352.
<https://doi.org/10.1177/1059601114562246>
- Breitsohl, H., & Ehrig, N. (2017). Commitment through employee volunteering: accounting for the motives of inter-organisational volunteers. *Applied Psychology*,

66(2), 260–289. <https://doi.org/10.1111/apps.12092>

Büchs, M., Edwards, R., & Smith, G. (2012). *Third sector organisations' role in pro-environmental behaviour change – A review of the literature and evidence*. TSRC Working Paper 81, Third Sector Research Centre.
<http://eprints.soton.ac.uk/339808/>

Caprara, G. V., Fida, R., Vecchione, M., Del Bove, G., Vecchio, G. M., Barbaranelli, C., & Bandura, A. (2008). Longitudinal analysis of the role of perceived self-efficacy for self-regulated learning in academic continuance and achievement. *Journal of Educational Psychology*, 100(3), 525–534. <https://doi.org/10.1037/0022-0663.100.3.525>

Carpentier, J., & Mageau, G. A. (2016). Predicting sport experience during training: The role of change-oriented feedback in athletes' motivation, self-confidence and needs satisfaction fluctuations. *Journal of Sport and Exercise Psychology*, 38(1), 45–58.
<https://doi.org/10.1123/jsep.2015-0210>

Casaló, L. V., & Escario, J. J. (2018). Heterogeneity in the association between environmental attitudes and pro-environmental behavior: A multilevel regression approach. *Journal of Cleaner Production*, 175, 155–163.

Ceresia, F., Moreno, R. M. M., & Puchol, Á. S. (2017). The perception and attitudes towards city garbage management: a first analysis. *European Journal of Interdisciplinary Studies*, 7(1), 75. <https://doi.org/10.26417/ejis.v7i1.p75-81>

Chan, S. H. J., & Lai, H. Y. I. (2017). Understanding the link between communication satisfaction, perceived justice and organizational citizenship behavior. *Journal of Business Research*, 70, 214–223.

Chaouali, W., Souiden, N., & Ladhari, R. (2017). Explaining adoption of mobile banking with the theory of trying, general self-confidence, and cynicism. *Journal of*

Retailing and Consumer Services, 35(April 2016), 57–67.

<https://doi.org/10.1016/j.jretconser.2016.11.009>

Cheung, S. F., & Chan, D. K. S. (2000). *The role of perceived behavioral control in predicting human behavior: a meta-analytic review of studies on the theory of planned behavior*. Unpublished Manuscript, Chinese University of Hong Kong, June 2000, 1–59.

[https://www.researchgate.net/publication/331113383_The_role_of_perceived_behavioral_control_in_predicting_human_behavior_A_meta-analytic_review_of_studies_on_the_theory_of_planned_behavior%0Afile:///C:/Users/IUU/AppData/Local/Mendeley Ltd./Mendeley Deskto](https://www.researchgate.net/publication/331113383_The_role_of_perceived_behavioral_control_in_predicting_human_behavior_A_meta-analytic_review_of_studies_on_the_theory_of_planned_behavior%0Afile:///C:/Users/IUU/AppData/Local/Mendeley%20Ltd./Mendeley%20Desktop)

Chiaburu, D. S., Oh, I. S., Berry, C. M., Li, N., & Gardner, R. G. (2011). The five-factor model of personality traits and organizational citizenship behaviors: A meta-analysis. *Journal of Applied Psychology*, 96(6), 1140–1166.

<https://doi.org/10.1037/a0024004>

Chiang, Y. Te, Fang, W. T., Kaplan, U., & Ng, E. (2019). Locus of control: The mediation effect between emotional stability and pro-environmental behavior. *Sustainability (Switzerland)*, 11(3). <https://doi.org/10.3390/su11030820>

Child, D. (2006). *The essentials of factor analysis* (3rd ed.). Continuum.

Chin, J., Jiang, B. C., Mufidah, I., Persada, S. F., & Noer, B. A. (2018). The investigation of consumers' behavior intention in using green skincare products: A pro- environmental behavior model approach. *Sustainability (Switzerland)*, 10(11), 3922. <https://doi.org/10.3390/su10113922>

Chiu, C. M., & Huang, H. Y. (2015). Examining the antecedents of user gratification and its effects on individuals' social network services usage: The moderating role of habit. *European Journal of Information Systems*, 24(4), 411–430.

<https://doi.org/10.1057/ejis.2014.9>

- Choi, Y., & Yu, Y. (2014). The influence of perceived corporate sustainability practices on employees and organizational performance. *Sustainability (Switzerland)*, 6(1), 348–364. <https://doi.org/10.3390/su6010348>
- Choong, Y.-O., Ng, L.-P., Tee, C.-W., Kuar, L.-S., Teoh, S.-Y., & Chen, I.-C. (2020). Green work climate and pro-environmental behaviour among academics: the mediating role of harmonious environmental passion. *International Journal of Management Studies*, 26(2), 77–97. <https://doi.org/10.32890/ijms.26.2.2019.10520>
- Chou, C. J. (2014). Hotels' environmental policies and employee personal environmental beliefs: Interactions and outcomes. *Tourism Management*, 40, 436–446.
- Chou, S. W., & Hsu, C. S. (2016). Understanding online repurchase intention: social exchange theory and shopping habit. *Information Systems and E-Business Management*, 14(1), 19–45. <https://doi.org/10.1007/s10257-015-0272-9>
- Ciocirlan, C. E. (2017). Environmental workplace behaviors: Definition matters. *Organization & Environment*, 30(1), 51–70.
- Colman, R. A., & Thompson, R. A. (2002). Attachment security and the problem-solving behaviors of mothers and children. *Merrill-Palmer Quarterly*, 48(4), 337–359. <https://doi.org/10.1353/mpq.2002.0016>
- Conner, M., Godin, G., Sheeran, P., & Germain, M. (2013). Some feelings are more important: Cognitive attitudes, Affective attitudes, Anticipated affect, And blood donation. *Health Psychology*, 32(3), 264–272. <https://doi.org/10.1037/a0028500>
- Cooke, R., & Sheeran, P. (2013). Properties of intention: component structure and consequences for behavior, information processing, and resistance. *Journal of Applied Social Psychology*, 43(4), 749–760. <https://doi.org/10.1111/jasp.12003>

- Cooper, C., Larson, L., Dayer, A., Stedman, R., & Decker, D. (2015). Are wildlife recreationists conservationists? Linking hunting, birdwatching, and pro-environmental behavior. *Journal of Wildlife Management*, 79(3), 446–457.
<https://doi.org/10.1002/jwmg.855>
- Cooper, D. R., Schindler, P. S., & Sun, J. (2006a). *Business Research Methods* (9th ed.). McGraw-Hill.
- Cordano, M., Marshall, R. S., & Silverman, M. (2010). How do small and medium enterprises go “green”? A study of environmental management programs in the US wine industry. *Journal of Business Ethics*, 92, 463–478.
- Cordano, M., Welcomer, S., Scherer, R. F., Pradenas, L., & Parada, V. (2011). A cross-cultural assessment of three theories of pro-environmental behavior: A comparison between business students of Chile and the United States. *Environment and Behavior*, 43(5), 634–657. <https://doi.org/10.1177/0013916510378528>
- Creswell, J. W. (2011). *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research* (4th ed). Pearson.
- Danner, U. N., Aarts, H., & De Vries, N. K. (2007). Habit formation and multiple means to goal attainment: Repeated retrieval of target means causes inhibited access to competitors. *Personality and Social Psychology Bulletin*, 33(10), 1367–1379.
<https://doi.org/10.1177/0146167207303948>
- Das, A. K., Biswas, S. R., Jilani, M. M. A. K., & Uddin, M. A. (2019). Corporate environmental strategy and voluntary environmental behavior-mediating effect of psychological green climate. *Sustainability (Switzerland)*, 11(11), 3123.
<https://doi.org/10.3390/su11113123>
- de Guinea, A. O., & Markus, L. (2009). Why break the habit of a lifetime? Rethinking the roles of intention, habit, and emotion in continuing information technology use.

MIS Quarterly: Management Information Systems, 33(3), 433–444.

<https://doi.org/10.2307/20650303>

de Leeuw, A., Valois, P., Ajzen, I., & Schmidt, P. (2015). Using the theory of planned behavior to identify key beliefs underlying pro-environmental behavior in high-school students: Implications for educational interventions. *Journal of Environmental Psychology*, 42(June), 128–138.

<https://doi.org/10.1016/j.jenvp.2015.03.005>

De Roeck, K., & Maon, F. (2018). Building the theoretical puzzle of employees' reactions to corporate social responsibility: An integrative conceptual framework and research agenda. *Journal of Business Ethics*, 149(3), 609–625.

de Vaus, D. (2001). *Research Design in Social Research*. Sage Publication.

Deci, E. L., & Ryan, R. M. (2000). The “what” and “why” of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11(4), 227–268.

Deline, M. B., Xu, X., Chen, C., & Maki, A. (2015). Saving energy at the workplace : The salience of behavioral antecedents and sense of community. *Energy Research & Social Science*, 6, 121–127.

Detert, J. R., & Edmondson, A. C. (2011). Leadership behaviors and employee voice: Taken-for-granted rules of self-censorship at work. *Academy of Management Journal*, 54, 461–488.

Dilchert, S., & Ones, D. S. (2012). Environmental sustainability in and of organizations. *Industrial and Organizational Psychology*, 5(4), 503–511.

<https://doi.org/10.1111/j.1754-9434.2012.01489.x>

Djellal, F., & Gallouj, F. (2016). Service innovation for sustainability: paths for greening through service innovation. In M. Toivonen (Ed.), *Service Innovation* (pp. 187–

- 215). Springer. https://doi.org/10.1007/978-4-431-54922-2_9
- Doran, R., & Larsen, S. (2016). The relative importance of social and personal norms in explaining intentions to choose eco-friendly travel options. *International Journal of Tourism Research*, 18(2), 159–166.
- Dunlap, R. E. V. L., Liere, K. V., Mertig, A., & Jones, R. E. (2000). Measuring endorsement of the new ecological paradigm: A revised NEP scale. *Journal of Social Issues*, 56(3), 425–442.
- El Akremi, A., Gond, J. P., Swaen, V., De Roeck, K., & Igalens, J. (2018). How do employees perceive corporate responsibility? Development and validation of a multidimensional corporate stakeholder responsibility scale. *Journal of Management*, 44(2), 619–657. <https://doi.org/10.1177/0149206315569311>
- ElTayeb, T. K., Zailani, S., & Jayaraman, K. (2010). The examination on the drivers for green purchasing adoption among EMS 14001 certified companies in Malaysia. *Journal of Manufacturing Technology Management*, 21(2), 206–225. <https://doi.org/10.1108/17410381011014378>
- Erdogan, B., Bauer, T. N., & Taylor, S. (2015). Management commitment to the ecological environment and employees: Implications for employee attitudes and citizenship behaviors. *Human Relations*, 68(11), 1669–1691. <https://doi.org/10.1177/0018726714565723>
- Ersche, K. D., Lim, T. V., Ward, L. H., Robbins, T. W., & Stochl, J. (2017). Creature of Habit: A self-report measure of habitual routines and automatic tendencies in everyday life. *Personality and Individual Differences*, 116, 73–85.
- Fang, W. T., Chiang, Y. Te, Ng, E., & Lo, J. C. (2019). Using the norm activation model to predict the pro-environmental behaviors of public servants at the central and local governments in Taiwan. *Sustainability (Switzerland)*, 11(13), 3712.

