



Green Training and Development Influencing Employee Green Behavior: The Mediating Role of Employee Green Attitude and Intentions in Lebanese Small and Medium-sized Enterprises

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Received: 13 December 2025

Accepted: 11 March 2026

DOI: <https://doi.org/10.32479/irmm.23316>

ABSTRACT

Environmental challenges have intensified interest in how green human resource management (GHRM) practices influence employee green behavior, yet prior studies frequently report non-significant relationships between aggregated GHRM practices and employee attitudes. Addressing this inconsistency, the present study disaggregates GHRM by examining green training and development as a focal practice and tests the mediating roles of employee attitude toward green behavior and green behavioral intention, drawing on the Ability-Motivation-Opportunity framework and the Theory of Planned Behavior. Data from a cross-sectional survey of 367 employees in Lebanese small and medium-sized enterprises were analyzed using partial least squares structural equation modeling. The results demonstrate that green training and development significantly influence employee attitudes toward green behavior, which in turn correlate with green behavioral intention and employee green behavior; green behavioral intention also directly predicts employee green behavior. Mediation analyses show that attitude and intention operate as distinct mechanisms linking green training and development to behavior. By disaggregating GHRM practices, this study successfully addresses and explains prior null findings and provides evidence that specific practices, rather than aggregated bundles, shape employee attitudes and behavior in SME and emerging-economy contexts.

Keywords: AMO Theory, Attitude, Green Training and Development, Employee Green Behavior, Green Behavioral Intention, Theory of Planned Behavior

JEL Classifications: M12, M14, Q56, J24

1. INTRODUCTION

The connection between green human resource management (GHRM) and employee green behavior (EGB) has already been investigated in a growing number of publications, but empirical evidence is still inconclusive, especially with respect to the role of employee attitudes (Chowdhury et al., 2023; Fawehinmi et al., 2024). Some influential studies also indicate that when GHRM is operationalized as a bundled form, its association with employee green attitude is statistically non-significant (Fawehinmi et al., 2024). Instead of suggesting a theoretical constraint of GHRM, these results indicate that the aggregation of diverse green HRM practices has long posed a methodological challenge because

specific practices can influence employee cognition and behaviors through unspecified psychological processes.

GHRM is traditionally presumed to be a system of practices that are interdependent, such as green recruitment, training, performance management, and rewards, but such a conglomeration runs the danger of watering down the impact of practices that work through unique channels. Green training and development (GTD) is one such practice, which is directly focused on enhancing and advancing the level of knowledge and skills of employees in terms of environmental awareness (Azizie et al., 2025). In the context of the AMO framework, GTD, which is an ability-enhancing practice, functions mostly by influencing knowledge

structures and evaluative beliefs of employees (Gull and Idrees, 2022; Jiang et al., 2012), and thus is theoretically likely to have a more direct impact on attitudes, as attitudes are founded on the evaluations of behavior outcomes based on beliefs (Ajzen, 1991). This mechanism is applied in the framework of GHRM through the green training that makes employees more environmentally conscious and promotes positive evaluation beliefs about the behavior that is pro-environmental (Renwick et al., 2013).

To rigorously address the inconsistency in prior GHRM findings and refine the application of the AMO and TPB frameworks, this study pursues two primary research objectives, guided by the following overarching research question: What are the psychological mechanisms operating through employee attitudes and behavioral intentions through which green training and development is associated with employee green behavior in organizational settings characterized by limited formal sustainability systems?

Specifically, this study aims:

1. To isolate the specific influence of green training and development on employee attitude toward green behavior and employee green behavior, thereby testing the theoretical value of disaggregating GHRM practices; and
2. To examine the mediating roles of employee attitude toward green behavior and green behavioral intention in linking green training and development to employee green behavior, clarifying these constructs as distinct psychological mechanisms through which ability-enhancing HR practices are related to voluntary workplace behavior.

