Green behavior at work of hospitality and tourism employees: Evidence from IGSCA-SEM and fsQCA

Abstract

Although the interplay among moral norms (MN), organizational support (OS), psychological ownership (PO), past green behavior, and green practice behavior (GPB) has been investigated separately in the hospitality and tourism literature, such investigations have been analyzed with the assumption of symmetrical perspective. This research provides additional information by applying both the symmetrical and non-symmetrical paradigms with an innovative methodological approach called the integrated generalized structured component analysis with fuzzy set qualitative comparative analysis (fsQCA). A survey with 277 respondents indicates that MN, OS, PO, and past green behavior can collectively and efficiently explain variations in GPB at work. Results from fsQCA identify four different combinations of configurations that can shape employees' behavior to perform green practices at work. In addition, MN is identified as a core factor and confirmed to be an indispensable condition to the occurrence of GPB. Moreover, this study tests and confirms all core tenets of complexity theory. Also, we address the potential sub-additive bias by relying on the perspective of the factor measurement model.

Keywords: Green practices in the workplace, Hospitality and tourism employees, Moral norms, Social norms, Perceived organizational support, Psychological ownership, Past green behavior, fsQCA, IGSCA, Complexity theory

Introduction

Among consumers and the public worldwide, the expectation is growing that businesses will take initiatives to decrease their negative environmental effects (De Bakker et al., 2019). Consequently,

several tourism-related businesses, such as Marriott International (Bethesa, 2020), Expedia Group (Cole & Allagnat, 2021), and Cathay Pacific Group (Cathay Pacific Airline Limited sustainability report, 2021), have reacted by undertaking high-level sustainability initiatives aimed at decreasing their adverse effects on the environment. The implementation of sustainability policies and performance targets, the employment of specialist personnel, and investment in new operational and training systems are examples of such initiatives. However, numerous academics believe that sustainability must be ingrained and included in an organization's comprehensive sustainability strategy for it to be a practical (Engert & Baumgartner, 2016).

Regardless of how significant the strategic effort exerted by the management team, the responsibility of individual workers in achieving environmental sustainability is comparably crucial (Ababneh, 2021). In fact, employees may create and advocate workplace sustainability projects (Tuan, 2020). Furthermore, strategic goals, regardless of how good they are, cannot be accomplished without the active support and involvement of individual workers. However, engaging team members is a challenging task, and sustainable habits are optional rather than mandated for most workers. Consequently, the cumulative environmental effect of a corporation is influenced in part by the daily discretionary choices made by individual workers. Although the influence of one individual's actions may seem insignificant, their collective effects are substantial (Unsworth et al., 2020). Consequently, comprehending the elements that influence the decisions of individual workers to participate in environment-friendly practices and the ramifications for enterprises and, by extension, the environment is critical.

The current research examined factors related to eco-friendly practices at work, which are defined as green practice behavior (GPB) not specified in official job descriptions that help make an organization or the society more sustainable through the combined effort of individual

employees. Turning off lights when not in use, printing on double-sided paper and drinking from reusable beverage containers are examples of such activities. Although GPB at work in the tourism industry has been eliciting interest among scholars, empirical research on the components associated with such behavior remains limited. Studies have sought to explain GPB in accordance with several theories, including the theory of planned behavior (TPB), norm activation model (NAM), value–belief–norm (VBN) theory, psychological ownership (PO) theory, and theory of green purchase behavior (Han, 2020). These theories have been extensively evaluated based on the symmetrical paradigm. This study also answers the call to use asymmetrical testing to learn more about the research. Symmetrical testing (e.g., SEM) tries to explain a dependent variable by figuring out how the scores of independent variables vary in the same way (variance-in-common). This variance-in-common is low primarily because false positive or negative cases happen (Prentice, 2020). False positives (negatives) are the circumstances in the dataset where the model says all the scores should be low (high), but in some situations, they have high (low) scores. Traditional analysis using NHST (such as SEM), the dominant method in social science research, does not directly consider false positive and negative cases. Researchers have recently started questioning whether relying only on an NHST that uses a single SEM analysis method is safe. For example, Hubbard (2015) calls these tests "corrupt research." Even the Journal of Basic and Applied Social Psychology (BASP) agreed that NHST doesn't tell the reader how advantageous the model is for forecasting an outcome (Trafimow, 2014; Trafimow & Earp, 2017). Therefore, the need for an asymmetrical approach is driven by the drawbacks of symmetrical testing.

One of the asymmetrical methodologies, known as fsQCA, has gained significant attention as a scientific way to reflect the usability or appropriateness of an investigative framework in forecasting a particular result of interest as calls for study on the elimination of NHST gain strength

globally. fsQCA is a method that uses Boolean logic to identify several combinations of independent variables that produce a particular outcome of interest equally. Although complexity theory is not a brand-new concept, social science academics have recently become more interested in applying it. Since there is a desire to blend symmetrical and asymmetrical methodologies to reveal the complexity of social science phenomena better, researchers in tourism have become aware of the limitations of depending solely on symmetrical analysis. Pappas published a technical note highlighting the tenets of fsQCA (T1: asymmetry, T2: equifinality, and T3: conjunctural causation) that are backed by complexity theory due to the expanding significance of the approach. This study methodologically adds values by complementing the symmetrical analysis (IGSCA-SEM) with an asymmetrical technique (fsQCA).

The objective of this research is twofold. First, we test the green behavior model that constitutes the most potential parsimonious constructs grounded from the previous literature (unifinality). Second, in accordance with the first objective, the current study adopts asymmetrical paradigm to identify various configurations in explaining pro-environmental behavior in the workplace. Consequently, our study supplements the standard symmetrical viewpoint by examining this complicated behavior from the variable-based and case-based perspectives.

Literature review

According to the Norm Activation Model (NAM), green behavior is more likely when an individual feels ethically obligated to take action (Ritchie et al., 2022). When triggered by situational conditions, personal norms affect (green) behavior (Meng et al., 2020). Individuals must be aware of and accept responsibility for the harmful effects of anti-environmental behavior. Prior research evidence in NAM literature shows that the more people's awareness and sense of

responsibility for environmental issues, the more they will view their efforts to decrease these issues as beneficial (Manosuthi et al., 2020). This perception activates personal norms, which, in turn, enhance the possibility of conducting green. The NAM successfully predicted individual pro-environmental behavior, such as adopting a pro-environmental policy or environmental advocacy. Some components included in NAM, such as ascribed responsibility and moral norms, also influenced pro-environmental behavior in the workplace (Gadenne et al., 2009). This study identified attributed responsibility, moral norms, and green practice behavior as fundamental components of NAM.

In addition, the research expands the NAM framework to include environmental value, which is supported by the Value-Belief-Norm theory (Han, 2021). This theory posits that values can trigger awareness and ascription of responsibility via the lens of ecological worldviews. The underlying assumption is that humankind is a part of nature (New Environmental Paradigm), which contrasts with the traditional social paradigm that humankind rules over the heart. This implies that a person's values determine how much they will accept this positive paradigm. That is, environmental or biospheric values are typically connected with people who perceive plants, animals, and other people as part of themselves, which leads to higher support for this positive paradigm. Additionally, the notion of connections between self and other objects of possessions can be explicated via the psychological ownership theory (Jussila et al., 2015). When applied to the organizational context, we proposed that this theory may enhance the reach of initiatives that encourage workplace green practice behavior.

The abovementioned overarching theory presumes that the evaluation of reasoned choices results in green practice behavior. However, frequent behavior can be translated into a habit. People frequently engage in environmental activity without thinking about the consequences or

making any objectives beforehand; instead, they are led by automatic cognitive structures (Klöckner & Verplanken, 2018). The more often this happens, the association gets more robust and more accessible access to. This makes it more likely that the behavior will be repeated the next time these situational cues are seen. Because of this, people don't have to think about everything they do. This makes it easier for them to use their limited mental resources in the best way possible. This study adds value to the existing overarching theory by accounting for the significance of habit, which has been ignored in the previous literature. Hence, the abovementioned theories support all variables and hypotheses developed in this study.