<https://doi.org/10.3390/su11133712>

Farooq, O., Rupp, D. E., & Farooq, M. (2017). The multiple pathways through which internal and external corporate social responsibility influence organizational identification and multifoci outcomes: The moderating role of cultural and social orientations. *Academy of Management Journal*, 60(3), 954–985.

<https://doi.org/10.5465/amj.2014.0849>

Farouk, S., & Jabeen, F. (2018). Ethical climate, corporate social responsibility and organizational performance: Evidence from the UAE public sector. *Social Responsibility Journal*, 14(4), 737-752.

Fatoki, O. (2020). Environmentally specific servant leadership and employees' pro-environmental behaviour in hospitality firms in South Africa. *Geojournal of Tourism and Geosites*, 37(3), 943–950. <https://doi.org/10.30892/gtg.37328-730>

Field, A. (2017). *Discovering statistics using IBM SPSS statistics* (5th ed.). Sage.

Fishbein, M., Jaccard, J., Davidson, A. R., Ajzen, I., & Loken, B. (1980). Predicting and understanding family planning behaviors. In I. Ajzen & M. Fishbein (Eds), *Understanding attitudes and predicting social behavior*. Prentice Hall.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50.

Francoeur, V., Paillé, P., Yuriev, A., & Boiral, O. (2019). The measurement of green workplace behaviors: a systematic review. *Organization and Environment*, 34(1), 18–42. <https://doi.org/10.1177/1086026619837125>

Frazer, L., & Lawley, M. (2000). *Questionnaire design & administration: a practical guide*. Wiley.

Frey, B. S., & Heggli, B. (1989). An ipsative theory of business behaviour. *Journal of*

Economic Psychology, 10(1), 1–20.

- Gao, L., & Bai, X. (2014). A unified perspective on the factors influencing consumer acceptance of internet of things technology. *Asia Pacific Journal of Marketing and Logistics*, 26(2), 211–231. <https://doi.org/10.1108/APJML-06-2013-0061>
- Gattiker, T. F., & Carter, C. R. (2010). Understanding project champions' ability to gain intra-organizational commitment for environmental projects. *Journal of Operations Management*, 28(1), 72–85. <https://doi.org/10.1016/j.jom.2009.09.001>
- Glavas, A., & Godwin, L. N. (2013). Is the perception of “goodness” good enough? Exploring the relationship between perceived corporate social responsibility and employee organizational identification. *Journal of Business Ethics*, 114(1), 15–27. <https://doi.org/10.1007/s10551-012-1323-5>
- Glavas, A., & Kelley, K. (2014). The effects of perceived corporate social responsibility on employee attitudes. *Business Ethics Quarterly*, 24(2), 165–202. <https://doi.org/10.5840/beq20143206>
- Gond, J. P., El Akremi, A., Swaen, V., & Babu, N. (2017). The psychological microfoundations of corporate social responsibility: A person-centric systematic review. *Journal of Organizational Behavior*, 38(2), 225–246. <https://doi.org/10.1002/job.2170>
- Gong, M., & Li, S. (2014). Learned reward association improves visual working memory. *Journal of Experimental Psychology: Human Perception and Performance*, 40(2), 841–856.
- Goulden, M., & Spence, A. (2015). Caught in the middle: The role of the Facilities Manager in organisational energy use. *Energy Policy*, 85, 280–287. <https://doi.org/10.1016/j.enpol.2015.06.014>
- Grabner-Kräuter, S., Breitenacker, R. J., & Tafolli, F. (2020). Exploring the relationship

between employees' CSR perceptions and intention to emigrate: Evidence from a developing country. *Business Ethics*, 30, 87–102.

<https://doi.org/10.1111/beer.12291>

Greaves, M., Zibarras, L. D., & Stride, C. (2013). Using the theory of planned behavior to explore environmental behavioral intentions in the workplace. *Journal of Environmental Psychology*, 34, 109–120.

<https://doi.org/10.1016/j.jenvp.2013.02.003>

Hagger, M. S., Chan, D. K. C., Protogerou, C., & Chatzisarantis, N. L. D. (2016). Using meta-analytic path analysis to test theoretical predictions in health behavior: An illustration based on meta-analyses of the theory of planned behavior. *Preventive Medicine*, 89, 154–161. <https://doi.org/10.1016/j.ypmed.2016.05.020>

Hair J. F. Jr., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2016). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (2nd ed.). Sage.

Hair, J. F., Babin, B. J., Anderson, R. E., & Black, W. C. (2018). *Multivariate Data Analysis*. Cengage Learning EMEA.

Halkos, G., & Skouloudis, A. (2018). Corporate social responsibility and innovative capacity: Intersection in a macro-level perspective. *Journal of Cleaner Production*, 182, 291–300. <https://doi.org/10.1016/j.jclepro.2018.02.022>

Halme, M., Rintamäki, J., Knudsen, J. S., Lankoski, L., & Kuisma, M. (2020). When is there a sustainability case for CSR? Pathways to environmental and social performance improvements. *Business and Society*, 59(6), 1181–1227.

<https://doi.org/10.1177/0007650318755648>

Hamzah, M. I., & Tanwir, N. S. (2021). Do pro-environmental factors lead to purchase intention of hybrid vehicles? The moderating effects of environmental knowledge. *Journal of Cleaner Production*, 279, 123643.

- Harland, P., Staats, H., & Wilke, H. A. M. (2007). Situational and personality factors as direct or personal norm mediated predictors of pro-environmental behavior: Questions derived from norm-activation theory. *Basic and Applied Social Psychology*, 29(4), 323–334. <https://doi.org/10.1080/01973530701665058>
- Hartwick, J., & Barki, H. (1994). Explaining the role of user participation in information system use. *Management Science*, 40(4), 440–465.
- He, X., & Zhan, W. (2018). How to activate moral norm to adopt electric vehicles in China? An empirical study based on extended norm activation theory. *Journal of Cleaner Production*, 172, 3546–3556. <https://doi.org/10.1016/j.jclepro.2017.05.088>
- Henderikx, M. A., Kreijns, K., & Kalz, M. (2017). Refining success and dropout in massive open online courses based on the intention–behavior gap. *Distance Education*, 38(3), 353–368. <https://doi.org/10.1080/01587919.2017.1369006>
- Hopper, J. R., & Nielsen, J. M. (1991). Recycling as altruistic behavior: normative and behavioral strategies to expand participation in a community recycling program. *Environment and Behavior*, 23(2), 195–220.
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Structural Equation Modeling*, 6(1), 1–55. <https://doi.org/10.1080/10705519909540118>
- Huber, J., Viscusi, W. K., & Bell, J. (2020). Dynamic relationships between social norms and pro-environmental behavior: evidence from household recycling. *Behavioural Public Policy*, 4(1), 1–25. <https://doi.org/10.1017/bpp.2017.13>
- Ibáñez, M. E., Ferrer, D. M., Muñoz, L. V. A., Claros, F. M., & Ruiz, F. J. O. (2020). University as change manager of attitudes towards environment (The importance of environmental education). *Sustainability (Switzerland)*, 12(11), 4568. <https://doi.org/10.3390/su12114568>

- Infanti, E., Hickey, C., & Turatto, M. (2015). Reward associations impact both iconic and visual working memory. *Vision Research*, 107, 22–29.
- Inoue, Y., & Alfaro-Barrantes, P. (2015). Pro-environmental behavior in the workplace: a review of empirical studies and directions for future research. *Business and Society Review*, 120(1), 137–160.
- Irwin, K., & Berigan, N. (2013). Trust, culture, and cooperation: A social dilemma analysis of pro-environmental behaviors. *The Sociological Quarterly*, 54(3), 424–449.
- Islam, T., Ahmed, I., & Ali, G. (2018). Effects of ethical leadership on bullying and voice behavior among nurses: mediating role of organizational identification, poor working condition and workload. *Leadership in Health Services*, 32(1), 2-17.
- Islam, T., Ali, G., & Asad, H. (2019). Environmental CSR and pro-environmental behaviors to reduce environmental dilapidation: The moderating role of empathy. *Management Research Review*, 42(3), 332–351. <https://doi.org/10.1108/MRR-12-2017-0408>
- Jaafar, N. I., Sulaiman, A., & Ali, S. M. (2018). Pro-environmentalism behavior, organizational pressure, sustainable information technology initiatives and financial performance of Malaysian service firms. *Environmental Engineering and Management Journal*, 17(1), 43–52. <https://doi.org/10.30638/eemj.2018.006>
- Jafarkarimi, H., Saadatdoost, R., Sim, A. T. H., & Hee, J. M. (2016). Behavioral intention in social networking sites ethical dilemmas: An extended model based on Theory of Planned Behavior. *Computers in Human Behavior*, 62, 545–561. <https://doi.org/10.1016/j.chb.2016.04.024>
- Jager, W., & Mosler, H. J. (2007). Simulating human behavior for understanding and managing environmental resource use. *Journal of Social Issues*, 63(1), 97–116.

<https://doi.org/10.1111/j.1540-4560.2007.00498.x>

Janmaimool, P. (2017). The role of descriptive social norms, organisational norms and personal norms in explaining solid waste management behaviours in workplaces.

Journal of Organizational Change Management, 30(2), 184–198.

Janmaimool, P., & Khajohnmanee, S. (2019). Roles of environmental system knowledge in promoting university students' environmental attitudes and pro-environmental behaviors. *Sustainability (Switzerland)*, 11(16), 4270.

<https://doi.org/10.3390/su11164270>

Jiang, R. J., & Bansal, P. (2003). Seeing the need for ISO 14001. *Journal of Management Studies*, 40(4), 1047–1067. <https://doi.org/10.1111/1467-6486.00370>

Joanes, T., Gwozdz, W., & Klöckner, C. A. (2020). Reducing personal clothing consumption: A cross-cultural validation of the comprehensive action determination model. *Journal of Environmental Psychology*, 71, 101396.

<https://doi.org/10.1016/j.jenvp.2020.101396>

Kahn, W. A., & Kahn, W. A. (2010). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal*, 33(4), 692–724.

Kangasniemi, M., Kallio, H., & Pietilä, A. M. (2014). Towards environmentally responsible nursing: A critical interpretive synthesis. *Journal of Advanced Nursing*, 70(7), 1465–1478. <https://doi.org/10.1111/jan.12347>

Karimi, S., Biemans, H. J., Lans, T., Chizari, M., & Mulder, M. (2016). The impact of entrepreneurship education: A study of Iranian students' entrepreneurial intentions and opportunity identification. *Journal of Small Business Management*, 54(1), 187–209. [https://doi.org/10.1111/\(ISSN\)1540-627X](https://doi.org/10.1111/(ISSN)1540-627X)

Khan, M., Ajmal, M. M., Jabeen, F., Talwar, S., & Dhir, A. (2022). Green supply chain management in manufacturing firms: A resource-based viewpoint. *Business*

Strategy and the Environment.