As an alternative to the prevailing bundle-level approach, the current research separates green training and development as an orientation point of employee green behavior. Such practice-related concentration makes it possible to analyze more accurately whether the often-documented lack of attitudinal influence is a manifestation of theoretical ineffectiveness or is due to the aggregation of concepts. The disaggregation of GTD allows the study to explain the cognitive and motivational mechanisms of GHRM practices internalized by its workforce and convert them into behavior.

Based on the theory of planned behavior (TPB), the paper further analyzes employee attitude towards green behavior and green behavioral intention as separate psychological processes that connect green training and development to the employee's green behavior. TPB hypothesizes that evaluative judgments and planned readiness are antecedents of behavior that are highly influenced by informational and experiential stimuli (Ajzen, 1991). To this end, a more direct test of the ability-enhancing HR practice can be carried out by focusing on GTD, which contributes to the attitudinal and intentional paths to green behavior.

These relationships are investigated empirically in this study in the context of Lebanese small and medium-sized enterprises (SMEs), which are not well enough represented in the literature on GHRM because of their economic and environmental importance. Formal systems of sustainability commonly affect SMEs, making them

more dependent on employee-level attitudes and intentions to take environmental action (Durrani et al., 2024). The selection of Lebanese SMEs as the empirical setting is theoretically significant. SMEs operating in emerging economies typically face institutional voids, including limited regulatory enforcement, resource constraints, and the absence of highly formalized environmental management systems (Malaeb, 2018). In such contexts, environmental sustainability is less likely to be driven by standardized procedures or external compliance pressures and more dependent on employees' internalized attitudes and intentional commitment toward pro-environmental behavior.

Consequently, organizational practices that operate through psychological mechanisms assume heightened importance. Green training and development, as an ability-enhancing HR practice, becomes a central means through which environmental knowledge, awareness, and evaluative beliefs are formed and reinforced at the employee level. In settings where formal sustainability infrastructures are weak, the effectiveness of green initiatives depends largely on the extent to which employees cognitively internalize environmental values and translate them into discretionary green behavior (Yuriev et al., 2018). This context therefore, offers a rigorous setting to examine the attitudinal and intentional mechanisms proposed by the AMO framework and the Theory of Planned Behavior, allowing for a more precise assessment of how targeted HR practices drive employee green behavior under conditions of structural limitation.

This paper has three main contributions. To begin with, it separates green training and green development out of aggregated GHRM practices to define its particular effect on influencing green behavior among employees. Second, it incorporates the AMO model and the Theory of Planned Behavior to indicate how the attitude of employees toward green behavior and the green behavioral intention play the role of a mechanism connecting green training and development to employee green behavior. Third, it expands the current knowledge of literature on GHRM by demonstrating empirical evidence of Lebanese SMEs, thus increasing the contextual, as well as historical and theoretical, scope of the current studies.

The remaining parts of the paper will be structured as follows: The second section shows the theoretical framework and the research hypotheses. These are methodology and data analysis. Then, the findings, discussion, and theoretical and practical implications are provided. Limitations and a future research direction are the last two points in the paper.

2. LITERATURE REVIEW

2.1. Underlying Theory

This research is based on the ability-motivation-opportunity (AMO) framework and the theory of planned behavior (TPB) to discuss how organizational practices are converted into employee green behavior. The AMO concept assumes that employees tend to adopt the desirable behaviors as they have the abilities required and they are backed by the organizational practices (Appelbaum et al., 2000). Green training and development has been highly

perceived to be a fundamental ability-enhancing process in which organizations encourage the embracement of green behavior by preparing workers with the appropriate knowledge, skill, and awareness of the environment (Renwick et al., 2012).

There is also the strengthening of the environmental competencies of such training, as it introduces knowledge about sustainability into the work practice (Azizie et al., 2025). According to the previous studies, green training will enhance the knowledge of environmental issues that employees possess and give a clear picture of how individual actions will help the organization achieve sustainability goals (Azizie et al., 2025). Green training and development also created a cognitive base enabling employees to develop more positive perceptions about green behavior, as it builds capacity and confidence and thus facilitates their eventual participation in behavioral change (Karatepe et al., 2022).