GPB in the workplace and moral/personal norms

The general public believes that firms are responsible for reducing their ecological consequences and contributing to global eco-friendly practices (De Bakker et al., 2019). Although the exact nature of such responsibility is still being contested, global industry leaders have concurred that businesses play a crucial role in attaining sustainability (Han et al., 2020). Instead of interacting with external stakeholders, several organizations have implemented supporting programs to encourage their employees to engage in environment-friendly conduct at work (Farooq et al., 2021). The pro-environmental behavior of employees, called employees' green practice at work, is an example of workplace behavior that is congruent with a company's socially and environmentally responsible values, beliefs, and goals. Furthermore, participating in a pro-environmental activity in an environmental setting is considered a moral imperative for employees, as stated by Zhang et al. (2013). Moral responsibility functions as an internal motivator for activities; thus, people with personal norms are more likely to engage in pro-environmental behavior (Manosuthi et al., 2020).

When MN is engaged, it exerts an effect on a person's pro-environmental conduct. Individual personal standards are aroused when people become cognitively aware of the adverse effects of their non-green activities and accept part of the responsibility for the repercussions (Han, 2020). MN has contributed to the explanation of environmentally responsible behavior in a variety of areas, including energy-saving worker behavior (Lopes et al., 2019), green human resource management (Fawehinmi et al., 2020), and employee green behavior in restaurants (Cho & Yoo, ahead-of-print). These pieces of evidence from the prior literature conducted in varied circumstances indicate that an individual's ecological norm is a critical motivator for ecologically responsible behavior.

Social/subjective norms

Several studies have been conducted to investigate the influences of normative concerns on environmental decision-making and behavior (Steg & Vlek, 2009). The notion of normative behavior distinguishes between descriptive and injunctive social norms (SN). Descriptive SN is associated with typical conduct in a particular scenario. In accordance with Cialdini et al. (1990), descriptive norms represent what a person believes other people do in a specific context. Descriptive norms influence public and private conduct by educating people about which activities are likely to be efficient and adaptable in a given setting. In contrast with descriptive norms, injunctive norms are related to other people's perceived expectations from a specific activity. Injunctive norms are what an individual believes other people expect him or her to behave in a specific scenario (Cialdini et al., 1990). Considering their different characters, Cialdini et al. (2006) argued that two types of subjective norms play an unequal role in promoting pro-environmental intention. However, injunctive norms tend to drive behavior in an wide variety of

contexts, inspiring an individual's activity in the proximate sector where the behavior of others emerge and may be readily noticed (Albrecht et al., 2017; Jacobson et al., 2015). Thus, the current research adopted the concept of injunctive norms as a core study.

As stated by Cestac et al. (2014), the effect of complying with others' positive expectations is known as normative social influence, which includes injunctive and descriptive norms. A morally appropriate action is organically driven by a person's self-expectation while complying with collective standards, or the expectations of others are reflected in SN. Personal norms are derived from the inside, whereas societal standards are imposed from the outside. SN that acts as normative activator frequently precedes personal standards and serves as inspiration for altruistic action (Pereda et al., 2017). People's norms and intention to travel in an ecologically responsible manner were reported to be affected dramatically by their SN by Doran and Larsen (2016). These authors also determined that SN compels people to take pro-environmental measures even while traveling. Hence, hypothesizing that this injunctive influence plays a crucial role in encouraging environment-friendly behavior through MN is logical.

Ascribed responsibility (AR) and perceived environmental value (EV)

The modern world recognizes environmental damage to the environment as the world's most pressing problem; thus, responsibility has arisen from the freedom to act in a specific situation, implying that people who can choose among different alternatives can be considered responsible for their behavior (Schrader, 2007). In this context, AR may be defined as sentiments of responsibility for the negative repercussions of not behaving prosocially or an individual's sense of personal commitment to the environment (De Groot & Steg, 2009). That is, the environmental behavior of people improves when they are aware of their detrimental influence on the

environment and feel jointly accountable for the consequences. By contrast, when people feel a low level of AR, the linkage degree tends to weaken. The unsustainable conduct of individuals may have long-term direct, indirect, and cumulative adverse effects on the environment. Being aware of these adverse implications from an employee's viewpoint is likely to affect decision-making toward environmentally responsible work behavior in a business. Employees who believe they are accountable for environmental issues created by their actions are more inclined to participate voluntarily in green consumption (Babiak & Trendafilova, 2011). They may also exhibit more ecological behavior in their organization. A large number of prior studies have also confirmed the importance of responsibility sentiments (societal and personal responsibilities) as predictors of moral standards and ecological behavior (e.g., Babiak & Trendafilova, 2011; De Groot & Steg, 2009; Schrader, 2007). Hence, assuming that AR can trigger MN is possible.

In addition, several studies have established that concern for EV is a prelude to activating an attributed obligation. Fundamental ideas regarding EV indicate a concern for the biosphere and focus on environmental quality because of the benefits it gives to humanity. Ecologically conscious people are concerned about the environment and make decisions on the basis of necessary trade-offs (Steg et al., 2014). Therefore, EV is regarded by researchers as a prerequisite for studying green behavior in various contexts (De Groot & Steg, 2009; Han, 2020). EV has been identified as a strong predictor of environmental behavior intention, norms, and attitudes in accordance with previous green behavior studies (Han, 2020). That is, EV may be used to predict norms and responsibilities to a certain extent. A person's environmental conduct has been demonstrated to be closely connected to their EV orientation. In accordance with the green behavior literature, EV has been recently suggested as the initial step in activating moral standards (Han, 2020). In accordance with this notion, the sequential process begins with the presence of

EV. Activating an ecological perspective, being aware of the repercussions, and assigning responsibility are all presumed effects of EV. Hence, for the sake of parsimony, the following assumption is reasonable: if the premise of a sequential process is correct, then EV is a precondition for assigning responsibility.

PO, organizational support (OS), and green behavior

A cognitive–affective state of mind in which people develop feelings of ownership for a wide variety of physical and intangible objects is known as PO. It is the feeling that something belongs to you. Organizational outcomes, including work motivation, job satisfaction, organizational commitment, organization-based self-esteem, and work performance, depend on an individual's sense of personal PO (Pierce et al., 2009). Possession leads to the proactive intention of a person to preserve and strengthen his/her owned object; it is linked to the distinct organizational citizenship behavior of team members to safeguard and strengthen their possessions (Van Dyne & Pierce, 2004). Employees are more willing to compromise when they feel that they have a stake in the company because PO fulfills their need to belong. PO is assumed to increase organizational citizenship behavior because of the endowment effect (Reb & Connolly, 2007), which argues that individuals value things that they own more than similar ones that they do not own. In Chang et al. (2012), the endowment effect was empirically supported by the fact that organizational citizenship behavior is evident when employee' sentiments of ownership toward their firm is warranted. This employee–organization link is considered adequate for fostering green behavior in the workplace. Therefore, it is reasonable to presume that employees who feel like they have control over the substance of their work will probably be more engage in pro-environmental activities if their organization supports such behavior.

Past behavior

When people think of green behavior, they frequently assume that it is a habit that benefits the environment. For example, many individuals regard energy-saving effort in their daily life as environment-friendly behavior. One of the key reasons for environmentally relevant consumer patterns is consistent ecologically beneficial activities. Stable habits also reduce the need to constantly seek for and utilize situational knowledge (Klöckner & Matthies, 2004). Predicting future behavior on the basis of past behavior, which refers to instinctive action triggered by relevant contextual input, is common (Perugini & Bagozzi, 2001). Ouellette and Wood (1998) implied that people are more prone to behave in a manner that they have frequently undertaken in the past; therefore, past behavior can predict future behavior. Hence, it is logical to hypothesize that past green behavior can predict the current green behavior.