- Khan, N. A., Khan, A. N., Moin, M. F., & Pitafi, A. H. (2021). A trail of chaos: how psychopathic leadership influence employee satisfaction and turnover intention via self-efficacy in tourism enterprises. *Journal of Leisure Research*, 52(3), 347-369.
- Khatimah, H., & Halim, F. (2016). The effect of attitude and its decomposed, perceived behavioral control and its decomposed and awareness on intention to use e-money mobile in Indonesia. *Journal of Scientific Research and Development*, 3(1), 39–50.
- Kim, A., Kim, Y., Han, K., Jackson, S. E., & Ployhart, R. E. (2017). Multilevel influences on voluntary workplace green behavior: individual differences, leader behavior, and coworker advocacy. *Journal of Management*, 43(5), 1335–1358.
<https://doi.org/10.1177/0149206314547386>
- Kim, M. S., Kim, J., & Thapa, B. (2018). Influence of environmental knowledge on affect, nature affiliation and pro-environmental behaviors among tourists. *Sustainability (Switzerland)*, 10(9), 3109. <https://doi.org/10.3390/su10093109>
- Kim, T., & Yun, S. (2019). How will changes toward pro-environmental behavior play in customers' perceived value of environmental concerns at coffee shops? *Sustainability (Switzerland)*, 11(14), 3816. <https://doi.org/10.3390/su11143816>
- Kim, Y. J., Kim, W. G., Choi, H. M., & Phetvaroon, K. (2019). The effect of green human resource management on hotel employees' eco-friendly behavior and environmental performance. *International Journal of Hospitality Management*, 76, 83–93. <https://doi.org/10.1016/j.ijhm.2018.04.007>
- Kline, R.B. (2015). *Principles and practice of structural equation modelling* (4th ed.). Guilford Press.
- Klößner, C. A. (2013). A comprehensive model of the psychology of environmental behaviour – a meta-analysis. *Global Environmental Change*, 23(5), 1028–1038.

- Klößner, C. A., & Blöbaum, A. (2010). A comprehensive action determination model. Toward a broader understanding of ecological behaviour using the example of travel mode choice. *Journal of Environmental Psychology*, 30(4), 574–586.
- Klößner, C. A., Matthies, E., & Hunecke, M. (2003). Problems of operationalizing habits and integrating habits in normative decision-making models. *Journal of Applied Social Psychology*, 33(3), 396–417.
- Kollmuss, A., & Agyeman, J. (2002). Mind the gap: why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental Education Research*, 8(3), 239–260.
- Kopaei, H. R., Nooripoor, M., Karami, A., Petrescu-Mag, R. M., & Petrescu, D. C. (2021). Drivers of residents' home composting intention: Integrating the theory of planned behavior, the norm activation model, and the moderating role of composting knowledge. *Sustainability (Switzerland)*, 13(12), 6826. <https://doi.org/10.3390/su13126826>
- Korschun, D., Bhattacharya, C. B., & Swain, S. D. (2014). Corporate social responsibility, customer orientation and the job performance of frontline employees. *Journal of Marketing*, 78(3), 20–37.
- Kruse, P., Wach, D., Costa, S., & Moriano, J. A. (2019). Values matter, don't they?—Combining theory of planned behavior and personal values as predictors of social entrepreneurial intention. *Journal of Social Entrepreneurship*, 10(1), 55–83. <https://doi.org/10.1080/19420676.2018.1541003>
- Kucharska, W., & Kowalczyk, R. (2019). How to achieve sustainability? —Employee's point of view on company's culture and CSR practice. *Corporate Social Responsibility and Environmental Management*, 26(2), 453–467.
- Kurtessis, J. N., Eisenberger, R., Ford, M. T., Buffardi, L. C., Stewart, K. A., & Adis, C.

- S. (2017). Perceived organizational support: a meta-analytic evaluation of organizational support theory. *Journal of Management*, 43(6), 1854–1884.
<https://doi.org/10.1177/0149206315575554>
- Lai, I. K. (2015). The roles of value, satisfaction, and commitment in the effect of service quality on customer loyalty in Hong Kong–style tea restaurants. *Cornell Hospitality Quarterly*, 56(1), 118–138.
- Lamm, E., Tosti-Kharas, J., & Williams, E. G. (2013). Read this article, but don't print it: organizational citizenship behavior toward the environment. *Group and Organization Management*, 38(2), 163–197.
<https://doi.org/10.1177/1059601112475210>
- Lange, F., & Dewitte, S. (2019). Measuring pro-environmental behavior: review and recommendations. *Journal of Environmental Psychology*, 63(665501), 92–100.
<https://doi.org/10.1016/j.jenvp.2019.04.009>
- Li, L., Ming, H., Yang, R., & Luo, X. (2020). The impact of policy factors and users' awareness on electricity-saving behaviors: From the perspective of habits and investment. *Sustainability (Switzerland)*, 12(12), 4815.
<https://doi.org/10.3390/SU12124815>
- Lim, Y. J., Osman, A., Salahuddin, S. N., Romle, A. R., & Abdullah, S. (2016). Factors influencing online shopping behavior: the mediating role of purchase intention. *Procedia Economics and Finance*, 35, 401–410. [https://doi.org/10.1016/s2212-5671\(16\)00050-2](https://doi.org/10.1016/s2212-5671(16)00050-2)
- Lin, S. C., Nadlifatin, R., Amna, A. R., Persada, S. F., & Razif, M. (2017). Investigating citizen behavior intention on mandatory and voluntary pro-environmental programs through a pro-environmental planned behavior model. *Sustainability (Switzerland)*, 9(7), 1289. <https://doi.org/10.3390/su9071289>

- Liobikienė, G., & Poškus, M. S. (2019). The importance of environmental knowledge for private and public sphere pro-environmental behavior: modifying the value-belief-norm theory. *Sustainability*, 11(12), 3324.
- Liu, Y., Sheng, H., Mundorf, N., Redding, C., & Ye, Y. (2017). Integrating norm activation model and theory of planned behavior to understand sustainable transport behavior: Evidence from China. *International journal of environmental research and public health*, 14(12), 1593.
- Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American Psychologist*, 57(9), 705–717. <https://doi.org/10.1037/0003-066X.57.9.705>
- Loersch, C., & Payne, B. K. (2011). The situated inference model: An integrative account of the effects of primes on perception, behavior, and motivation. *Perspectives on Psychological Science*, 6(3), 234–252. <https://doi.org/10.1177/1745691611406921>
- Lülfes, R., & Hahn, R. (2013). Corporate greening beyond formal programs, initiatives, and systems: A conceptual model for voluntary pro-environmental behavior of employees. *European Management Review*, 10(2), 83–98. <https://doi.org/10.1111/emre.12008>
- Lülfes, R., & Hahn, R. (2014). Sustainable behavior in the business sphere: a comprehensive overview of the explanatory power of psychological models. *Organization and Environment*, 27(1), 43–64. <https://doi.org/10.1177/1086026614522631>
- Lunenburg, F. C. (2011). Self-efficacy in the workplace: Implications for motivation and performance. *International Journal of Management, Business, and Administration*, 14(1), 1–6. <https://doi.org/10.1177/216507999103901202>

- Maes, J., Leroy, H., & Sels, L. (2014). Gender differences in entrepreneurial intentions: A TPB multi-group analysis at factor and indicator level. *European Management Journal*, 32(5), 784–794. <https://doi.org/10.1016/j.emj.2014.01.001>
- Malhotra, N. K. (2019). *Marketing Research: An Applied Orientation* (7th ed.). Pearson.
- Mannetti, L., Pierro, A., & Livi, S. (2004). Recycling: planned and self-expressive behaviour. *Journal of Environmental Psychology*, 24(2), 227–236. <https://doi.org/10.1016/j.jenvp.2004.01.002>
- Mansoor, A., Jahan, S., & Riaz, M. (2021). Does green intellectual capital spur corporate environmental performance through green workforce? *Journal of Intellectual Capital*, 22(5), 823–839. <https://doi.org/10.1108/JIC-06-2020-0181>
- McCusker, J., Lambert, S. D., Cole, M. G., Ciampi, A., Strumpf, E., Freeman, E. E., & Belzile, E. (2016). Activation and self-efficacy in a randomized trial of a depression self-care intervention. *Health Education and Behavior*, 43(6), 716–725. <https://doi.org/10.1177/1090198116637601>
- McDonald, F. (2014). Developing an integrated conceptual framework of pro-environmental behavior in the workplace through synthesis of the current literature. *Administrative Sciences*, 4(3), 276–303. <https://doi.org/10.3390/admsci4030276>
- McEachan, R. R. C., Conner, M., Taylor, N. J., & Lawton, R. J. (2011). Prospective prediction of health-related behaviours with the theory of planned behaviour: A meta-analysis. *Health Psychology Review*, 5(2), 97–144. <https://doi.org/10.1080/17437199.2010.521684>
- Mehmood, K., Jabeen, F., Al Hammadi, K. I. S., Al Hammadi, A., Iftikhar, Y., & AlNahyan, M. T. (2022). Disentangling employees' passion and work-related outcomes through the lens of cross-cultural examination: a two-wave empirical study. *International Journal of Manpower*, (ahead-of-print).

- Mehmood, K., Jabeen, F., Iftikhar, Y., Yan, M., Khan, A. N., AlNahyan, M. T., ... & Alhammadi, B. A. (2022). Elucidating the effects of organisational practices on innovative work behavior in UAE public sector organisations: the mediating role of employees' wellbeing. *Applied Psychology: Health and Well-Being*, 14(3), 715-733.
- Mehmood, K., Li, Y., Jabeen, F., Khan, A. N., Chen, S., & Khalid, G. K. (2020). Influence of female managers' emotional display on frontline employees' job satisfaction: a cross-level investigation in an emerging economy. *International Journal of Bank Marketing*, 38(7), 1491–1509. <https://doi.org/10.1108/IJBM-03-2020-0152>
- Mehmood, K., Li, Y., Jabeen, F., Khan, A. N., Chen, S., & Khalid, G. K. (2020). Influence of female managers' emotional display on frontline employees' job satisfaction: a cross-level investigation in an emerging economy. *International Journal of Bank Marketing*, 38(7), 1491-1509.
- Mfarrej, M. F. B. (2019). Climate change patterns in the UAE: A qualitative research and review. *Nature Environment and Pollution Technology*, 18(1), 261–268.
- Moon, M. A., Habib, M. D., & Attiq, S. (2015). Analyzing the sustainable behavioral intentions: role of norms, beliefs and values on behavioral intentions. *Pakistan Journal of Commerce and Social Sciences (PJCSS)*, 9(2), 524–539.
- Moss, S. (2016). *Fit indices for structural equation modelling*. <https://www.sicotests.com/psyarticle.asp?id=277>
- Neal, D. T., Wood, W., & Drolet, A. (2013). How do people adhere to goals when willpower is low? The profits (and pitfalls) of strong habits. *Journal of Personality and Social Psychology*, 104(6), 959–975. <https://doi.org/10.1037/a0032626>
- Nesbit, R., Christensen, R. K., & Brudney, J. L. (2018). The limits and possibilities of

- volunteering: A framework for explaining the scope of volunteer involvement in public and nonprofit organizations. *Public Administration Review*, 78(4), 502–513.
- Ng, T. W. H., Yam, K. C., & Aguinis, H. (2019). Employee perceptions of corporate social responsibility: Effects on pride, embeddedness, and turnover. *Personnel Psychology*, 72(1), 107–137. <https://doi.org/10.1111/peps.12294>
- Nordlund, A. M., & Garvill, J. (2003). Effects of values, problem awareness, and personal norm on willingness to reduce personal car use. *Journal of Environmental Psychology*, 23(4), 339–347.
- Norton, T. A., Parker, S. L., Zacher, H., & Ashkanasy, N. M. (2015). Employee green behavior: A theoretical framework, multilevel review, and future research agenda. *Organization & Environment*, 28(1), 103–125. <https://doi.org/10.1177/1086026615575773>
- Norton, T. A., Zacher, H., & Ashkanasy, N. M. (2014). Organisational sustainability policies and employee green behaviour: The mediating role of work climate perceptions. *Journal of Environmental Psychology*, 38, 49–54. <https://doi.org/10.1016/j.jenvp.2013.12.008>
- Nunnally, J. C. (1978). *Psychometric Theory*. McGraw-Hill.
- O’Leary, Z. (2017). *The Essential Guide to Doing Your Research Project* (3rd ed.). Sage.
- Ofstad, S. P., Tobolova, M., Nayum, A., & Klöckner, C. A. (2017). Understanding the mechanisms behind changing people’s recycling behavior at work by applying a comprehensive action determination model. *Sustainability (Switzerland)*, 9(2), 204. <https://doi.org/10.3390/su9020204>
- Olsson, L. E., Huck, J., & Friman, M. (2018). Intention for car use reduction: Applying a stage-based model. *International Journal of Environmental Research and Public*