The current study uses the AMO framework in a targeted manner by isolating its ability dimension. Instead of analyzing AMO as a system of bundled practices (which often aggregate Ability, Motivation, and Opportunity components), this research analyzes green training and development (GTD) as the concerned organizational input that primarily influences the cognitive and behavioral outcomes of employees (Iqbal et al., 2024). This focused approach is methodologically imperative, as prior research often reports non-significant or inconclusive relationships between aggregated GHRM bundles and employee attitudes. This study theorizes that Ability, particularly facilitated by GTD, is the threshold mechanism that must be established first to influence the knowledge structures and evaluative beliefs of employees. While GTD may incidentally signal organizational Opportunity (e.g., resources) or boost Motivation, isolating the Ability component allows us to provide a clearer explanation for how a specific GHRM practice shapes the attitudinal and intentional paths to behavior, thereby addressing the methodological challenge posed by the bundling of diverse practices. This narrower application can be utilized to examine how organizational practices influence the internal evaluative processes of employees, which are theorized to align with the theory of planned behavior.

TPB provides a micro-foundation for understanding the relationship between green training and development and the green behavior exhibited by employees. TPB says that the appraisal that people hold of an action determines the behavioral intentions of the respective individuals and subsequently determines actual behavior (Ajzen, 1991). The attitude to behavior is the overall judgment of the representative of a person performing a certain action and is one of the focal antecedents of behavioral intention (Lee and Albarracin, 2026; Ajzen, 1991). Green practices can make employees in an organization more inclined to form intentions of taking the behaviors (Parvez et al., 2026).

Conceptually, attitude toward green behavior (ATTGB) is an employee's evaluative judgment of the degree to which the employee views the performance of green behavior as favorable or unfavorable (Blok et al., 2015). Conversely, Green Behavioral Intention (GBI) is the employee's planned readiness or motivational determination to engage in environmentally friendly actions

(Mancha and Yoder, 2015). Intention thus serves as a proximal predictor of such behaviors, bridging the cognitive evaluation (attitude) with the actual performance (behavior). TPB has been extensively used to explain environmentally responsible behavior within an organizational setting, especially where behavior involves conscious consideration and volitional commitment instead of automatic compliance (Naskar and Lindahl, 2025). In the current research, green training and development will positively and indirectly affect employees' green behavior by influencing their attitudes towards green behavior, which will subsequently impact their green behavioral intentions and, ultimately, their actual green behavior.

Combined, AMO and TPB have an integrated theoretical perspective that is used to study the impact of green training and development on the green behavior of employees. AMO describes how organizational practices improve the abilities of employees, and TPB describes how those abilities are converted into attitudes, intentions, and behaviors. This integration is the theoretical basis of the hypotheses suggested and empirically tested through a positive structural equation modeling method.

2.2. Hypothesis Development

2.2.1. GTD and ATTGB

Green training and development (GTD) is one of the fundamental practices in Green Human Resource Management (GHRM) because this approach aims to sensitize employees to environmental concerns and provide them with knowledge and skills to implement green practices at work (Usman et al., 2023; Veerasamy et al., 2024). GTD also involves systematic learning programs like workshops, forums, and e-learning programs geared towards improving environmental awareness and competencies of employees, as well as orienting individual behaviors with the sustainability goals of an organization (Daily and Huang, 2001).

Attitude, though being a core construct in the behavioral theories, empirical evidence of the association between the GHRM and the attitude of employees towards green behavior has been inconsistent. Specifically, research studies defining GHRM as a set of practices that are operationalized have found no significant correlation with employee attitudes, and hence the impacts of single GHRM practices might be masked when diverse practices are considered jointly (Fawehinmi et al., 2024). These results indicate that there is a need to study the particular GHRM practices in order to gain greater insight into the attitudinal impacts of the practices.