Complexity theory

Complexity theory posits that the outcome can be the result of a combination of different potential events. It assumes that three core tenets (asymmetry, equifinality, and conjunctural causation) can be present in any complex situation (Fiss, 2007). Complexity theory is widely used to gain additional insights into an outcome, such that its observation becomes potentially heterogeneous in nature. Hence, complexity theory is highly applicable when we aim to determine how different situations can come up with the same answer. Similarly, the current research anticipates that the GPB of employees at work will result from complex interactions among multiple antecedents. Consequently, we may gain an additional understanding of how employees' GPB occurs in terms

of several configurations that work together to explain this outcome by applying complexity theory.

fsQCA is an analysis that integrates the deductive reasoning and methodological rigor of case-based oriented qualitative techniques that gather rich contextual information with variable-oriented quantitative methods that cope with many cases, consequently producing much more generalizable analytical inferences (Acquah et al., 2021). According to the fsQCA theory, set membership is frequently the most useful concept for understanding interactions between constructs. Set membership reveals kind distinctions. Determining necessary and sufficient subset relations (or conditions) is the goal of the analysis, which is based on Boolean algebra. The fsQCA terminology refers to the independent variables as antecedent or causal conditions and the dependent variables as outcomes. By turning study variable scores into set membership scores for Boolean analysis, fsQCA entails calibrating raw data. Theoretical and practical knowledge are crucial parts of the calibration process, which enables flexibility in defining set membership, from a crisp set (0 and 1) to a continuous fuzzy set ([0,1]). The results that fsQCA produces may be divided into three tenets (Prentice, 2020), representing the fundamental ideas of complexity theory (Mehran & Olya, 2020). Asymmetrical associations are demonstrated by fsQCA, which shows variables causally correlated in one configuration but irrelevant or negatively related in another (Lee, 2022). Several equally viable alternatives to the same result are found using fsQCA, thus proving the equifinality (Romero-Castro et al., 2021). Conjunctural causation is demonstrated by fsQCA, which reveals that the combination of the linked indicators, rather than the size of the standalone indications themselves, determines the influence of predecessors on a given event (Romero-Castro et al., 2021). This study acknowledges the necessity to apply asymmetrical methodologies to supplement the symmetrical analysis to capture the complexity of the social

science phenomena by testing three core tenets of the complexity theory based on fsQCA: T1 asymmetry, T2 equifinality, and T3 conjunctural causation

Unifinality perspective:

H1: The key constructs can collectively explain the variation in employees' green behavior. They include

H1a: EV exhibits a positive relationship with AR,

H1b: AR exhibits a positive relationship with MN,

H1c: SN exhibits a positive relationship with MN,

H1d: MN exhibits a positive relationship with green behavior at work,

H1e: PO exhibits a positive relationship with green behavior at work,

H1f: OS exhibits a positive relationship with green behavior at work, and

H1g: Past green behavior at home exhibits a positive relationship with green behavior at work.

Methodology

Measurement

All the research variables were measured using a seven-point scale with several different items. Questionnaires for measuring EV, AR, MN, and environment-friendly conduct at work were adopted from earlier research (Bamberg et al., 2007; Han, 2015; Han, 2020; Onwezen et al., 2013). Moreover, questions regarding social and environment-friendly practices at home (EFPH; past behavior) in daily life were amended on the basis of the information provided by the participants in their replies to the open-ended question and information from prior research (Han, 2020;

Perugini & Bagozzi, 2001). In addition, six items were utilized to provide OS, and five items were used to provide PO (Han, 2015; Han, 2020). After pretesting with hospitality academics and practitioners, the survey questionnaire, which contained the measurement questions, was slightly modified in response to their comments. The questionnaire was examined by two professors, who are both specialists in tourism management.

Data collection

Data were collected by using a web-based survey. The prepared questionnaire was sent to general hospitality clients in Korea via a survey mechanism provided by an online market research organization. We also utilized the firm's database to select samples randomly from a pool of candidates. A description of the study was provided to entice possible respondents. Only personnel who had worked in the tourist business were asked to participate in the online survey. These potentially eligible respondents were instructed to access the survey questionnaire by clicking on the link provided in the survey invitation e-mail that they received. They were also asked to read the questions thoroughly and complete the questionnaire before submitting it. A total of 346 cases were usable. The data were divided into training (277) and testing (69) datasets, which were subsequently utilized in the data analysis.

Males accounted for 41.1% of the 336 respondents, while females accounted for 58.9%. The participants ranged in age from 19 years to 59 years, with 39.8 years as the average. Approximately 40.2% of the participants indicated that their annual income was between $40,001 and $70,000, followed by those earning $40,000 or less (31.1%), those earning between $70,001 and $100,000 (20.2%), and those earning $100,001 or more (8.5%). Approximately 67.4% of the respondents had a college degree, 18.9% were graduate degree holders, 10.5% graduated from 2-

year college courses, 3.2% were high school graduates, 0.1% had lower educational level. Approximately 40.1% of the respondents had worked in the hotel, resort, or lodging industry, followed by the restaurant sector (33.2%), the meeting and event sector (14.4%), and the remaining 12.3% worked in the airline, theme park, cruise line, travel agency, park recreation, and other industries.

Analysis procedure

The assessment of the reliability and validity of the items for the factor models was initially conducted through a series of evaluations of construct reliability and convergent/discriminant validity recommended by Benitez et al. (2020) and Manosuthi et al. (2021). Construct reliability was examined using alpha (α) and DG-rho (ρ) with a cutoff value of 0.6. To achieve an acceptable level of convergent validity, the average variance extracted (AVE) and loadings must be greater than 0.6. To assess the discriminant validity of factors, the 0.9 cutoff criterion of CI_{CFA} (sys) and χ^2 (sys) was selected over the traditional heterotrait–monotrait (HTMT) ratio because the former does not involve the parallel assumption of HTMT, which requires the validation of the equal variances and covariances of indicators (Rönkkö & Cho, 2020).

Our structural equation modeling (SEM) analysis comprised a systematic four-step procedure (Fakfare et al., 2021). First, we prepared two competing models: (1) the constrained path coefficient between factor and composite GPB and (2) the unconstrained model. Second, these models were fitted using the full-information integrated generalized structured component analysis (IGSCA) framework to account for the bias from the mixed factor–composite measurement models (Hwang et al., 2020). In this step, overall model fit was assessed on the basis of the goodness-of-fit index (GFI) and the standardized root mean square residual (SRMR) with

cutoff values of 0.93 and 0.08, respectively (Cho et al., 2020). Third, the bootstrapping fit difference was calculated on the basis of the IGSCA approach. Fourth, the choice between the constrained and unconstrained models depended on the result of the confidence interval fit difference with 1,000 bootstrap samples. Subsequently, the latent and composite scores were imputed under the IGSCA approach to the subsequent calibration by using logistic regression as input for the contrarian case, necessary condition, and fsQCA

In asymmetrical analysis, calibration is a vital process. It involves transforming raw numerical data into set membership scores based on a set of qualitative anchors or thresholds. Experts assign fuzzy scores as they deem fit and their areas of expertise in a direct assignment technique. The different points may have some theoretical basis. Another technique to avoid unintentional bias from the direct assignment is the application of logistic regression. The purpose of the calibration procedure is to get membership ratings that range from 0 to 1 accurately. Logistic regression is widely used to assign membership scores (Duşa, 2018) nonlinearly. This study thus applies logistic regression and follows the recommendation step in Duşa (2018) to give membership scores of all cases rather than using direct assignment since it could introduce bias from researchers.

Results

Reliability and validity

Using a self-report approach to test the predictor constructs and the outcome variables, this research may be prone to the problem of common method bias. Harman's single-factor test was used in the present study to check for common method bias. After all the items were loaded into a

shared component using PCA, a rotated variance of 13.281% was reported, suggesting that common method bias is not a significant problem.

The alpha and rho coefficients were used to determine reliability, as indicated in Table 1. All reliability estimates are greater than or equal to the threshold values (alpha > 0.6, rho > 0.7, and AVE > 0.5), indicating construct reliability. Construct validity was determined using convergent and discriminant validities. Given that all the items in Table 1 had standardized loadings of more than 0.6, inferring a significant support for convergent validity was reasonable. In addition, the discriminant validity of the confirmatory factor analysis (Table 2) was established because its upper limit was smaller than the cutoff value. Thus, the data suggested that the measurement met the most fundamental requirements for reliability and validity.

Insert TABLE 1

Insert TABLE 2

Structural and constrain analysis

As shown in Table 3, we calculated and compared the fit indices for the constrained (Model 1) and unconstrained (Model 2) models to determine the validity of assuming that the dependent construct was triangulated. IGSCA indicated that for the constrained model, FIT = 0.738, GFI = 0.978, and SRMR = 0.056. For the unconstrained model, FIT = 0.741, GFI = 0.977, and SRMR = 0.055. When observations exceed 100, recent simulation research in the GSCA literature suggests that the GFI cutoff should be more than 0.93 and that of SRMR should be less than 0.08 (Cho et al., 2020). Consequently, our fit indices (GFI = 0.978/0.977 and SRMR = 0.056/0.055) suggested that both models were extremely well fitted. The difference in FIT between the constrained and

unconstrained models was then determined using 1,000 bootstrap samples. IGSCA indicated that the FIT difference was −0.011, and the 95% confidence interval was [−0.039; 0.007]. Therefore, empirical evidence supported the conclusion that the constrained model (Model 1) was superior, indicating that we may benefit from the overall model robustness by triangulating the measurement constructs as previously stated.