- Health*, 15(2), 216. <https://doi.org/10.3390/ijerph15020216>
- Onwezen, M. C., Antonides, G., & Bartels, J. (2013). The Norm Activation Model: an exploration of the functions of anticipated pride and guilt in pro-environmental behaviour. *Journal of Economic Psychology*, 39, 141–153.
<https://doi.org/10.1016/j.joep.2013.07.005>
- Organ, D. W., Podsakoff, P. M., & MacKenzie, S. B. (2006). *Organizational Citizenship Behavior: Its Nature, Antecedents, and Consequences*. Sage Publications.
- Osman, A., Md, I. F., Othman, S. N., & Jaganathan, M. (2015). Attitude towards recycling among business undergraduate students in Malaysia. *American-Eurasian Journal of Sustainable Agriculture*, 8(13), 6–12.
- Oxford Business Group (2020). *Abu Dhabi 2020*.
<https://oxfordbusinessgroup.com/overview/one-nature-conservation-protection-and-sustainable-use-natural-resources-remain-central>
- Paillé, P., Boiral, O., & Chen, Y. (2013). Linking environmental management practices and organizational citizenship behaviour for the environment: a social exchange perspective. *International Journal of Human Resource Management*, 24(18), 3552–3575.
- Paillé, P., Chen, Y., Boiral, O., & Jin, J. (2014). The impact of human resource management on environmental performance: an employee-level study. *Journal of Business Ethics*, 121(3), 451–466. <https://doi.org/10.1007/s10551-013-1732-0>
- Pandur, V., & Albulescu, P. (2016). How to promote pro-environmental behaviour in organizations: the message matters. *Psihologia Resurselor Umane*, 14(4), 69–82.
- Park, J., & Ha, S. (2014). Understanding consumer recycling behavior: Combining the theory of planned behavior and the norm activation model. *Family and Consumer Sciences Research Journal*, 42(3), 278–291.

- Parzonko, A. J., Balińska, A., & Sieczko, A. (2021). Pro-environmental behaviors of Generation Z in the context of the concept of Homo Socio-Oeconomicus. *Energies*, 14(6), 1597. <https://doi.org/10.3390/en14061597>
- Paul, J., Modi, A., & Patel, J. (2016). Predicting green product consumption using theory of planned behavior and reasoned action. *Journal of Retailing and Consumer Services*, 29, 123–134. <https://doi.org/10.1016/j.jretconser.2015.11.006>
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879–903. <https://doi.org/10.1037/0021-9010.88.5.879>
- Polonsky, M. J., Vocino, A., Grau, S. L., Garma, R., & Ferdous, A. S. (2012). The impact of general and carbon-related environmental knowledge on attitudes and behaviour of US consumers. *Journal of Marketing Management*, 28(3–4), 238–263.
- Poropat, A. E. (2009). A meta-analysis of the five-factor model of personality and academic performance. *Psychological Bulletin*, 135(2), 322.
- Powell, J. (2019). Scientists reach 100% consensus on anthropogenic global warming. *Bulletin of Science, Technology and Society*, 37(4), 183–184. <https://doi.org/10.1177/0270467619886266>
- Presseau, J., Tait, R. I., Johnston, D. W., Francis, J. J., & Sniehotta, F. F. (2013). Goal conflict and goal facilitation as predictors of daily accelerometer-assessed physical activity. *Health Psychology*, 32(12), 1179–1187. <https://doi.org/10.1037/a0029430>
- Raineri, N., & Paillé, P. (2016). Linking corporate policy and supervisory support with environmental citizenship behaviors: the role of employee environmental beliefs and commitment. *Journal of Business Ethics*, 137(1), 129–148. <https://doi.org/10.1007/s10551-015-2548-x>

- Ramkissoon, H., Smith, L. D. G., & Weiler, B. (2013). Relationships between place attachment, place satisfaction and pro-environmental behaviour in an Australian national park. *Journal of Sustainable Tourism*, 21(3), 434–457.
<https://doi.org/10.1080/09669582.2012.708042>
- Rampedi, I. T., & Ifegbesan, A. P. (2022). Understanding the determinants of pro-environmental behavior among South Africans: evidence from a structural equation model. *Sustainability (Switzerland)*, 14(6), 3218.
<https://doi.org/10.3390/su14063218>
- Ramus, C. A. (2002). Encouraging innovative environmental actions: what companies and managers must do. *Journal of World Business*, 37(2), 151–164.
- Ramus, C. A., & Killmer, A. B. (2007). Corporate greening through prosocial extrarole behaviours—a conceptual framework for employee motivation. *Business Strategy and the Environment*, 16(8), 554–570.
- Rapaport, P., & Orbell, S. (2000). Augmenting the theory of planned behaviour: Motivation to provide practical assistance and emotional support to parents. *Psychology and Health*, 15(3), 309–324.
- Rasool, F., Zuberi, N. A., Siddiqui, N. U., & Madni, M. (2019). Using the theory of planned behavior and norm activation model to understand individual energy conservation behavior in Karachi, Pakistan. *International Journal of Economic and Environmental Geology*, 10(1), 93–99.
- Raza, A., Farrukh, M., Iqbal, M. K., Farhan, M., & Wu, Y. (2021). Corporate social responsibility and employees' voluntary pro-environmental behavior: The role of organizational pride and employee engagement. *Corporate Social Responsibility and Environmental Management*, 28(3), 1104–1116.
- Razak, N. F., & Sabri, M. F. (2019). Pro-environmental workplace intention behaviour

- in the Malaysian public organization. *Asian Social Science*, 15(4), 60.
<https://doi.org/10.5539/ass.v15n4p60>
- Ren, S., Tang, G., & E. Jackson, S. (2018). Green human resource management research in emergence: A review and future directions. *Asia Pacific Journal of Management*, 35(3), 769–803. <https://doi.org/10.1007/s10490-017-9532-1>
- Richetin, J., Perugini, M., Conner, M., Adjali, I., Hurling, R., Sengupta, A., & Greetham, D. (2012). To reduce and not to reduce resource consumption? That is two questions. *Journal of Environmental Psychology*, 32(2), 112–122.
<https://doi.org/10.1016/j.jenvp.2012.01.003>
- Riebl, S. K., Estabrooks, P. A., Dunsmore, J. C., Savla, J., Frisard, M. I., Dietrich, A. M., Peng, Y., Zhang, X., & Davy, B. M. (2015). A systematic literature review and meta-analysis: The Theory of Planned Behavior's application to understand and predict nutrition-related behaviors in youth. *Eating Behaviors*, 18, 160–178.
- Robertson, J. L., & Barling, J. (2013). Greening organizations through leaders' influence on employees' pro-environmental behaviors. *Journal of Organizational Behavior*, 34(2), 176–194. <https://doi.org/10.1002/job.1820>
- Robertson, J. L., & Barling, J. (2015). *The Psychology of Green Organizations*. Oxford University Press.
- Rodell, J. B., Breitsohl, H., Schröder, M., & Keating, D. J. (2016). Employee volunteering: a review and framework for future research. *Journal of Management*, 42(1), 55–84. <https://doi.org/10.1177/0149206315614374>
- Rojas-Méndez, J. I., Le Nestour, M., & Rod, M. (2015). Understanding attitude and behavior of Canadian consumers toward organic wine. *Journal of Food Products Marketing*, 21(4), 375–396. <https://doi.org/10.1080/10454446.2014.885869>
- Rupp, D. E., Shao, R., Skarlicki, D. P., Paddock, E. L., Kim, T. Y., & Nadisic, T.

- (2018). Corporate social responsibility and employee engagement: The moderating role of CSR-specific relative autonomy and individualism. *Journal of Organizational Behavior*, 39(5), 559–579. <https://doi.org/10.1002/job.2282>
- Rupp, D. E., Shao, R., Thornton, M. A., & Skarlicki, D. P. (2013). Applicants' and employees' reactions to corporate social responsibility: The moderating effects of first-party justice perceptions and moral identity. *Personnel Psychology*, 66(4), 895–933.
- Schlegelmilch, B. B., Bohlen, G. M., & Diamantopoulos, A. (2015). The link between green purchasing decisions and measures of environmental consciousness. *European Journal of Marketing*, 30(5), 35–55. <https://doi.org/10.1108/03090569610118740>
- Schumacker, R., & Lomax, R. G. (2010). *Beginner's Guide to Structural Equation Modeling* (3rd ed.). Routledge.
- Schwartz, S. H. (1973). Normative explanations of helping behavior: A critique, proposal, and empirical test. *Journal of Experimental Social Psychology*, 9(4), 349–364. [https://doi.org/10.1016/0022-1031\(73\)90071-1](https://doi.org/10.1016/0022-1031(73)90071-1)
- Schwartz, S. H. (1977). Normative influences on altruism. *Advances in Experimental Social Psychology*, 10(C), 221–279. [https://doi.org/10.1016/S0065-2601\(08\)60358-5](https://doi.org/10.1016/S0065-2601(08)60358-5)
- Schwartz, S. H., & Howard, J. A. (1981). A normative decision-making model of altruism. *Altruism and helping behavior*, 189-211.
- Sekaran, U., & Bougie, R. (2019). *Research Methods for Business* (8th ed.). John Wiley & Sons.
- Seymour, V., King, M., & Antonaci, R. (2018). Understanding the impact of volunteering on pro-environmental behavioural change. *Voluntary Sector Review*,

- 9(1), 73–88. <https://doi.org/10.1332/204080518X15155917206307>
- Sheeran, P. (2002). Intention-behavior relations: a conceptual and empirical review. *European Review of Social Psychology*, 12(1), 1–36.
<https://doi.org/10.1002/0470013478.ch1>
- Sheeran, P., & Orbell, S. (1999). Implementation intentions and repeated behaviour: Augmenting the predictive validity of the theory of planned behaviour. *European Journal of Social Psychology*, 29(2–3), 349–369.
[https://doi.org/10.1002/\(SICI\)1099-0992\(199903/05\)29:2/3<349::AID-EJSP931>3.0.CO;2-Y](https://doi.org/10.1002/(SICI)1099-0992(199903/05)29:2/3<349::AID-EJSP931>3.0.CO;2-Y)
- Sheeran, P., & Webb, T. L. (2016). The intention–behavior gap. *Social and Personality Psychology Compass*, 10(9), 503–518.
- Sheeran, P., Harris, P. R., & Epton, T. (2014). Does heightening risk appraisals change people’s intentions and behavior? A meta-analysis of experimental studies. *Psychological Bulletin*, 140(2), 511–543. <https://doi.org/10.1037/a0033065>
- Shi, H., Fan, J., & Zhao, D. (2017). Predicting household PM2.5-reduction behavior in Chinese urban areas: An integrative model of Theory of Planned Behavior and Norm Activation Theory. *Journal of Cleaner Production*, 145, 64–73.
<https://doi.org/10.1016/j.jclepro.2016.12.169>
- Shih, Y. Y., & Fang, K. (2004). The use of a decomposed theory of planned behavior to study Internet banking in Taiwan. *Internet Research*, 14(3), 213–223.
<https://doi.org/10.1108/10662240410542643>
- Shirokova, G., Osiyevskyy, O., & Bogatyreva, K. (2016). Exploring the intention–behavior link in student entrepreneurship: Moderating effects of individual and environmental characteristics. *European Management Journal*, 34(4), 386–399.
<https://doi.org/10.1016/j.emj.2015.12.007>