In the ability-motivation-opportunity (AMO) model, GTD is the ability-enhancing part of GHRM and is theoretically placed as the initial process where organizations determine the behavior of the employees by developing knowledge, awareness, and understanding (Appelbaum et al., 2000). In this regard, GTD has a threshold influence on employees' cognitive assessments of environmental practices. According to previous research, green training improves the environmental awareness of employees and explains the impact of non-green practices, which form the foundation of the development of positive attitudes towards green behavior (Purba et al., 2024; Amini et al., 2024). In the same study,

Shafaei et al. (2020) discovered that green training enhances sustainability awareness and reinforces the persistence of green practices, which promote the development of pro-environmental attitudes (Andoh et al., 2025).

In addition to the development of technical skills, GTD is part of attitude development since it instills organizational sustainability objectives in the learning experiences of employees, which results in a feeling of responsibility and value congruence (Saputra and Mahaputra, 2022; Mukherjee and Chandra, 2018; Judeh and Khader, 2023). In line with AMO theory, the current study does not consider GTD as an independent construct when compared to GHRM but as a key practice because of its dominance in the ability dimension and the fact that it is directly related to cognitive and evaluative activities.

In this light, through analytical segregation of green training and development from the larger GHRM system, the current research tries to shed light on whether or not this fundamental practice has a strong impact on employee attitude towards green behavior. According to this argument, the next hypothesis is the following: H₁: Green training and development positively influence employee attitude toward green behavior.

2.2.2. *ATTGB and GBI*

In the theory of planned behavior (TPB), the attitude of an employee towards green behavior is placed at an intermediate cognitive antecedent of behavioral intention (Ajzen, 1991). This sequence reflects the logical progression: an employee must first evaluate a behavior positively (Attitude) before forming a concrete plan or commitment to perform it (Intention). TPB assumes that the more people perceive a behavior as desirable, the more they tend to develop intentions toward engaging in it. To this end, when employees have a positive assessment of environmentally responsible behaviors, they are more likely to form intentions of taking action at the workplace.

In the workplace, the attitude towards green behavior is an evaluative opinion of employees about how desirable and meaningful being involved in environmental practices at work is (Pawar, 2025). These assessments form the willingness and preparedness of employees to do things through the determination of the intensity of their green behavioral intentions (Ajzen, 1991). Therefore, in the theory of planned behavior, the role of attitude is a cognitive evaluative process where the value-based evaluation of the green behavior that the employees make is transformed into purposeful commitment (Ajzen, 1991; Stern, 2000).

The relationship is supported by empirical evidence available in the green human resource management literature. Mukherjee and Chandra (2018) showed that positive intentions towards pro-environmental behavior of employees triggered by the organizational green practices are intrinsic motivations that enhance the employees' intention to behave sustainably in the workplace. In a similar manner, incorporating TPB with the Ability-Motivation-Opportunity framework, Fawehinmi et al. (2024) focused on the importance of attitude in the explanation of

environmentally responsible behavior, which highlights the crucial role that attitude plays as a significant psychological precursor to intention formation in an organizational context.

Although the theory of planned behavior positions attitude as a direct antecedent of behavioral intention, most publications in the green human resource management literature concentrate on the behavioral consequences and do not give sufficient empirical attention to intention as a distinct construct that exists between attitudes and behavior. In the study of organizational sustainability, attitude and behavior are often analyzed without a model that explicitly examines green behavioral intention as a more psychological intermediary state. In reaction, the current paper explicitly discusses the employee attitude to green behavior as a predictor of green behavioral intention to explain the attitudinal-intentional connection suggested by TPB in the framework of green human resource management.

H₂: Employee attitude towards green behavior positively influences green behavioral intention

2.2.3. *ATTGB and EGB*

The connection between employee attitude towards green behavior and employee green behavior has been thoroughly studied in organizational and environmental psychology, and the strength and consistency of this connection have been discussed extensively. There has been emphasis on the existence of an attitude-behavior gap among some scholars whereby positive environmental attitudes do not necessarily lead to green behavior, which is observable at the workplace (Kaiser et al., 2010). As an example, De Luco and Pegan (2011) suggested that contextual or situational factors might make employees feel positive towards the environment but not practice green behavior. Equally, Miller and Rice (2024), in their cross-country study, revealed that the attitude-behavior relationship is inconsistent between organizational and cultural settings, especially where the structural support of environmental action is ineffective.