Insert TABLE 3

The overall evaluation fit indices for the unconstrained model exhibited the significance of the FIT family in the overall assessment. In particular, this model accounted for 73.8% of the total variance of all the variables inside the model (FIT = 0.738), indicating that this model is highly predictive. On this basis, an analysis of the measurement model's explanatory power showed that FITm = 0.853, indicating that the measurement model accounted for 85.3% of the entire variance in all the indicators. Furthermore, the structural model explained approximately 20.3% of the overall variance in both latent components and composites (FITs = 0.203).

Given that GPB(c) can thoroughly explain the variance in GPB(f) as previously suggested, MN exerted a statistically significant and positive influence on GPB(f) (Figure 1). By contrast, MN had a statistically negligible effect on GPB(c). Moreover, OS, EFPH, and PO exerted statistically significant and positive effects on GPB(c) and GPB(f) (see the Appendix). In accordance with sequential NAM, EV exhibited a statistically significant and positive effect on AR, which exerted a statistically significant and positive impact on MN. On the basis of the structural model evaluation results, concluding that OS and EFPH are crucial predictors of GPB is possible.

The post hoc endogeneity test was conducted using the Wu-Hausman test. The statistically insignificant results from Wu-Hausman led to the rejection of the null, which stated that variables suspected to be endogenous are uncorrelated with the error term of GPB. Thus, the problem of endogeneity is not a significant concern.

Insert FIGURE 1

Contrarian case and necessary condition analysis (NCA)

To account for potential measurement errors, we imputed the IGSCA latent and composite scores in preparation for the calibration and contrarian case analysis. The IGSCA latent and composite scores were calibrated into fuzzy set scores on the basis of the logistic function ranging from 0 (full nonmembership) to 1 (complete membership) during the calibration step in fsQCA (full membership). Three thresholds were established in the current study: 7 denoted full membership with a value of 1, 4 denoted a crossover point with a value of 0.50, and 1 denoted full nonmembership with a value of 0 as previously recommended (Afonso et al., 2018). Calibration was performed using R programing. We divided the calibrated dataset equally by using quintiles. Thereafter, we ran cross-tabulations across quintiles, resulting in the contrarian instance shown in the Appendix. Again, we found contrarian examples at the bottom left and top right, indicating the variability that the primary effect cannot account for.

We performed NCA to determine the necessary conditions for pro-environmental behavior (Table 4). In accordance with our study, the three primary antecedent circumstances were OS, EFPH, and MN. When a condition's consistency value exceeds 0.9, it is called "necessary." Table

4 indicates the existence of EFPH (consistency = 0.915 and coverage = 0.896), OS (consistency = 0.907 and 0.865), and MN (consistency = 0.903 and 0.834) as essential requirements, but no absence conditions are necessary. These results imply that prior green conduct at home, OS, and adherence to MN are important prerequisites for understanding pro-environmental behavior at work.

Insert TABLE 4

Sufficient condition analysis (SCA) and its predictive power

By conducting sufficient condition analysis, we determined whether circumstances and diverse causal configurations are sufficient to account for the occurrence of GPB. First, all possible formulas that provide the same outcome were identified by building a truth table and applying logical minimization to the table. As a starting point, the raw consistency and proportional reduction inconsistency (PRI) scores were both set as 0.90. Then, the fsQCA approach was used to extract intermediate, parsimonious, and complex solutions for pro-environmental behavior, with the frequency threshold set as 3. As a consequence of these findings, we distinguished between core and peripheral conditions of the outcome, wherein a core condition suggested a more significant causal association with the outcome while a peripheral condition indicated a weaker causal relationship.

Our analysis of essential and sufficient criteria is summarized in Table 5. Four configurations with a consistency coefficient of 0.912 were determined to be associated with green behavior. These configurations accounted for 68.4% of observed green behavior. In Table 5, a complete black circle (●) denotes the existence of a condition associated with a core condition, an

open loop (○) represents the absence of a condition, and a peripheral black ring (⦿) denotes a peripheral condition related to the configuration. MN established sufficient fundamental antecedents of the conclusion based on the parsimonious solution. Necessary conditions were also considered core conditions; thus, we highlighted that EFPH, OS, and MN were core antecedents of workplace green behavior. The other components were considered peripheral antecedents.

Configuration 1 consisted of a mixture of core (EFPH, OS, and MN) and peripheral (PO) variables and was devoid of SN and AR factors. This setup had a coverage of 0.318 and a consistency of 0.967, explaining 31.8% of green behavior occurrences. By contrast, Configuration 2 had a maximum coverage (0.536) and explained 53.6% of the variance in the result. That is, EFPH, OS, and MN played a significant role in developing the two formulae. Furthermore, EFPH and OS were not included in Configurations 3 and 4, respectively. In Configuration 3, when SN, AR, and EV were absent in the combination, the presence of PO was necessary to maintain GPB at work (consistency = 0.81, coverage = 0.146). Configuration 4 indicated that under the assumption that all elements in the sequential model of norm activation exist, we disregard the presence or absence of PO to sustain green behavior (consistency = 0.866, coverage = 0.162). To ensure the usability of the model, we tested it on our testing dataset. The result achieved a high level of predictive validity (Figure 2).

Insert TABLE 5

Insert FIGURE 2

Evaluation of all core tenets based on fsQCA

In addition to the traditional unifinality analysis, this study offers an asymmetrical method based on fsQCA to test all core tenets of complexity theory, comprising asymmetry, equifinality, and conjunctural causation. Findings confirm the merits of all core tenets of complexity theory and provide more significant insights that the traditional SEM cannot capture. Table 6 summarizes the result of testing all core tenets of complexity theory using fsQCA.

Insert TABLE 6

Asymmetry

The results from fsQCA confirm the asymmetrical relationships among the study variables. The asymmetrical set relations, as shown in the contrarian case (Appendix), indicate that both high and low scores for all the same simple antecedents likely appear for the same outcome. IGSCA-SEM reveals that moral norms do not affect the composite green practice behavior. However, the results from fsQCA indicate that moral norms appear to explain the occurrence of green behavior in all four configurations. Similarly, contrarian case analysis confirms the asymmetrical effect of moral norms on green behavior. 8.31% of a high score on moral norms generates low scores for pro-environmental behaviors, while 10.11% of high scores on moral standards lead to a low score on green behavior. Therefore, these results confirm asymmetrical relationships between the identified antecedent condition and green behavior.

Equifinality

Equifinality, by definition, is coined as the same outcome (the occurrence of green behavior) that multiple paths and solutions can reach. While symmetrical testing (SEM) confirms the validity of

the proposed model, asymmetrical analysis shows several ways that moral norms with various combinations of other different antecedents (4 different paths) lead to the creation of green behavior with appropriate solutions coverage and consistency. Hence, equifinality is supported.

Conjunctural causation

Our findings reveal that multiple combinations of green behavior antecedents account for each proposed outcome. Each factor, either with a high or low score, appears in different configurations and is combined with other elements to explain the results. In addition, the effect of antecedents on the creation of green behavior is determined by how moral norms are integrated with other peripheral conditions (e.g., green habits at home, support from the organization, or psychological ownership as presented in the first configuration) can explain the occurrence of green behavior at work, rather than depending on the effect size of the standalone indicator as defined by the traditional symmetrical approach. Therefore, conjunctural causation is confirmed.