- Singh, R. L., & Singh, P. K. (2017). Global environmental problems. In R. L. Singh (Ed.), *Principles and Applications of Environmental Biotechnology for a Sustainable Future* (pp. 13–41). Springer.
- Sniehotta, F. F., Gellert, P., Witham, M. D., Donnan, P. T., Crombie, I. K., & McMurdo, M. E. (2013). Psychological theory in an interdisciplinary context: psychological, demographic, health-related, social, and environmental correlates of physical activity in a representative cohort of community-dwelling older adults. *International Journal of Behavioral Nutrition and Physical Activity*, 10(1), 1–11.
- Sniehotta, F. F., Pesseau, J., & Araújo-Soares, V. (2014). Time to retire the theory of planned behaviour. *Health Psychology Review*, 8(1), 1–7.
<https://doi.org/10.1080/17437199.2013.869710>
- Šontaitė-Petkevičienė, M. (2015). CSR reasons, practices and impact to corporate reputation. *Procedia - Social and Behavioral Sciences*, 213, 503–508.
<https://doi.org/10.1016/j.sbspro.2015.11.441>
- Sopha, B. M. (2013). Sustainable paper consumption: Exploring behavioral factors. *Social Sciences*, 2(4), 270–283. <https://doi.org/10.3390/socsci2040270>
- Soror, A. A., Hammer, B. I., Steelman, Z. R., Davis, F. D., & Limayem, M. M. (2015). Good habits gone bad: Explaining negative consequences associated with the use of mobile phones from a dual-systems perspective. *Information Systems Journal*, 25(4), 403–427. <https://doi.org/10.1111/isj.12065>
- Soutter, A. R. B., & Möttus, R. (2021). Big Five facets' associations with pro-environmental attitudes and behaviors. *Journal of Personality*, 89(2), 203–215.
<https://doi.org/10.1111/jopy.12576>
- Steg, L., & de Groot, J. (2010). Explaining prosocial intentions: Testing causal relationships in the norm activation model. *British Journal of Social Psychology*,

- 49(4), 725–743. <https://doi.org/10.1348/014466609X477745>
- Steg, L., & Vlek, C. (2009). Encouraging pro-environmental behaviour: An integrative review and research agenda. *Journal of Environmental Psychology*, 29(3), 309–317. <https://doi.org/10.1016/j.jenvp.2008.10.004>
- Steiner, A. (2020). *United Nations Development Programme Annual Report 2020*. United Nations Development Programme. <https://doi.org/10.1016/B978-0-444-86236-5.50086-9>
- Stern, P. C. (2000). Toward a coherent theory of environmentally significant behavior. *Journal of Social Issues*, 56, 407–424.
- Stern, P. C., Dietz, T., & Black, J. S. (1985). Support for environmental protection: The role of moral norms. *Population and Environment*, 8(3), 204–222.
- Stern, P. C., Dietz, T., Abel, T., Guagnano, G. A., & Kalof, L. (1999). A value-belief-norm theory of support for social movements: The case of environmentalism. *Human Ecology Review*, 6(2), 81–97.
- Stritch, J. M., & Christensen, R. K. (2016). Going green in public organizations: linking organizational commitment and public service motives to public employees' workplace eco-initiatives. *American Review of Public Administration*, 46(3), 337–355. <https://doi.org/10.1177/0275074014552470>
- Sulek, J. M., & Hensley, R. L. (2004). The relative importance of food, atmosphere, and fairness of wait: The case of a full-service restaurant. *Cornell Hotel and Restaurant Administration Quarterly*, 45(3), 235–247.
- Tang, G., Chen, Y., Jiang, Y., Paillé, P., & Jia, J. (2018). Green human resource management practices: scale development and validity. *Asia Pacific Journal of Human Resources*, 56(1), 31–55. <https://doi.org/10.1111/1744-7941.12147>
- Tang, Z., Warkentin, M., & Wu, L. (2019). Understanding employees' energy saving

- behavior from the perspective of stimulus-organism-responses. *Resources, Conservation and Recycling*, 140, 216–223.
<https://doi.org/10.1016/j.resconrec.2018.09.030>
- Tanner, C. (1999). Constraints on environmental behaviour. *Journal of Environmental Psychology*, 19(2), 145–157. <https://doi.org/10.1006/jevp.1999.0121>
- Tarigan, J., Susanto, A. R. S., Hatane, S. E., Jie, F., & Foedjiawati, F. (2021). Corporate social responsibility, job pursuit intention, quality of work life and employee performance: case study from Indonesia controversial industry. *Asia-Pacific Journal of Business Administration*, 13(2), 141-158.
- Temminck, E., Mearns, K., & Fruhen, L. (2015). Motivating employees towards sustainable behaviour. *Business Strategy and the Environment*, 24(6), 402–412.
- Terry, D. J., & O’Leary, J. E. (1995). The theory of planned behaviour: The effects of perceived behavioural control and self-efficacy. *British Journal of Social Psychology*, 34(2), 199–220.
- Testa, F., Corsini, F., Gusmerotti, N. M., & Iraldo, F. (2020). Predictors of organizational citizenship behavior in relation to environmental and health & safety issues. *International Journal of Human Resource Management*, 31(13), 1705–1738.
<https://doi.org/10.1080/09585192.2017.1423099>
- Thongrawd, C., Bootpo, W., Thipha, S., & Jermstiparsert, K. (2019). Exploring the nexus of green information technology capital, environmental corporate social responsibility, environmental performance and the business competitiveness of Thai sports industry firms. *Journal of Human Sport and Exercise*, 14(Proc5), S2127–S2141. <https://doi.org/10.14198/jhse.2019.14.Proc5.33>
- Tian, Q., & Robertson, J. L. (2019). How and when does perceived CSR affect employees’ engagement in voluntary pro-environmental behavior? *Journal of*

Business Ethics, 155(2), 399–412.

Timm, S. N., & Deal, B. M. (2016). Effective or ephemeral? The role of energy information dashboards in changing occupant energy behaviors. *Energy Research & Social Science*, 19, 11–20.

Triandis, H. C. (1977). Values, attitudes, and interpersonal behavior. In *Nebraska Symposium on Motivation* 27 (pp. 195–259). University of Nebraska Press.

Trivellas, P., Rafailidis, A., Polychroniou, P., & Dekoulou, P. (2019). Corporate social responsibility (CSR) and its internal consequences on job performance: The influence of corporate ethical values. *International Journal of Quality and Service Sciences*, 11(2), 265–282. <https://doi.org/10.1108/IJQSS-12-2017-0117>

Trochim, W. M. K. (2006). Design. In *Research methods knowledge base*.

<http://www.socialresearchmethods.net/kb/design.php>

Tsai, C. C., Stritch, J. M., & Christensen, R. K. (2016). Eco-helping and eco-civic engagement in the public workplace. *Public Performance and Management Review*, 40(2), 336–360. <https://doi.org/10.1080/15309576.2016.1216001>

Turaga, R. M. R., Howarth, R. B., & Borsuk, M. E. (2010). Pro-environmental behavior: Rational choice meets moral motivation. *Annals of the New York Academy of Sciences*, 1185, 211–224. <https://doi.org/10.1111/j.1749-6632.2009.05163.x>

UAE Government Portal. (2020). *Climate action*. <https://u.ae/en/about-the-uae/leaving-no-one-behind/13climateaction#:~:text=Backed%20by%20an%20ambitious%20'National,y,is%20employing%20various%20energy%20and>

UAE Ministry of Climate Change and Environment. (2016). *UAE State of Green Economy Report*. https://www.moccae.gov.ae/assets/644fa89a/state-of-green-economy-report-2016_summary_a5_for-website.aspx

- Ünal, A. B., Steg, L., & Granskaya, J. (2019). “To support or not to support, that is the question”. Testing the VBN theory in predicting support for car use reduction policies in Russia. *Transportation Research Part A: Policy and Practice*, 119, 73–81. <https://doi.org/10.1016/j.tra.2018.10.042>
- Unsworth, K. L., Dmitrieva, A., & Adriasola, E. (2013). Changing behaviour: increasing the effectiveness of workplace interventions in creating pro-environmental behaviour change. *Journal of Organizational Behavior*, 34(2), 211–229. <https://doi.org/10.1002/job.1837>
- Vamvaka, V., Stoforos, C., Palaskas, T., & Botsaris, C. (2020). Attitude toward entrepreneurship, perceived behavioral control, and entrepreneurial intention: dimensionality, structural relationships, and gender differences. *Journal of Innovation and Entrepreneurship*, 9(1), 1–26. <https://doi.org/10.1186/s13731-020-0112-0>
- van den Broek, K. L., Walker, I., & Klöckner, C. A. (2019). Drivers of energy saving behaviour: The relative influence of intentional, normative, situational and habitual processes. *Energy Policy*, 132, 811–819. <https://doi.org/10.1016/j.enpol.2019.06.048>
- van der Werff, E., & Steg, L. (2015). One model to predict them all: Predicting energy behaviours with the norm activation model. *Energy Research and Social Science*, 6, 8–14. <https://doi.org/10.1016/j.erss.2014.11.002>
- van der Werff, E., Steg, L., & Keizer, K. (2013). It is a moral issue: The relationship between environmental self-identity, obligation-based intrinsic motivation and pro-environmental behaviour. *Global Environmental Change*, 23(5), 1258–1265. <https://doi.org/10.1016/j.gloenvcha.2013.07.018>
- Van Liere, K. D., & Dunlap, R. E. (1978). Moral norms and environmental behavior: an

- application of Schwartz's norm-activation model to yard burning. *Journal of Applied Social Psychology*, 8(2), 174–188.
- van Riper, C. J., & Kyle, G. T. (2014). Understanding the internal processes of behavioral engagement in a national park: A latent variable path analysis of the value-belief-norm theory. *Journal of Environmental Psychology*, 38, 288–297. <https://doi.org/10.1016/j.jenvp.2014.03.002>
- Vavra, T. G. (1997). *Improving Your Measurement of Customer Satisfaction: A Guide to Creating, Conducting, Analyzing, and Reporting Customer Satisfaction Measurement Programs*. ASQ Quality Press.
- Venkatesh, V., & Davis, F. D. (2000). Theoretical extension of the Technology Acceptance Model: four longitudinal field studies. *Management Science*, 46(2), 186–204. <https://doi.org/10.1287/mnsc.46.2.186.11926>
- Verplanken, B., & Aarts, H. (1999). Habit, attitude, and planned behaviour: is habit an empty construct or an interesting case of goal-directed automaticity? *European Review of Social Psychology*, 10(1), 101–134.
- Verplanken, B., & Faes, S. (1999). Good intentions, bad habits, and effects of forming implementation intentions on healthy eating. *European Journal of Social Psychology*, 29(5–6), 591–604. [https://doi.org/10.1002/\(SICI\)1099-0992\(199908/09\)29:5/6<591::AID-EJSP948>3.0.CO;2-H](https://doi.org/10.1002/(SICI)1099-0992(199908/09)29:5/6<591::AID-EJSP948>3.0.CO;2-H)
- Verplanken, B., & Orbel, S. (2003). Reflections on past behavior: a self-report index of habit strength. *Journal of Applied Social Psychology*, 33(6), 1313–1330.
- Vesely, S., Masson, T., Chokrai, P., Becker, A. M., Fritsche, I., Klöckner, C. A., Tiberio, L., Carrus, G., & Panno, A. (2021). Climate change action as a project of identity: Eight meta-analyses. *Global Environmental Change*, 70, 102322. <https://doi.org/10.1016/j.gloenvcha.2021.102322>