Nevertheless, a considerable literature based on organizational research shows that employee attitude towards green behavior is positively related to employee green behavior. The results of previous research have indicated that employees who have positive environmental attitudes tend to take environmentally responsible actions in the workplace (Fawehinmi et al., 2021; Tian et al., 2020). Owing to the example, Arshad et al. (2021) conducted a study based on a sample of 508 employees and found that positive environmental attitudes were strong motivators of ecological green behavior in organizations. Such results indicate that the motives of employees' attitudes are significant in the development of discretionary green behaviors in the workplace.

More evidence suggests that task-related and proactive green behavior are contingent on the attitude of employees towards green behavior. Bissing-Olson et al. (2013) showed that the pro-environmental attitudes are positively related to the voluntary green initiatives of the employees, whereas Wesselink et al. (2017) specified that attitude is one of the most important determinants of the employees' green behavior. Later research has supported this correlation in various organizational settings and has established

that positive environmental attitude leads to an increased rate of employee green behavior (Tariq et al., 2020; Tian et al., 2020).

Recent studies have also narrowed this relationship by demonstrating that not all green behaviors are equally predicted by attitude. Katz et al. (2023) discovered that pro-environmental attitudes significantly forecast task-related and proactive employee green behavior, but not counterproductive green behavior, indicating that the attitude is especially applicable to constructive and discretionary environmental behavior. Equally, Lathabhavan and Bharti (2024), relying on survey results of IT employees surveyed, found that there is a great positive correlation between employee attitude towards green behavior and employee green behavior, which also supports the attitudinal basis of sustainability practices in the workplace.

Among Lebanese SMEs, where formal environmental systems and standardized sustainability policies are typically constrained, daily environmental activities might become the focus of employee attitudes toward green behavior, which is a set of relationships that have been proven in the studies, indicating that environmental attitudes have a great impact on the employee's pro-environmental actions in the workplace (Banwo and Du, 2019; Bashirun and Noranee, 2020). In these conditions, individual-level assessment and internalized values of the environment are significant forces in the translation of environmental awareness to actual behavior in the workplace. Based on this argument, the following hypothesis is proposed:

H₃: Employee attitude towards green behavior positively influences employee green behavior.

2.2.4. GBI and EGB

The correlation that has existed between the green behavioral intention and the green behavior of employees has been widely studied under the Theory of Planned Behavior, which assumes that behavioral intention is the nearest antecedent of actual behavior (Ajzen, 1991). In organizational settings, green behavioral intention indicates the willingness and the intention of employees to perform environmentally responsible behaviors at work and is one of the essential psychological processes by which cognitive conclusions end up being converted into behavior (Ajzen, 1991).

The empirical evidence concerning the strength of the intention-behavior relationship is not absolutely consistent, and there are studies that show that the intention-behavior gap does exist in the workplace environment. Indicatively, Al Zaidi et al. (2023), using a sample of workers in the UAE in the public sector, found that green behavioral intention was not always effective in predicting employee green behavior, especially where they had negative supportive organizational routines. These results indicate that contextual limitations can render invalid the translation of intention to action in certain instances, but not the theory applicability of intention.

Despite these findings, a significant body of organizational research literature uniformly supports a positive relationship between green behavioral intention and employee green behavior. Empirical evidence on workplace sustainability has shown that intention is a psychological stimulus that triggers the occurrence of goal-oriented

environmental behaviors among employees (Klockner, 2013). On the same note, Al-Ghazali and Afsar (2021) established that employees who had stronger intentions towards green behavior were more likely to have environmentally responsible behavior at the workplace. The study by Fawehinmi et al. (2024) also confirmed this linkage since it was revealed that intention is a key factor in the transformation of cognitive and motivational states into employee green behavior in an organizational context.