Insert TABLE 6

Discussion

MN is considered a core component in elucidating pro-environmental and prosocial behavior in various situations (De Groot & Steg, 2009; Fawehinmi et al., 2020; H. Lu et al., 2020). While PO, OS, and past green behavior at home have been introduced as antecedents of green behavior in the workplace, the merged theories between normative theory and NAM are proposed as MN activators to trigger GPB at work. The unique feature is that we measured GPB from holistic and specific behavior perspectives to minimize potential bias generated from respondents. Furthermore, IGSCA is applied because this technique can impose model constraints to triangulate

and enhance the accuracy of GPB measures. The findings of the unifinality method shed light on the interplay among focal constructs that underpin the process of GPB at work and provide an improved understanding of how MN interacts with existing significant pro-environmental behavior determinants in creating green behavior at work. In summary, the proposed model fits extremely well with the empirical data as hypothesized in H1.

Consistent with the previous literature (Bamberg et al., 2007; Cialdini et al., 1990; De Groot & Steg, 2009; Doran & Larsen, 2016; Fawehinmi et al., 2020; H. Lu et al., 2020), our results support the argument that MN positively and significantly transmits the effects of AR and SN to GPB (H1a–H1b–H1c–H1d). Therefore, they demonstrate that normative theory and NAM yield an appreciation of the mediating role of MN. In addition, the findings indicate that PO, OS, and green behavior at home contribute considerably to eco-friendly work behavior (H1e–H1f–H1g), supporting prior pro-environmental behavior literature, which states that these variables can be introduced into a model to explain this complex behavior better (Chang et al., 2012; Ouellette & Wood, 1998; Pierce et al., 2009; Van Dyne & Pierce, 2004).

With the most considerable standardized regression weight to the holistic view of GPB at work, MN is determined to be the strongest predictor of the three direct predictors (OS, EFPH, and PO). This finding lends credence to the notion that MN is an indispensable explanatory factor for this desirable behavior at work. However, MN exerts an insignificant effect when measuring GPB at work from the perspective of specific diverse behavior. This unexpected outcome can be partly attributed to the sub-additive bias that arises from a holistic view. That is, people may assign various grades to an incident depending on how it is described, resulting in widely divergent conclusions. For example, Tversky (1994) asked their Stanford undergraduate students to determine the chance of mortality due to numerous potential causes of seven types of cancers,

namely, respiratory cancer (12%), digestive cancer (8%), genitourinary cancer (5%), breast cancer (13%), urinary cancer (7%), leukemia (8%), and other types of cancer (17%), given the natural cause of death. Through a comparison with its holistic view (32%), they determined that the total of the mean estimates of the implicit disjunction's components is less than the mean estimate of the implicit disjunction itself (e.g., death from cancer). This case is similar to what we encountered given that the implicit disjunction of GPB is different from its components due to the effect of sub-additive bias.

The empirical findings show that moral standard exhibits a more ambiguous relationship with green behavior than PO, OS, and EFPH. Nevertheless, our results highlight the value of moral standard. Furthermore, given the presence of the contrarian situation, the findings of NCA demonstrate that moral standard represents essential circumstances for green conduct at work assessed from a diversified behavioral perspective. Consequently, moral standard cannot be eliminated from the model.

In further examinations with sufficient conditions, fsQCA shows that the proposed tenets (T1, T2, and T3) are empirically supported. In addition, it indicates that pro-environmental work behavior may be determined by four distinct combinations of cognitive elements (EV, AR, MN, PS, and OS), normative elements, and past behavior. Among the four configurations, only moral standard is present in all four configurations that lead to environment-friendly working habits, and it is also the backbone. On the basis of these findings, moral standard can be safely regarded as an indelible factor in motivating people to practice ecologically friendly behavior. In addition, PO is determined to affect pro-environmental behavior in the workplace in three formulas. Nevertheless, one formula suggests that PO is not required if the coexisting conditions of OS, EFPH, MN, SN, AR, and EV can be identified. That is, as long as MN is active, along with aid from the organization

and regular green conduct at home, ideal green behavior at work may be achieved without the occurrence of PO.

Theoretical implications

The current study adds to the body of knowledge on workplace pro-environmental behavior by elucidating how individual- and organizational-level variables interact to affect workers' pro-environmental conduct in several ways. First, our study responds to the call for more research to verify the mechanism that drives the relationship between potential antecedents and pro-environmental workplace behavior (Ababneh, 2021; Fawehinmi et al., 2020; Unsworth et al., 2020; Van Dyne & Pierce, 2004; Zhang et al., 2013). In doing so, we provide an additional explanation on how organizational rules and employees' previous green behavior adopted at the company and individual levels influence their behavior in the workplace. In particular, our findings indicated that employees are more likely to engage in green initiatives at work if they believe that their employer values and encourages such activities. Second, this research contributes to the measurement of green behavior. Prior research has measured this construct by using only factor models (Han, 2020; Zhang et al., 2013). Respondents react holistically to questionnaire's questions when using a factor model (GPB at work), while a composite model relies on a variety of behavior (eco-friendly practice at work). Conceptually, these constructs should be equal. However, some discrepancies exist between constructs. The current research proposes and verifies a more robust version of the conceptual model by introducing factor and composite paradigms into a unified model, improving model accuracy and robustness.

Third, the IGSCA results conclude that MN exerts no statistically significant effect on GPB when observed from a component viewpoint. However, the NCA and fsQCA results highlight the

significance of MN in predicting the pro-environmental behavior of employees at work beyond the net effects. In particular, the third model demonstrates that as long as moral standard is evident, a firm's workers continue to engage in green activities even if EV, AR, SN, OS, and EFPH are lacking. With the advantages of complexity theory, we identify employee behavior as the product of interactions among several complicated elements that may lead to a similar outcome, with the benefit of considering the contrarian case and heterogeneity within the dataset. Consequently, the current study helps in theoretical advancement because complexity theory is seldom used by academics to describe green behavior. As a consequence of this finding, making conclusions based only on a symmetry test result misses essential information. Given the multi-method approach used in the current work, the insights gained from this empirical finding may be appreciated better, providing more room to grow in terms of theoretical advancement.

Practical implications

Most people spend a large portion of their career at work, and their actions likely significantly impact environmental quality. However, little is understood about pro-environmental workplace behavior. In particular, how personal and environmental circumstances influence this behavior. This study fills this gap by investigating individual and contextual factors in activating green behavior in the workplace. The most important conclusion drawn from this study's use of IGSCA-SEM and fsQCA is that moral norms are a necessary condition for ensuring green conduct in the workplace. Organizations should therefore concentrate on raising or at the very least keeping employees' moral standards at an acceptable level. To attain this aim, policymakers may enhance their efforts to build a moral culture. Employees' capacity to adapt their normative psychology to green conduct is thought to be enhanced by moral culture (Kennedy & Horne, 2020). For instance,

businesses need to make sure that high ethical standards workers may wholly and freely express their moral convictions in addition to offering them recognition and support. Organizations can utilize training techniques for employees with low moral levels to educate staff members about their moral efforts, foster ethical discussion among staff members, and encourage them to raise their moral decision-making standards. This technique is in line with the theory of dual inheritance (Hui Lu et al., 2020), which suggests that improving ethical conduct alone could be a valuable tactic for boosting normative internalization.

Additionally, businesses should consider a candidate's moral standing while doing employee recruiting to raise the bar for hiring morally upright workers. By doing this, companies may guarantee that new hires' ethical standards align with their own and that their moral climate is steady. Also, findings suggest an environmental value with the ascription of responsibility is a peripheral core to trigger green behavior. An organization should seriously educate about environmental obligations so employees with low moral levels and organizations can establish a uniform emotional reaction to ecological deterioration. In this way, the "moral culture" of the organization could be strengthened, promoting long-term green behavior in the workplace.

Limitations and future directions

The present study has several limitations. First, green behavior can be categorized into two groups: required and voluntary green behaviors. Prior organizational behavior literature confirms that both behaviors require different antecedents to explain (Joshua et al., 2022; Norton et al., 2015). Additionally, there is an urgent need to investigate the necessary and voluntary pro-environmental behaviors in the workplace to fill the academic gap (Joshua et al., 2022).Second, complexity and individual differences have been scarcely explored in the green behavior literature. Based on our

study, asymmetrical, equifinality, and conjunctural causation have been ignored from the prior literature. We call for more research on the application of fsQCA since it better reflects the real-world situation and is suitable for research in complicated contexts such as the social science (Prentice, 2020). Third, causal inference is usually drawn from the experimental research design, not the cross-sectional design. Researchers are encouraged to apply procedural remedy cross-sectional data such as two-wave data collection to enhance the research validity of the correlational study (Joshua et al., 2022). Fourth, fsQCA's calibration technique is subjective. That is, various calibrating approaches may provide diverse results. We propose that researchers avoid this bias by conducting different facets of calibration to determine the robustness of the analysis. Fifth, this research examines green workplace practices in the broader tourist business. Finally, we call for more studies on the multi-method approach (e.g., SEM and fsQCA) in specific tourism businesses, such as tour guides; meetings, initiatives, conferences, and exhibitions; restaurants; and cruise lines.