- Vining, J., & Ebreo, A. (1992). Predicting recycling behavior from global and specific environmental attitudes and changes in recycling opportunities. *Journal of Applied Social Psychology*, 22(20), 1580–1607.
- Vlachos, P. A., Panagopoulos, N. G., & Rapp, A. A. (2014). Employee judgments of and behaviors toward corporate social responsibility: A multi-study investigation of direct, cascading, and moderating effects. *Journal of Organizational Behavior*, 35(7), 990–1017. <https://doi.org/10.1002/job.1946>
- Wahyu Ariani, D. (2013). The relationship between employee engagement, organizational citizenship behavior, and counterproductive work behavior. *International Journal of Business Administration*, 4(2), 46. <https://doi.org/10.5430/ijba.v4n2p46>
- Waldman, D. A., Sully de Luque, M., Washburn, N., House, R. J., Adetoun, B., Barrasa, A., ... & Wilderom, C. P. (2006). Cultural and leadership predictors of corporate social responsibility values of top management: A GLOBE study of 15 countries. *Journal of International Business Studies*, 37, 823-837.
- Wan, C., Shen, G. Q., & Choi, S. (2017). Experiential and instrumental attitudes: Interaction effect of attitude and subjective norm on recycling intention. *Journal of Environmental Psychology*, 50, 69–79. <https://doi.org/10.1016/j.jenvp.2017.02.006>
- Wang, S., Fan, J., Zhao, D., Yang, S., & Fu, Y. (2016). Predicting consumers' intention to adopt hybrid electric vehicles: using an extended version of the theory of planned behavior model. *Transportation*, 43(1), 123–143. <https://doi.org/10.1007/s11116-014-9567-9>
- Wang, S., Wang, J., Zhao, S., & Yang, S. (2019). Information publicity and resident's waste separation behavior: An empirical study based on the norm activation model. *Waste Management*, 87, 33–42.

- Wang, W., Li, X., & Li, H. (2011). Empirical research of the environmental responsibility affected on the urban residential housing energy saving investment behavior. *Energy Procedia*, 5, 991–997.
<https://doi.org/10.1016/j.egypro.2011.03.175>
- Wang, Z., Dong, X., & Yin, J. (2018). Antecedents of urban residents' separate collection intentions for household solid waste and their willingness to pay: Evidence from China. *Journal of Cleaner Production*, 173, 256–264.
- Wells, V. K., Manika, D., Gregory-Smith, D., Taheri, B., & McCowlen, C. (2015). Heritage tourism, CSR and the role of employee environmental behaviour. *Tourism Management*, 48, 399–413.
- Wesselink, R., Blok, V., & Ringersma, J. (2017). Pro-environmental behaviour in the workplace and the role of managers and organisation. *Journal of Cleaner Production*, 168, 1679–1687. <https://doi.org/10.1016/j.jclepro.2017.08.214>
- Wolff, K., Nordin, K., Brun, W., Berglund, G., & Kvale, G. (2011). Affective and cognitive attitudes, uncertainty avoidance and intention to obtain genetic testing: An extension of the theory of planned behaviour. *Psychology & Health*, 26(9), 1143–1155.
- Wood, W., & Rünger, D. (2016). Psychology of habit. *Annual Review of Psychology*, 67, 289–314.
- Wood, W., Mazar, A., & Neal, D. T. (2022). Habits and goals in human behavior: Separate but interacting systems. *Perspectives on Psychological Science*, 17(2), 590–605.
- Wood, W., Quinn, J. M., & Kashy, D. A. (2002). Habits in everyday life: thought, emotion, and action. *Journal of Personality and Social Psychology*, 83(6), 1281.
- Yadav, R., & Pathak, G. S. (2017). Determinants of consumers' green purchase behavior

- in a developing nation: applying and extending the theory of planned behavior. *Ecological Economics*, 134, 114–122.
<https://doi.org/10.1016/j.ecolecon.2016.12.019>
- Yasir, N., Mahmood, N., Mehmood, H. S., Babar, M., Irfan, M., & Liren, A. (2021). Impact of environmental, social values and the consideration of future consequences for the development of a sustainable entrepreneurial intention. *Sustainability (Switzerland)*, 13(5), 2648. <https://doi.org/10.3390/su13052648>
- Yeboah, F. K., & Kaplowitz, M. D. (2016). Explaining energy conservation and environmental citizenship behaviors using the value-belief-norm framework. *Human Ecology Review*, 22(2), 137–159.
<https://doi.org/10.22459/her.22.02.2016.06>
- Yu, T. Y., & Yu, T. K. (2017). The moderating effects of students' personality traits on pro-environmental behavioral intentions in response to climate change. *International Journal of Environmental Research and Public Health*, 14(12), 1472. <https://doi.org/10.3390/ijerph14121472>
- Yu, X., Mehmood, K., Paulsen, N., Ma, Z., & Kwan, H. K. (2021). Why safety knowledge cannot be transferred directly to expected safety outcomes in construction workers: the moderating effect of physiological perceived control and mediating effect of safety behavior. *Journal of Construction Engineering and Management*, 147(1), 04020152. [https://doi.org/10.1061/\(asce\)co.1943-7862.0001965](https://doi.org/10.1061/(asce)co.1943-7862.0001965)
- Yuriev, A., Boiral, O., & Guillaumie, L. (2020). Evaluating determinants of employees' pro-environmental behavioral intentions. *International Journal of Manpower*, 41(7), 1005–1019. <https://doi.org/10.1108/IJM-08-2019-0387>
- Yuriev, A., Boiral, O., Francoeur, V., & Paillé, P. (2018). Overcoming the barriers to

- pro-environmental behaviors in the workplace: A systematic review. *Journal of Cleaner Production*, 182, 379–394. <https://doi.org/10.1016/j.jclepro.2018.02.041>
- Zafar, M., & Ali, I. (2016). The influence of corporate social responsibility on employee commitment: the mediating role of employee company identification. *Asian Social Science*, 12(12), 262. <https://doi.org/10.5539/ass.v12n12p262>
- Zhang, X., Geng, G., & Sun, P. (2017). Determinants and implications of citizens' environmental complaint in China: Integrating theory of planned behavior and norm activation model. *Journal of Cleaner Production*, 166, 148–156.
- Zhang, X., Liu, J., & Zhao, K. (2018). Antecedents of citizens' environmental complaint intention in China: An empirical study based on norm activation model. *Resources, Conservation and Recycling*, 134, 121–128.
- Zibenberg, A., Greenspan, I., Katz-Gerro, T., & Handy, F. (2018). Environmental behavior among Russian youth: the role of self-direction and environmental concern. *Environmental Management*, 62(2), 295–304.

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Appendix A. Certificate of IRB approval



Abu Dhabi University Ethical Approval

Date(mm/dd/yyyy)

File Number: CoBA – 21-04-010

04/20/2021

Ethical Approval Notice

Principal Investigator/ Supervisor/ Co-investigator(s) / Student(s)

<u>First Name</u>	<u>Last Name</u>	<u>Affiliation</u>	<u>Role</u>
Sameera	Al Zaidi	Abu Dhabi University	Principal Investigator
Dr. Fauzia	Jabeen	Abu Dhabi University	Co- Investigator
Dr. Shilpa	Iyanna	Abu Dhabi University	Co- Investigator

File Number:

CoBA – 21-04-010

Type of Project:

Thesis

Title:

Antecedents to voluntary pro-environmental behavior of employees in Public Organizations
by Stimulus – Organism -Response Approach

Approval Date (mm/dd/yyyy)

04/ 20 /2021

Expiry Date (mm/dd/yyyy)

04 / 19 /2022

Special Conditions / Comments

NA

IRB Chair

Dr. Rania AL Dweik

A handwritten signature in black ink, appearing to be 'Rania AL Dweik', written over a horizontal line.



Appendix B. Survey questionnaire (bilingual version)

Dear Sir or Madam,

My name is Sameera Mohamed Al Zaidi. As part of my doctoral research, I am conducting a survey on the topic “*Antecedents to Voluntary Pro-environmental Behavior of Employees (VPEB) in Public Organizations*.” The purpose of this study is to investigate which factor encourages employees to practice voluntary pro-environmental behavior in public organizations from individual and organizational perspectives. The findings will enable organizations to develop more strategies and policies that strengthen their formal corporate social responsibility programs. The study will help business owners and decision makers to contribute to institutions’ environmental performance, saving natural resources, and promoting pro-environmental practices. The survey will require no more than 15 minutes of your time.

Your response will be kept strictly confidential and will be used for academic purposes only. The survey contains no personally identifying information. If you agree to participate, you may decline to answer any questionnaire item(s) you choose and may stop participating at any time. If you require additional information or have question about this research, please feel free to contact me. Your co-operation is very much appreciated and will be a valuable contribution towards the success of this research project.

تحية طيبة وبعد،

اسمي سميرة محمد الزيدي. كجزء من رسالة الدكتوراه الخاصة بي، أقوم بإجراء مسح حول موضوع "العوامل الكامنة للسلوك التطوعي المؤيد للبيئة لموظفي الجهات الحكومية". الغرض من هذه الدراسة هو التحقق من العوامل الكامنة التي تشجع الموظفين على ممارسة السلوك التطوعي المؤيد للبيئة في المؤسسات العامة من منظور فردي ومؤسسي. ستتمكن النتائج المؤسسات العامة من تطوير المزيد من الاستراتيجيات والسياسات التي تعزز برامج المسؤولية المجتمعية الرسمية. ستساعد الدراسة أصحاب الأعمال وصناع القرار على المساهمة في الأداء البيئي للمؤسسات، توفير الموارد الطبيعية وتعزيز الممارسات المؤيدة للبيئة. لن تتطلب الاستبانة أكثر من 15 دقيقة من وقتك.

سيتم الاحتفاظ بإجاباتك بسرية تامة واستخدامها فقط للأغراض الأكاديمية. لا تحتوي الاستبانة على معلومات التعريف الشخصية. يمكنك رفض الإجابة على أي عنصر (عناصر) تختاره من الاستبانة والتوقف عن المشاركة في أي وقت. إذا كنت بحاجة إلى معلومات إضافية أو لديك سؤال حول هذه الاستبانة، فلا تتردد في التواصل معي.

إن تعاونك يحظى بتقدير كبير وسيكون إسهاماً قيماً في نجاح هذا المشروع البحثي.

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Demographic Information

The following questions are about demographic information. Please choose the one answer per question that you consider most applies to you.

1. What is your gender?

- ☐ Male ☐ Female

2. What is your age?

- ☐ 20–24 years old ☐ 25–34 years old
☐ 35–44 years old ☐ 45–54 years old
☐ Over 55

3. What is your marital status?

- ☐ Single ☐ Married
☐ Divorced ☐ Widowed

4. What is the highest level of education you have completed?

- ☐ High school or equivalent ☐ Bachelor's degree
☐ Master's degree ☐ Doctoral degree
☐ Other

5. What is your nationality?

- ☐ Emirati
☐ GCC National
☐ Arab (Non-Emirati)
☐ Asian
☐ European
☐ American and others

6. What is your average monthly income in Emirati Dirhams (AED)?

- ☐ 5,000 AED–10,000 AED
☐ 11,000 AED–50,000 AED
☐ 51,000 AED–100,000 AED
☐ Over 100,000 AED

7. How many years of work experience do you have?

- ☐ 1–5 years
☐ 6–10 years
☐ 11–15 years
☐ more than 15 years

البيانات الأولية

الأسئلة التالية تدور حول البيانات الشخصية. يرجى اختيار إجابة واحدة لكل سؤال.