The strength of this relationship is still affirmed by more current studies. According to Katz et al. (2022), the correlation between green behavioral intention and employee green behavior was strong in various organizational settings and was statistically significant. Similarly, Khalid et al. (2022) proved that green behavioral intention has a positive impact on the necessary and desirable aspects of employee green behavior, which is the main assumption of the Theory of Planned Behavior. Cross-national evidence can further substantiate this association, as Hasebrook et al. (2022) found that an increase in workers' green behavioral intentions correlated with greater engagement in environmentally responsible workplace practices.

In summary, these findings suggest that while contextual factors may affect the quality of the intention-behavior relationship, green behavioral intention serves as a significant and conceptually grounded predictor of green behavior among employees. Green behavioral intention, in terms of the AMO-TPB viewpoint, is the last cognitive process, where the impact of green human resource management practice is converted into actual environmental action within the workplace. In this context, the hypothesis is stated as follows:

H₄: Green behavioral intention positively influences employee green behavior

2.2.5. Mediation of ATTGB between GTD and GBI

Green training and development practices are meant to be used to improve the level of environmental knowledge, skills, and awareness among employees by strengthening their cognitive knowledge about the issues related to sustainability in the workplace (Renwick et al., 2013; Masri and Jaaron, 2017). Under the ability dimension of the ability-motivation-opportunity (AMO) model, training boosts the ability of employees, and the same affects the way employees assess and analyze organizational practices (Appelbaum et al., 2000). By engaging in systematic green training, employees tend to appreciate environmentally responsible behavior as worthwhile, relevant, and organizational purpose, developing positive attitudes toward green behavior (Blok et al., 2015; Saeed et al., 2019; Gilal et al., 2025).

The Theory of Planned Behavior also assumes that attitude toward a behavior is one of the key antecedents of behavioral intention (Ajzen, 1991). Organizational sustainability. The attitudes that employees hold towards green behavior will make them more willing to develop intentions to act in environmentally responsible manners at the workplace (Mancha and Yoder, 2015; Saeed et al., 2019; Bonfanti et al., 2026). Empirical studies also indicate that the training-based interventions can affect behavioral intentions through the development of attitudinal assessments

of the employees, which will later translate into the intentional willingness to act (Pham et al., 2022).

Combined, these theoretical views suggest that the concept of green training and development also induces green behavioral intention by affecting the attitude of the employee toward green behavior. Attitude in this perspective serves as the initial psychological process: It is the evaluative judgment that connects the capacity-developing function of green training (Ability) with the subsequent formation of the employee's plan for conscious environmental action (Intention). In this regard, the hypothesis is as follows:

H₅: Employee attitude toward green behavior mediates the relationship between green training and development and green behavioral intention.

2.2.6. Mediation of ATTGB between GTD and EGB

Green training and development are intended and organized organizational initiatives to augment the knowledge, abilities, and consciousness of employees with regard to environmental control and sustainability (Garavan et al., 1995; Renwick et al., 2013). In the organizational setting, this training will equip the employees with the cognitive resources required to comprehend the environmental implications of their working actions and learn the importance of environmentally responsible conduct to organizational performance (Daily et al., 2012).

According to the ability-motivation-opportunity (AMO) model, green training and development mainly serve an ability-enhancing role in empowering employees with environmental competencies and interpretive capacity (Appelbaum et al., 2000). But the transformation of these increased capabilities into real employee green behavior is not automatic. Instead, attitudinal appraisals towards green behavior by the employees are of primary significance in the evaluation of whether the knowledge and skills acquired are put into practice in day-to-day work practices. As earlier research suggests, environmental training can positively affect their attitude towards environmental efforts and sustainability activities in organizations, which in turn are likely to produce environmentally friendly behaviors (Aragon-Correa, 1998; Veerasamy et al., 2024).