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Table 1: Reliability and validity of measurement model

Construct	Type	Item	$\hat{\lambda}_i$	CI ($\hat{\lambda}_i$)	$\widehat{W}_i$	CI ($\widehat{W}_i$)	AVE	α	ρ
EV	Factor	EV1	.811	[.742,.889]	.392	[.363,.438]	.689	.861	.869
		EV2	.772	[.688,.855]	.374	[.348,.402]			
		EV3	.904	[.826,.962]	.437	[.387,.474]			
AR	Factor	AR1	.783	[.695,.867]	.426	[.381,.485]	0.613	0.813	.825
		AR2	.876	[.790,.938]	.477	[.428,.528]			
		AR3	.677	[.570,.761]	.368	[.323,.411]			
SN	Factor	SN1	.777	[.692,.884]	.393	[.359,.441]	.658	.844	.852
		SN2	.880	[.777,.931]	.447	[.398,.475]			
		SN3	.773	[.712,.847]	.391	[.359,.438]			
MN	Factor	MN1	.805	[.722,.887]	.430	[.383,.471]	.625	.824	.833
		MN2	.815	[.754,.881]	.435	[.395,.479]			
		MN3	.750	[.662,.847]	.400	[.357,.449]			
PO	Factor	PO1	.819	[.778,.869]	.240	[.228,.254]	.687	.886	.917
		PO2	.821	[.756,.872]	.238	[.222,.250]			
		PO3	.808	[.758,.852]	.238	[.225,.250]			
		PO4	.818	[.768,.861]	.238	[.223,.253]			
		PO5	.879	[.846,.905]	.254	[.239,.269]			
OS	Factor	OS1	.832	[.782,.875]	.197	[.188,.208]	.705	.933	.935
		OS2	.867	[.815,.915]	.205	[.196,.215]			
		OS3	.873	[.835,.909]	.207	[.198,.218]			
		OS4	.830	[.775,.880]	.196	[.186,.210]			
		OS5	.841	[.781,.887]	.199	[.187,.211]			
		OS6	.796	[.714,.852]	.188	[.174,.200]			
EFPH	Component	EFPH1	.624	[.506,.717]	.177	[.149,.206]	.441	.858	.863
		EFPH2	.597	[.461,.715]	.169	[.135,.199]			
		EFPH3	.685	[.592,.780]	.194	[.167,.224]			
		EFPH4	.657	[.571,.751]	.186	[.164,.216]			
		EFPH5	.659	[.572,.747]	.187	[.159,.212]			
		EFPH6	.711	[.618,.783]	.202	[.174,.233]			
		EFPH7	.678	[.593,.767]	.192	[.163,.219]			
		EFPH8	.698	[.610,.764]	.198	[.174,.214]			
GPB(f)	Factor	GBF1	.778	[.718,.855]	.431	[.378,.488]	0.602	0.809	.819
		GBF2	.813	[.732,.895]	.451	[.402,.502]			
		GBF3	.735	[.630,.846]	.407	[.364,.443]			
GPB(c)	Component	GBC1	.654	[.547,.746]	.169	[.135,.215]	.558	.886	.91
		GBC2	.720	[.635,.775]	.145	[.117,.178]			
		GBC3	.736	[.661,.806]	.142	[.109,.171]			
		GBC4	.774	[.714,.824]	.187	[.148,.228]			
		GBC5	.754	[.690,.804]	.151	[.103,.206]			
		GBC6	.728	[.649,.782]	.158	[.107,.203]			
		GBC7	.796	[.733,.836]	.198	[.148,.236]			
		GBC8	.805	[.750,.845]	.190	[.159,.231]			

Notes: EV = environmental value, AR = ascriptive response, SN = social norm, MN = moral norm, EFPH = environmental friendly performance at home, PO = psychological ownership, OS = organization support, GPB(f) = factor-based model of green performance behavior, GPB(c) = component-based model of green performance behavior, AVE = average variance extracted

Table 2: Assessment of discriminant validity

		EV	AR	SN	MN	PO	OS	GPB
EV	Estimated		0.379	0.502	0.714	0.322	0.224	0.659
	CI Estimated		[.256,.500]	[.393,.609]	[.632,.794]	[.200,.444]	[.099,.349]	[.568,.750]
	Degree of problem		No	No	No	No	No	No
AR	Estimated			0.447	0.618	0.357	0.351	0.431
	CI Estimated			[.329,.563]	[.519,.716]	[.235,.478]	[.231,.469]	[.309,.553]
	Degree of problem			No	No	No	No	No
SN	Estimated				0.715	0.496	0.469	0.733
	CI Estimated				[.633,.797]	[.389,.602]	[.362,.575]	[.651,.814]
	Degree of problem				No	No	No	No
MN	Estimated					0.416	0.413	0.816
	CI Estimated					[.299,.533]	[.299,.527]	[.745,.885]
	Degree of problem					No	No	No
PO	Estimated						0.714	0.428
	CI Estimated						[.644,.783]	[.310,.544]
	Degree of problem						No	No
GPB	Estimated							0.526
	CI Estimated							[.423,.629]
	Degree of problem							No

Table 3: Assessment of structural model

	Constrained model				Unconstrained model			
Relationship	$\widehat{\beta_\iota}$	**CI** ($\widehat{\beta_\iota}$)	f^2	R^2	$\widehat{\beta_\iota}$	**CI** ($\widehat{\beta_\iota}$)	f^2	R^2
EV→AR	.375	[.248,.531]	.164	.141	.377	[.211,.516]	.165	.141
AR→MN	.381	[.232,.512]	.169	.605	.381	[.264,.498]	.169	.605
SN→MN	.528	[.378,.634]	.387		.529	[.360,.664]	.387	
MN→GPB(f)	.379	[.245,.512]	.167	.441	.721	[.581,.861]	1.077	.665
EFPH→GPB(c)	.474	[.339,.593]	.290	.352	.470	[.369,.593]	.283	.576
PO→ GPB(c)	.133	[.005,.271]	.018		.138	[-.028,.289]	.019	
OS→ GPB(c)	.325	[.171,.451]	.118		.326	[.165,.443]	.118	
GPB(c)→GPB(f)	.999	[.999,.999]	49.25		.186	[.064,.31]	.035	
Model Evaluation:	**Constrained model**				**Unconstrained model**			
FIT indices	**Est**	**CI(Est)**			**Est**	**CI(Est)**		
FIT	.738	[.708,.746]			.741	[.711,.741]		
FITs	.203	[.152,.253]			.221	[.177,.258]		
FITm	.853	[.822,.854]			.852	[.821,.851]		
GFI	.978	[.955,.978]			.977	[.948,.974]		
SRMR	.056	[.063,.080]			.055	[.063,.079]		
FIT difference:	**Est**	**CI(Est)**			**Decision:**			
Δ FIT	-.011	[-.039,.007]			No difference			
Δ FITs	-.059	[-.110,.000]			No difference			
Δ FITm	.000	[-.027,.016]			No difference			

Notes: EV = environmental value, AR = ascriptive response, SN = social norm, MN = moral norm, EFPH = environmental friendly performance at home, PO = psychological ownership, OS = organization support, GPB(f) = factor-based model of green performance behavior, GPB(c) = component-based model of green performance behavior

Table 4: Necessary conditions analysis results for green practice behavior at work

	Outcome: GPB (composite model)	
Conditions	**Consistency**	**Coverage**
EFPH	.915	.896
OS	.907	.865
PO	.873	.843
MN	.903	.834
SN	.726	.860
AR	.731	.812
EV	.821	.836
~EFPH	.323	.707
~OS	.304	.708
~PO	.330	.745
~MN	.305	.769
~SN	.486	.767
~AR	.441	.776
~EV	.384	.773

Note: ~ indicates the absence of a condition

Table 5: Configurations of Attributes Leading to Green Practice Behavior at Work

Configurations	**1**	**2**	**3**	**4**
EFPH	⓿	⓿	○	○
OS	⓿	⓿	○	○
PO	⓿			⓿
MN	●	●	●	●
SN	○	⓿	○	⓿
AR	○	⓿	○	⓿
EV		⓿	○	⓿
Consistency	.962	.966	.810	.866
Raw coverage	.318	.536	.146	.162
Unique coverage	.114	.325	.004	.003
Solution consistency	.684			
Solution coverage	.912			

Notes: Black circle indicates the presence of a condition; ● indicates core conditions; ⓿ indicates peripheral conditions; ○ indicates its absence. A space indicates unnecessary or unimportant condition.