1. الجنس:

☐ أنثى ☐ ذكر

2. كم عمرك؟

☐ 24-20 سنة ☐ 34-25 سنة
☐ 44-35 سنة ☐ 55-45 سنة

☐ أكثر من 55 سنة

3. ما هي حالتك الاجتماعية؟

☐ أعزب ☐ متزوج
☐ مطلق ☐ أرمل

4. ما هو أعلى مؤهل تعليمي حصلت عليه؟

☐ الثانوية العامة أو ما يعادلها ☐ درجة بكالوريوس
☐ درجة الماجستير ☐ درجة الدكتوراه
☐ (غير ذلك)

5. اما هي جنسيتك؟

☐ اماراتي
☐ خليجي
☐ عربي
☐ اسويوي
☐ أوروبي

☐ أمريكي ، غير ذلك

6. ما هو متوسط دخلك الشهري بالدرهم الإماراتي (د.إ.)؟

☐ 5000-10,000 (د.إ.)
☐ 11,000-50,000 (د.إ.)
☐ 51,000-100,000 (د.إ.)
☐ أكثر من 100000 (د.إ.)

7. كم عدد سنوات الخبرة في العمل لديك؟

☐ 1-5 سنوات
☐ 6-10 سنوات
☐ 11-15 سنوات
☐ أكثر من 15 سنة

In Sections A to H, please **CIRCLE** the appropriate number to indicate how strongly you agree or disagree with each of the following statements on a scale of 1 to 5. If you are unable to answer a question, use the neutral value of 3 on the scale.

① Strongly disagree ② Disagree ③ Neutral ④ Agree ⑤ Strongly agree

في الأقسام من A إلى H، يرجى وضع دائرة حول الرقم المناسب للإشارة إلى مدى موافقتك أو عدم موافقتك مع كل من العبارات التالية من المقياس 1 إلى 5. إذا لم تتمكن من الإجابة على السؤال، فاستخدم القيمة المحايدة 3 من المقياس

① لا أوافق بشدة ② لا أوافق ③ محايد ④ أوافق ⑤ أوافق بشدة

Section A

The following questions are about **attitude** : way of thinking or feeling about someone or something that can be reflected in persona's behavior. The scale ranges from 1 (strongly disagree) to 5 (strongly agree). Please circle only one number per statement.

تتعلق الأسئلة التالية بالموقف أو طريقة التفكير أو الشعور تجاه شخص ما أو شيء ما قد ينعكس في السلوك. يتراوح المقياس من 1 (لا أوافق بشدة) إلى 5 (أوافق بشدة). يرجى اختيار رقم واحد فقط لكل عبارة.

• Attitude

Statement	Strongly Disagree لا أوافق بشدة	Disagree لا أوافق	Neutral محايد	Agree أوافق	Strongly Agree أوافق بشدة
1. I'm in favor of behaving pro-environmentally in the workplace. أنا أؤيد السلوك البيئي في العمل.	1	2	3	4	5
2. I think it's a good idea when an employer supports pro-environmental behavior in the workplace. أعتقد أنها فكرة جيدة عندما يدعم صاحب العمل السلوك المؤيد للبيئة في العمل.	1	2	3	4	5
3. A pro-environmental attitude in the workplace is important to me. الموقف المؤيد للبيئة مهم بالنسبة لي في مكان العمل	1	2	3	4	5
4. I think too much attention is paid to the pro-environmental behavior in the workplace. أعتقد أن السلوك المؤيد للبيئة يحظى بالكثير من الاهتمام في مكان العمل	1	2	3	4	5
5. I think it is good when colleagues show pro-environmental behavior. أعتقد أنه من الجيد أن يظهر الزملاء في العمل سلوكًا مؤيدًا للبيئة	1	2	3	4	5

Section B

The following questions are about **perceived behavioral control**: internal control factors such as the amount of information the employees possess and their skills or abilities. External behavioral control factors are those outside the individual that facilitate or interfere with the performance of the behavior. The scale ranges from **1 (strongly disagree) to 5 (strongly agree)**. Please circle only one number per statement.

تتعلق الأسئلة التالية بالتحكم بالسلوكيات المكتسبة: ومنها عوامل داخلية للفرد، مثل كمية المعلومات التي يمتلكها الموظفون ومهاراتهم أو قدراتهم. وأخرى خارجية تعمل على تسهيل أداء السلوك أو تتداخل معه. يتراوح المقياس من 1 (لا أوافق بشدة) إلى 5 (أوافق بشدة). يرجى اختيار رقم واحد فقط لكل عبارة.

• Perceived behavioral control.

Statement	Strongly Disagree لا أوافق بشدة	Disagree لا أوافق	Neutral محايد	Agree أوافق	Strongly Agree أوافق بشدة
1. If I wanted to, I could easily behave pro-environmentally in the workplace. يمكنني بسهولة التصرف بشكل مؤيد للبيئة في مكان العمل إذا أردت ذلك	1	2	3	4	5
2. Whether I perform pro-environmentally is entirely up to me. يرجع لي الأمر كلياً ما إذا كنت أرغب بتأدية سلوك مؤيد للبيئة.	1	2	3	4	5

Section C

The following questions are about **personal moral norms**: feelings of personal responsibility or duty to perform a behavior. The scale ranges from **1 (strongly disagree) to 5 (strongly agree)**. Please circle only one number per statement.

تتعلق الأسئلة التالية المعيار الأخلاقي الشخصي: الشعور بالمسؤولية الشخصية أو الواجب اتجاه أداء السلوك. يتراوح المقياس من 1 (لا أوافق بشدة) إلى 5 (أوافق بشدة). يرجى اختيار رقم واحد فقط لكل عبارة

• Personal moral norms

Statement	Strongly Disagree لا أوافق بشدة	Disagree لا أوافق	Neutral محايد	Agree أوافق	Strongly Agree أوافق بشدة
1. I feel guilty if I do not act pro environmentally at work. أشعر بالذنب إذا لم أقم بسلوك مؤيد للبيئة في العمل.	1	2	3	4	5
2. I feel morally obliged to act pro-environmentally at work,	1	2	3	4	5

أشعر بأنني مجبر أخلاقياً على القيام بسلوك مؤيد للبيئة في العمل،					
3. I feel proud when I act pro-environmentally at work. أشعر بالفخر عندما أقوم بسلوك مؤيد للبيئة في العمل.	1	2	3	4	5
4. I would violate my principles if I would not act pro-environmentally at work. سوف أخالف مبادئني إذا لم أقم بسلوك مؤيد للبيئة في العمل.	1	2	3	4	5

Section D

The following questions are about **perceived corporate social responsibility**: degree of employee's perception about the support provided by their employer to the CSR-related activities. The scale ranges from **1 (strongly disagree) to 5 (strongly agree)**. Please circle only one number per statement.

تتعلق الأسئلة التالية بالشعور المكتسب للمسؤولية المجتمعية للمؤسسات: والتي يحددها درجة إدراك الموظفين للدعم الذي يقدمه صاحب العمل للأنشطة المتعلقة بالمسؤولية المجتمعية للمؤسسات. يتراوح المقياس من 1 (لا أوافق بشدة) إلى 5 (أوافق بشدة). يرجى اختيار رقم واحد فقط لكل عبارة

• Perceived corporate Social Responsibility

Statement	Strongly Disagree لا أوافق بشدة	Disagree لا أوافق	Neutral محايد	Agree أوافق	Strongly Agree أوافق بشدة
1. Our business supports employees' education. تدعم مؤسستي تعليم الموظفين	1	2	3	4	5
2. Flexible company policies enable employees to better coordinate work and personal life. تمتلك مؤسستي سياسات مرنة تمكن الموظفين من تحقيق توازن أفضل بين العمل والحياة الشخصية	1	2	3	4	5
3. Our business gives adequate contributions to charities. تقدم مؤسستي مساهمات كافية للجمعيات الخيرية	1	2	3	4	5
4. A program is in place to reduce the amount of energy and materials wasted in our business. يوجد برنامج لتقليل كمية الطاقة والمواد المهدرة في مؤسستي	1	2	3	4	5
5. We encourage partnerships with local businesses and schools. نشجع الشراكات مع الشركات والمدارس الوطنية	1	2	3	4	5

Section E

The following questions are about **organizational citizenship behavior**: the positive and constructive employee actions and behavior that aren't part of their job description. The scale ranges from **1 (strongly disagree)** to **5 (strongly agree)**. Please circle only one number per statement.

تتعلق الأسئلة التالية بسلوك المواطنة المؤسسية: التصرفات والسلوكيات الإيجابية والبناءة للموظفين والتي لا تشكل جزءاً من الوصف الوظيفي. يتراوح المقياس من 1 (لا أوافق بشدة) إلى 5 (أوافق بشدة). يرجى اختيار رقم واحد فقط لكل عبارة

• Organizational citizenship behavior towards the Environment

Statement	Strongly Disagree لا أوافق بشدة	Disagree لا أوافق	Neutral محايد	Agree أوافق	Strongly Agree أوافق بشدة
1. I suggest new practices that could improve the environmental performance of my company. أقترح ممارسات جديدة من شأنها تحسين الأداء البيئي لمؤسستي	1	2	3	4	5
2. I encourage my colleagues to adopt more environmentally conscious behaviors. أشجع زملائي على تبني سلوكيات أكثر وعياً بالبيئة	1	2	3	4	5
3. I stay informed of my company's environmental efforts. أبقى على اطلاع بالجهود البيئية لمؤسستي	1	2	3	4	5
4. I make suggestions about ways to protect the environment more effectively. أقدم اقتراحات حول طرق حماية البيئة بشكل أكثر فعالية	1	2	3	4	5
5. I volunteer for projects or activities that address environmental issues in my company. أتطوع في المشاريع أو الأنشطة التي تعالج القضايا البيئية في مؤسستي	1	2	3	4	5
6. I spontaneously give my time to help my colleagues take the environment into account. أمنح وقتي تلقائياً لمساعدة زملائي مع مراعاة الأمور البيئية	1	2	3	4	5

7. I undertake environmental actions that contribute positively to my company's image. أقوم بإجراءات بيئية تساهم بشكل إيجابي في تحسين سمعة مؤسستي	1	2	3	4	5
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Section F

The following questions are about **intention to perform voluntary pro-environmental behavior**: the motivational factors that influence pro-environmental behavior. The scale ranges from **1 (strongly disagree)** to **5 (strongly agree)**. Please circle one answer per statement.

تتعلق الأسئلة التالية بنية الفرد على أداء السلوك التطوعي المؤيد للبيئة: والذي يعتمد على العوامل التحفيزية المؤثرة على السلوك. يتراوح المقياس من 1 (لا أوافق بشدة) إلى 5 (أوافق بشدة). يرجى اختيار رقم واحد فقط لكل عبارة.

• Intention to perform voluntary pro-environmental behavior.