According to the Theory of Planned Behavior, attitude toward green behavior is one of the important psychological processes through which cognitive appraisal is connected to the action that takes place (Ajzen, 1991). The mediating logic is empirically supported by showing that employees with positive attitudes toward the environment tend to participate in both mandatory and optional green practices in the workplace (Tian et al., 2020). Green training in this perspective plays a role in influencing an employee to act green indirectly through the development of evaluative orientations of the employee to environmental action, but it is not a direct or mechanical influence on employee behavior.

This intermediary effect of attitude is stronger in a situation when the formal control of the environment and the implementation of mechanisms are scarce, and the discretionary decisions of the employees are more significant to determine environmentally

responsible actions (Renwick et al., 2013; Saeed et al., 2019; Durrani et al., 2024). At small and medium-sized businesses like those in Lebanon, the discretionary behavior is usually based on internalized values and personal assessment of the employees. In this scenario, green training and development is particularly significant, as is the case when it develops a positive attitude that encourages employees to put environmental knowledge into green practice at the workplace.

Combined, these theoretical and empirical arguments indicate that employee attitude towards green behavior is a highly important psychological channel through which green training and development impacts employee green behavior. In this regard, it is proposed that the following hypothesis will hold:

H₆: Employee attitude toward green behavior positively mediates the influence of green training and development on employee green behavior.

2.2.7. Mediation of GBI between ATTGB and EGB

In the Theory of Planned Behavior, behavioral intention is placed as the nearest psychological precursor of actual behavior, where the evaluative judgments of individuals are connected to the action taken (Ajzen, 1991). In such a model, the intention is created by the attitude towards a behavior, which becomes the direction of behavioral performance. In this regard, green behavioral intention can be understood as the willingness and intent of employees to perform environmentally responsible behavior in the workplace and is a crucial way in which the attitude is brought to life by showing employees actual green conduct (Fawehinmi et al., 2024).

The organizational sustainability empirical research favors the applicability of this attitudinal-intentional-behavioral sequence. Empirical research studies supported by TPB always prove that employees who have positive attitudes toward green behavior have more chances to form strong green behavioral intentions, which in turn predetermine the possibility of taking environmentally responsible behavior at work (Fawehinmi et al., 2024). These results support the theoretical assumption that intention acts as the psychological mediator between evaluative beliefs and real-life action at workplaces.

Simultaneously, organizational research evidence indicates that the nature of the intention-behavior relationship can differ across situations, especially when structural or situational factors restrict the ability of employees to act. Nevertheless, these contextual effects do not in any way diminish the key role of intention in TPB, but, to the contrary, they emphasize its role as the ultimate mental process through which attitudes are transformed into behavior where there is volitional control (Ajzen, 1991). In organizational settings where formal controls and enforcement mechanisms are weak, such as in small and medium-sized enterprises, the intentional commitment of employees serves as one of the mechanisms through which attitudes toward green behavior are transformed into discretionary green behavior.

Green behavioral intention in the case of the Lebanese SMEs is a key channel through which positive views on green behavior are

converted into positive environmental behavior at the workplace because of the nature of environmental practices, which are often based on personal initiative, rather than institutionalized frameworks. The explicit inclusion of green behavioral intention as a mediator in the current research elucidates the psychological mechanism between the employee attitude toward green behavior and employee green behavior, which is coherent with the fundamental reasoning of the Theory of Planned Behavior. The following hypothesis is therefore postulated:

H₇: Green behavioral intention positively mediates the influence of employee attitude towards green behavior and employee green behavior.

Figure 1 illustrates the conceptual framework that was developed according to the above hypotheses.

3. METHODOLOGY

3.1. Participants and Method

The data collection instrument was a self-administered questionnaire, which was used to gather data on employees in Lebanese small and medium-sized enterprises (SMEs) during the period (February-March, 2025). The questionnaire was prepared in English, and it was translated into Arabic through the method of back-translation because it is imperative to maintain semantic equivalence (Brislin, 1980). Due to the lack of a central repository for SME staff in Lebanon, the recruitment of respondents was done via available channels of communication, such as WhatsApp, LinkedIn, and email.