Table 6: Evaluations of all core tenets of complexity theory

Core tenets	**Results**
Asymmetry	Supported
Equifinality	Supported
Conjunctural causation (or complexity)	Supported

Figure 1. Result of unifinality analysis using IGSCA

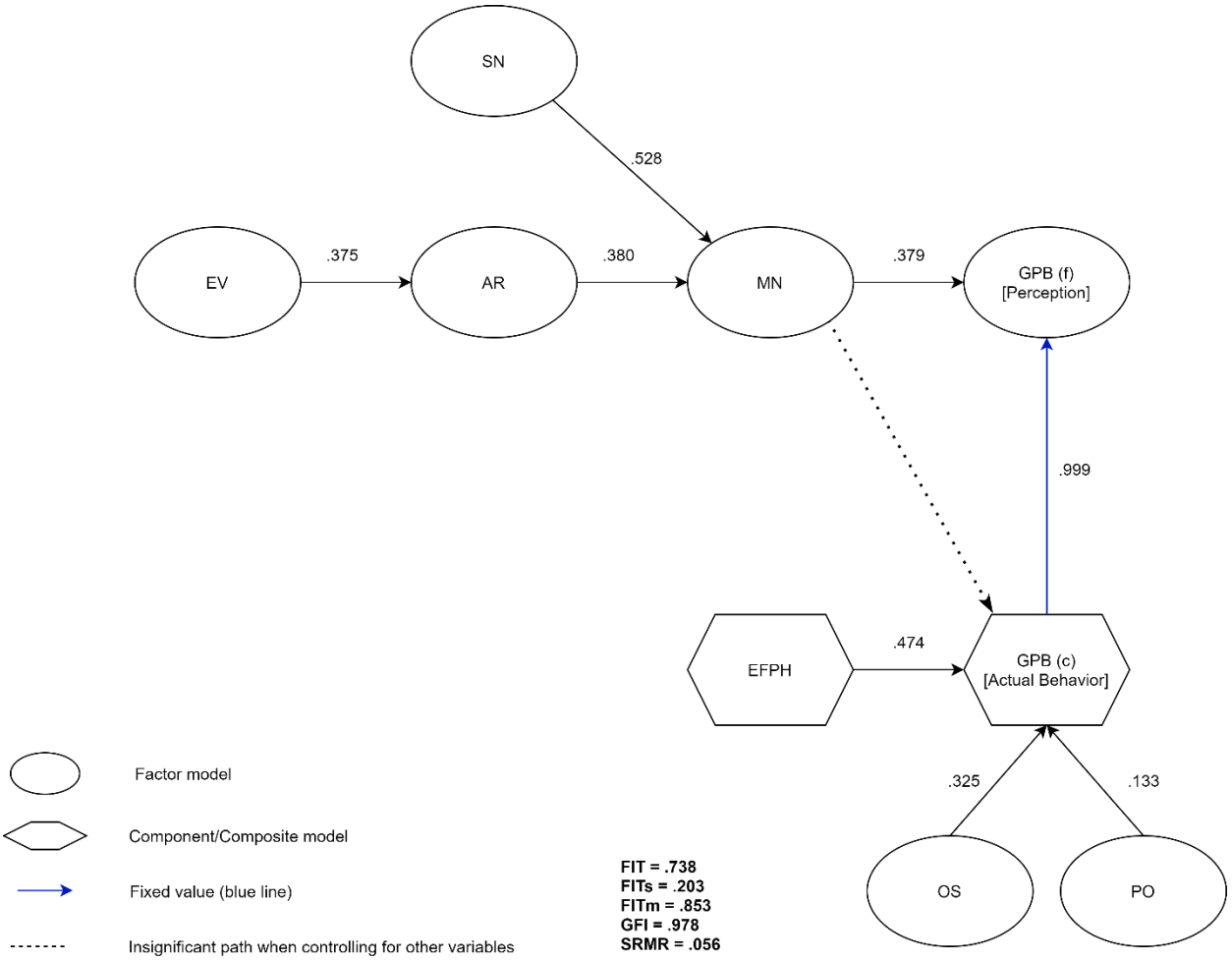
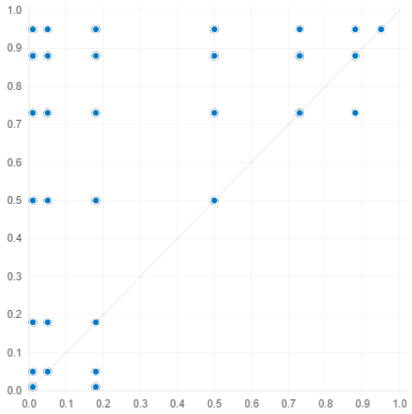
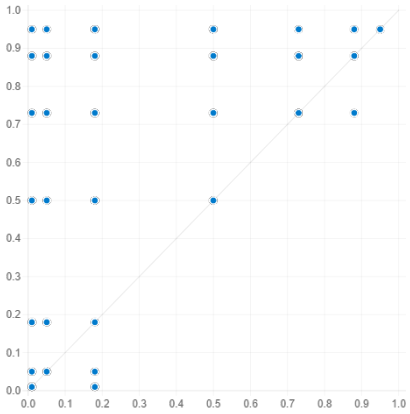
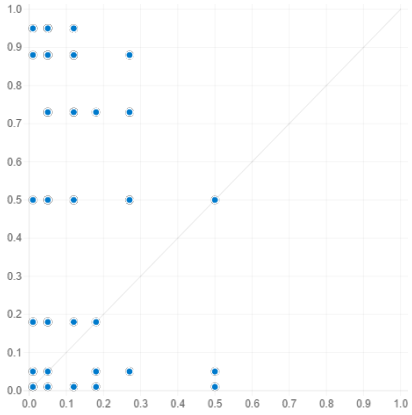
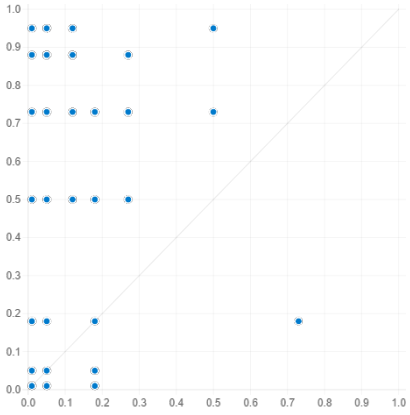


Figure 2. Predictive power from the testing sample

Model 1	Model 2
	
Consistency: .963 Coverage: .441	Consistency: .985 Coverage: .512
Model 3	**Model 4**
	
Consistency: .866 Coverage: .302	Consistency: .904 Coverage: .641

Appendix A: Contrarian case analysis

OS (Phi = .671)

	Green behavior at work					
	1	2	3	4	5	Total
1	21	16	7	8	4	56
	7.58	5.78	2.53	2.89	1.44	20.22
	%	%	%	%	%	%
2	10	10	12	2	2	36
	3.61	3.61	4.33	0.72	0.72	13.00
	%	%	%	%	%	%
3	13	13	15	10	3	54
	4.69	4.69	5.42	3.61	1.08	19.49
	%	%	%	%	%	%
4	4	4	20	20	16	64
	1.44	1.44	7.22	7.22	5.78	23.10
	%	%	%	%	%	%
5	2	2	6	19	38	67
	0.72	0.72	2.17	6.86	13.72	24.19
	%	%	%	%	%	%

SN (Phi = .482)