Statement	Strongly Disagree لا أوافق بشدة	Disagree لا أوافق	Neutral محايد	Agree أوافق	Strongly Agree أوافق بشدة
1. I plan/intend to behave more pro-environmentally in the coming months. أخطط / أنوي التصرف بشكل أكثر تأييداً للبيئة في الأشهر القادمة	1	2	3	4	5
2. I will try to behave more pro-environmentally in the coming months. سأحاول أن أتصرف بشكل أكثر تأييداً للبيئة في الأشهر القادمة	1	2	3	4	5
3. I want to behave more pro-environmentally in the coming months. أريد أن أتصرف بشكل أكثر مراعاة للبيئة في الأشهر القادمة	1	2	3	4	5

Section G

The following questions are about **habit**: a routine of behavior that is repeated regularly and tends to occur subconsciously. The scale ranges from **1 (strongly disagree)** to **5 (strongly agree)**. Please circle one answer per statement.

تتعلق الأسئلة التالية بالعادة: وهي روتين لسلوك يتكرر بانتظام ويميل إلى الحدوث دون وعي. يتراوح المقياس من 1 (لا أوافق بشدة) إلى 5 (أوافق بشدة). يرجى اختيار رقم واحد فقط لكل عبارة

• Habit

Statement	Strongly Disagree لا أوافق بشدة	Disagree لا أوافق	Neutral محايد	Agree أوافق	Strongly Agree أوافق بشدة
1. Voluntary pro-environmental behavior is something I do frequently. غالبًا ما أقوم بالسلوك التطوعي المؤيد للبيئة	1	2	3	4	5
2. Voluntary pro environmental behavior is something I do automatically. أقوم تلقائيًا بالسلوك التطوعي المؤيد للبيئة	1	2	3	4	5
3. Voluntary pro-environmental behavior is something I do without having to consciously remember. لا أحتاج إلى تذكير للقيام بالسلوك التطوعي المؤيد للبيئة	1	2	3	4	5
4. Voluntary pro-environmental behavior is something that makes me feel weird if I do not do it. أشعر بالغرابة إذا لم أقم بسلوك تطوعي مؤيد للبيئة	1	2	3	4	5
5. Voluntary pro-environmental behavior is something I do without thinking. أقوم بالسلوك التطوعي المؤيد للبيئة بدون تفكير	1	2	3	4	5
6. Voluntary pro-environmental behavior is something would require effort not to do it. السلوك التطوعي المؤيد للبيئة هو شيء يتطلب بذل جهد في حال عدم القيام به	1	2	3	4	5
7. Voluntary pro-environmental behavior is something that belongs to my (daily, weekly, monthly) routine. السلوك التطوعي المؤيد للبيئة يعتبر من ضمن روتيني (اليومي، الأسبوعي، الشهري)	1	2	3	4	5
8. Voluntary pro-environmental behavior is something I start doing before I realize I'm doing it. أقوم بالسلوك التطوعي المؤيد للبيئة قبل أن أدرك بأنني أعمله	1	2	3	4	5
9. Voluntary pro-environmental behavior is something I would find hard not to do.	1	2	3	4	5

من الصعب عدم القيام بالسلوك التطوعي المؤيد للبيئة					
10. Voluntary pro-environmental behavior is something I have no need to think about doing. لست بحاجة إلى التفكير حتى أقوم بالسلوك التطوعي المؤيد للبيئة	1	2	3	4	5
11. Voluntary pro-environmental behavior is something that's typically 'me'. السلوك التطوعي المؤيد للبيئة هو سلوك يمثلني شخصياً	1	2	3	4	5
12. Voluntary pro-environmental behavior is something I have been doing for a long time. أقوم بالسلوك التطوعي المؤيد للبيئة منذ فترة طويلة	1	2	3	4	5

Section H

The following questions are about **voluntary pro-environmental behavior**: work behavior that is consciously displayed by employees at any organizational level, directed towards conserving and/or improving the natural environment and making an inhabitable planet for future generations by reducing resource consumption. The scale ranges from **1 (strongly disagree)** to **5 (strongly agree)**. Please circle one answer per statement

تتعلق الأسئلة التالية بالسلوك التطوعي المؤيد للبيئة: وهو سلوك يقوم به الموظفون في مكان العمل من جميع المستويات الوظيفية بغرض الحفاظ على البيئة الطبيعية أو تحسينها وجعل كوكبنا بيئة صالحة للأجيال القادمة عن طريق ترشيد استخدام الموارد. يتراوح المقياس من 1 (لا أوافق بشدة) إلى 5 (أوافق بشدة). يرجى اختيار رقم واحد فقط لكل عبارة.

• Voluntary Pro-environmental Behavior

Statement	Strongly Disagree لا أوافق بشدة	Disagree لا أوافق	Neutral محايد	Agree أوافق	Strongly Agree أوافق بشدة
1. I recycle as much as possible. أنا أعيد التدوير قدر الإمكان	1	2	3	4	5
2. I use scrap paper rather than new paper for notes. أنا أستخدم قصاصات الورق بدلاً من الورق الجديد للملاحظات	1	2	3	4	5
3. If I lived close to work, I would go to work by bicycle (or walking) rather than by car. إذا كنت أسكن بالقرب من مكان العمل، فساذهب إلى العمل بالدراجة (أو المشي) بدلاً من السيارة	1	2	3	4	5

4. I turn off the lights when I am the last to leave the office. أطفئ الأنوار عندما أكون آخر من يغادر المكتب	1	2	3	4	5
5. I turn off the lights in empty rooms when I pass them. أطفئ الأنوار في الغرف الفارغة عندما أمر بها	1	2	3	4	5
6. I turn off all my electronic devices at the end of the day. أقوم بإيقاف تشغيل جميع أجهزتي الإلكترونية في نهاية اليوم	1	2	3	4	5
7. If it was offered in our canteen, I would choose organic food and beverages. إذا كان متاحا لمكان تقديم الأطعمة في مكان العمل، سأختار الأطعمة والمشروبات العضوية	1	2	3	4	5
8. I use a new paper/plastic cup for each cup of coffee/tea. أستخدم كوبًا ورقيًا / بلاستيكيًا جديدًا لكل فنجان قهوة / شاي	1	2	3	4	5
9. I take care to turn off or down the cooling outside office hours. أحرص على إيقاف أو خفض أجهزة التبريد خارج ساعات العمل	1	2	3	4	5

Appendix C. ADU Letter for data collection



To: H.E Sumaya Al Hosani
The Dean of Abu Dhabi School of Government

Date: May 24, 2021

Subject: A Request for Administrative Approval for Collecting Data for Research Project.

Dear Madam,

I am a doctoral student in Abu Dhabi University conducting a research titled: "Antecedents to Voluntary Proenvironmental Behaviour of Employees (VPEB) in Public Organizations by (Stimulus–Organism -Response) Approach". The purpose of this study is to investigate which factor encourages employees to practice voluntary proenvironmental behaviour in public organizations from individual and organizational perspectives. The findings will enable organizations to develop strategies and policies that strengthen their formal corporate social responsibility programs. The study will help business owners and decision makers to contribute to institutions' environmental performance, saving natural resources, and promoting pro-environmental practices.

The researcher aimed to get responses from employees who are working in Abu Dhabi public organizations to be able to generalize the results based on the collected data from the targeted sample. Thus, the estimated sample size that researcher is aim to reach is between 400-600 completed surveys that is required to be answered by employees, wherein the survey solely intended to get the employees' perceptions about attitude, perceived behavioural control, personal moral norm, perceived CSR, organizational citizenship behaviour, intention to perform voluntary proenvironmental behaviour, and habit. There will be no experiments done; neither do we require personal employees' data for this research. Further, the survey will ensure anonymity of the participants and protection of their rights as the survey has the consent form at the beginning of the online survey. Public organizations employees' participation is voluntary, wherein they may withdraw at any point, the data will be used solely for academic research purpose. Your co-operation is very much appreciated and will be a valuable contribution towards the success of this research project.

Principal investigator: Sameera Mohamed Al Zaidi
DBA Candidate
College of Business, Abu Dhabi University

Supervisor: Dr. Shilpa Iyanna
Associate Professor of Marketing
College of Business, Abu Dhabi University



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دبي: أ.م.ع، ص.ب: 410896 | ت: +971 4 248 1555 | ف: +971 4 248 1501 | **تول فري:** 600 850003

www.adu.ac.ae

Appendix D. Letter showing AD SG support for survey distribution.

ABU DHABI SCHOOL
OF GOVERNMENT



أكاديمية أبوظبي
الحكومية

الرقم: AD SG/2021/DG/79
التاريخ: 29/06/2021

المحترمين،،،

السادة /سفراء أكاديمية أبوظبي الحكومية
السلام عليكم ورحمة الله وبركاته،،،

الموضوع : المشاركة في تعبئة استبيان مشروع بحث علمي

تهديكم أكاديمية أبوظبي الحكومية أطيب التحيات والتقدير متمنين لكم دوام التوفيق والسداد.

ضمن إطار توجه حكومة أبوظبي في دعم منظومة التعلم وتشجيع البحث العلمي نود مشاركتكم رابط استبيان لدراسة الدكتوراه بعنوان " السلوك التطوعي الداعم لبيئة الموظفين في المؤسسات الحكومية" وذلك لغرض مشاركته مع موظفي جهنكم الموقرة (المشاركة إختيارية).

رابط الاستبيان : <https://www.surveymonkey.com/r/LF2YP2G>

كما نود إفادتكم بأن الأكاديمية لا تتحمل أي مسؤولية اتجاه مشاركة المعلومات الخاصة بالموظف والتي قد نندرج ضمن المعلومات المذكورة في الإستبيان (إن وجد).

للإستفسار يرجى التواصل مع فريق علاقات الموظفين من خلال البريد الإلكتروني:

employeeerelation@adsg.gov.abudhabi

وتفضلوا بقبول فائق الاحترام و التقدير

سمية عبدالعزيز الحوسني

عميد أكاديمية أبوظبي الحكومية

Appendix E. Letter of support from Environment Agency – Abu Dhabi



Date :09/05/2021
Ref :EAD/EISOM/2021/484



To whom it may concern

Sameera M. Alzaidi
DBA Candidate
College of Business
Abu Dhabi University
Email: uae76ad@gmail.com
Phone: +971506610070

Subject: Letter in support to Abu Dhabi University research project entitled as "Antecedents to Voluntary Pro-environmental Behavior of Employees (VPEB) in Public Organizations from individual and organizational perspectives"

By way of this letter the Environment Agency – Abu Dhabi (EAD) confirms it's in principle support for the subject research.

EAD recognize the importance of understanding the antecedent factors affecting public sector employee's engagement in voluntary pro-environmental behavior. Gathering high quality data on perceptions, views, mindsets of stakeholders is an important input in engaging sectors of society in continuous improvement of environmental quality, ecosystem vitality and sustainability.

EAD caution the proponent that any survey of the public must be in full compliance with all relevant local regulations. EAD advise the proponent to get formal approval to perform any public survey from the relevant authorities including (but not limited to) Statistics Centre Abu Dhabi and Abu Dhabi Executive Office.

EAD bear no responsibility arising from the issuance of this letter.

Your Sincerely,



Ahmed Abdulmuttaleb Baharoon
Executive Director, Environmental Information Science & Outreach

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PO Box 45553 - Abu Dhabi - United Arab Emirates

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customerhappiness@ead.gov.ae
www.ead.gov.ae

Appendix F. Proofreading certificate

MELISSA LEFFLER

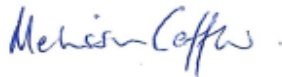
Freelance writer and editor

All types of editing and writing work undertaken

23 May 2022

To whom it may concern,

I certify that I have edited a draft of the dissertation "Understanding employees' voluntary pro-environmental behavior in public organizations – An integrative theory approach" for Sameera Al Zaidi.

A handwritten signature in blue ink that reads "Melissa Leffler".

Melissa Leffler