	Green behavior at work					
	1	2	3	4	5	Total
1	15	19	8	7	4	53
	5.42	6.86	2.89	2.53	1.44	19.13
	%	%	%	%	%	%
2	9	4	12	2	5	32
	3.25	1.44	4.33	0.72	1.81	11.55
	%	%	%	%	%	%
3	11	11	13	13	12	60
	3.97	3.97	4.69	4.69	4.33	21.66
	%	%	%	%	%	%
4	10	6	13	23	12	64
	3.61	2.17	4.69	8.30	4.33	23.10
	%	%	%	%	%	%
5	5	5	14	14	30	68
	1.81	1.81	5.05	5.05	10.83	24.55
	%	%	%	%	%	%

EV (Phi = .462)

	Green behavior at work					
	1	2	3	4	5	Total
1	14	16	8	6	5	49
	5.05	5.78	2.89	2.17	1.81	17.69
	%	%	%	%	%	%
2	6	10	20	13	5	54
	2.17	3.61	7.22	4.69	1.81	19.49
	%	%	%	%	%	%
3	14	6	8	14	9	51
	5.05	2.17	2.89	5.05	3.25	18.41
	%	%	%	%	%	%
4	4	7	12	11	9	43
	1.44	2.53	4.33	3.97	3.25	15.52
	%	%	%	%	%	%
5	12	6	12	15	35	80
	4.33	2.17	4.33	5.42	12.64	28.88
	%	%	%	%	%	%

AR (Phi = .346)

	Green behavior at work					
	1	2	3	4	5	Total
1	15	11	5	11	11	53
	5.42	3.97	1.81	3.97	3.97	19.13
	%	%	%	%	%	%
2	8	7	7	3	6	31
	2.89	2.53	2.53	1.08	2.17	11.19
	%	%	%	%	%	%
3	10	13	14	13	7	57
	3.61	4.69	5.05	4.69	2.53	20.58
	%	%	%	%	%	%
4	10	7	18	19	12	66
	3.61	2.53	6.50	6.86	4.33	23.83
	%	%	%	%	%	%
5	7	7	16	13	27	70
	2.53	2.53	5.78	4.69	9.75	25.27
	%	%	%	%	%	%

EFPH (Phi = .721)

	Green behavior at work					
	1	2	3	4	5	Total
1	21	16	6	4	3	50
	7.58	5.78	2.17	1.44	1.08	18.05
	%	%	%	%	%	%
2	10	13	13	9	2	47
	3.61	4.69	4.69	3.25	0.72	16.97
	%	%	%	%	%	%
3	9	11	23	12	3	58
	3.25	3.97	8.30	4.33	1.08	20.94
	%	%	%	%	%	%
4	5	4	11	24	15	59
	1.81	1.44	3.97	8.66	5.42	21.30
	%	%	%	%	%	%
5	5	1	7	10	40	63
	1.81	0.36	2.53	3.61	14.44	22.74
	%	%	%	%	%	%
	18.05	16.25	21.66	21.30	22.74	100.0
	%	%	%	%	%	0%

MN (Phi = .431)

	Green behavior at work					
	1	2	3	4	5	Total
1	15	9	6	7	5	42
	5.42	3.25	2.17	2.53	1.81	15.16
	%	%	%	%	%	%
2	13	14	9	8	3	47
	4.69	5.05	3.25	2.89	1.08	16.97
	%	%	%	%	%	%
3	10	6	18	15	9	58
	3.61	2.17	6.50	5.42	3.25	20.94
	%	%	%	%	%	%
4	4	7	18	17	22	68
	1.44	2.53	6.50	6.14	7.94	24.55
	%	%	%	%	%	%
5	8	9	9	12	24	62
	2.89	3.25	3.25	4.33	8.66	22.38
	%	%	%	%	%	%
	18.05	16.25	21.66	21.30	22.74	100.0
	%	%	%	%	%	0%

Appendix B: AVE, HTMT2, and factor/composite correlation

	EFPW	EFPH	OS	PO	GPB	MN	SN	AR	EV
EFPW	**.747**	.695	.626	.648	.523	.449	.463	.344	.384
EFPH	.654	**.665**	.365	.496	.668	.593	.538	.375	.589
OS	.588	.362	**.84**	.721	.518	.408	.463	.358	.230
PO	.573	.463	.675	**.829**	.441	.414	.494	.364	.329
GPB	.493	.653	.509	.407	**.776**	.818	.739	.444	.674
MN	.424	.58	.404	.387	.799	**.791**	.715	.641	.729
SN	.438	.524	.458	.462	.721	.699	**.812**	.466	.519
AR	.319	.366	.35	.336	.428	.618	.449	**.783**	.389
EV	.36	.571	.224	.305	.654	.706	.503	.376	**.831**

Notes: Lower diagonal = Component/Factor correlations, Diagonal = Square root of the AVEs, Upper diagonal = HTMT ratio

Appendix C: Result of endogeneity test

Dependent variable	Independent variable	Test	df1	df2	Stat	p-value	Instruments
MN	SN, AR						PO,OS,EFPW
		Wu-Hausman	2	272	2.33	.098	
		Sargan	1	-	1.66	.197	
GPB	EFPW, MN						
		Wu-Hausman	2	273	0.177	0.674	EFPW,AR,PO,OS

Appendix D: Questionnaire

Subjective norm
Strongly disagree (1) – Strongly agree (7)

- Most people who are important to me believe that I should practice sustainable activities in the workplace.
- Most people who are important to me want me to practice sustainable activities in the workplace.
- People whose opinions I value prefer that I practice sustainable activities in the workplace.

Ascription of responsibility
Strongly disagree (1) – Strongly agree (7)

- I feel jointly responsible for the environmental problems caused by not practicing sustainable activities in the workplace.
- I feel partly responsible for the environmental problems arising from not practicing sustainable activities in the workplace.
- I believe that every employee is partly responsible for the problems arising from not practicing sustainable activities in the workplace.

Moral norm/Personal norm
Strongly disagree (1) – Strongly agree (7)

- I have an obligation to practice sustainable activities in the workplace.
- Regardless of what other people do, I should practice sustainable activities in the workplace because of my own values/principles.
- I feel that practicing sustainable activities in the workplace is important to reduce the harm inflicted on the environment.

Environmental value
"Not very important" [1]/"Very important" [7]
Kindly indicate the extent to which the following practices are important as guiding principles in your life.

- Preventing pollution
- Respecting Earth
- Protecting the environment

Eco-friendly at home
Never (1) – Always (7)

- At home, I switch off lights when they are not being used. [reduce]
- At home, I switch off the air conditioner/heater when it is not being used. [reduce]
- At home, I conserve water. [reduce]
- At home, I reduce the usage of paper, such as writing paper, toilet paper, and paper towels. [reduce]
- At home, I sort trash on the basis of recyclability. [recycle]
- At home, I recycle materials, such as paper, cans, and bottles. [recycle]
- At home, I search for ways to reuse household items. [reuse]
- At home, I utilize reusable items. [reuse]

Organizational support for the environment
Strongly disagree (1) – Strongly agree (7)

- The company takes pride in my environmental accomplishments at work.
- My company cares about my view regarding the environment.
- The company values my environmental contributions.
- My company is willing to assist its employees in solving environmental problems.
- My company is willing to extend itself to solve environmental problems.
- Help is available from my company when environmental problems arise.

Psychological ownership
Strongly disagree (1) – Strongly agree (7)

- For me, this company is home.
- I am completely comfortable in this company.

- I feel that I belong to this company.
- I feel that this company's success is also my success.
- I feel that being a member of this company helps me realize my value.

Green practice behavior at work (Factor model)
Strongly disagree (1) – Strongly agree (7)

- I practice sustainable activities in the workplace whenever possible.
- I frequently engage in sustainable behavior in the workplace.
- I exert effort for practicing sustainable activities in the workplace.

Green practice behavior at work (Composite model)
Never (1) – Always (7)

- At work, I switch off lights they are not being used. [reduce]
- At work, I switch off the air conditioner/heater when it is not being used. [reduce]
- At work, I conserve water. [reduce]
- At work, I reduce the usage of paper, such as writing paper, toilet paper, and paper towels. [reduce]
- At work, I sort trash on the basis of recyclability. [recycle]
- At work, I recycle materials, such as papers, cans, and bottles. [recycle]
- At work, I search for ways to reuse office items. [reuse]
- At work, I utilize reusable items. [reuse]