In the Lebanese context, small and medium-sized enterprises are commonly defined based on employee size thresholds. In line with this approach, the present study focused on SMEs typically employing between approximately 50 and 250 employees (OECD, 2004). Given the absence of a centralized sampling frame for SME employees in Lebanon, the study relied on a non-probability convenience sampling approach, drawing on accessible professional networks through digital communication platforms. Although precise firm-level size data were not collected for each respondent, participating SMEs primarily represented small to medium-sized enterprises operating across multiple service and knowledge-intensive

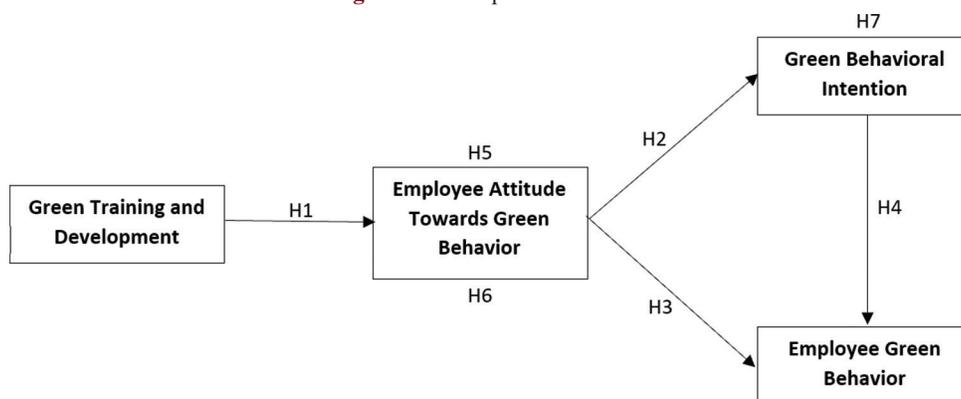
sectors in various Lebanese regions. Every response was electronically gathered to ease the process of participation and management of data.

The purpose of the study was made known to the participants beforehand, and filling out the questionnaire was voluntary. The respondents were told they could leave at any time without penalty, and anonymity and confidentiality were assured, but no personally identifying information was collected. Voluntary participation in the survey implied informed consent, and the research followed the general ethical principles of conducting studies through surveys.

The questionnaire gauged green training and development, employee attitude towards green behavior, green behavioral intention, and employee green behavior with closed-ended questions based on validated scales in the green human resource management literature. There were a few demographic questions that were incorporated to describe the sample. The screening of responses was done in terms of completeness and internal consistency, and questionnaires that contained a significant amount of missing data or inconsistencies in response patterns were rejected.

Since there was no formal sampling frame, convenience sampling was used, which is also typical of organizational research in a similar situation. They tried to access employees in various fields of SME in order to minimize sampling bias. To aid interpretation of the findings within the Lebanese SME context, the study sought participation from employees working across a broad range of SME sectors, as reflected in the demographic profile of respondents. The final sample includes representation from multiple industries, organizational levels, and experience ranges. However, because convenience sampling was employed, the findings should be interpreted with caution and cannot be assumed to be statistically representative of the entire population of Lebanese SMEs. The total number of collected questionnaires was 396, out of which 367 valid responses were obtained after data cleaning. The available methodology suggests that multivariate methods require a sample of 160-300 observations (partial least squares structural equation modeling, PLS-SEM) (Memon et al., 2020); therefore, it is considered that the final sample size was sufficient.

Figure 1: Conceptual framework



4. RESULTS

4.1. Demographic Characteristics of the Sample

The survey collected 367 usable responses reported in Table 1. In regard to gender, respondents were primarily male (n = 194, 52.9%), female (n = 168, 45.8%), a small minority identified as non-binary (n = 1, 0.3%) or chose not to answer (n = 4, 1.1%). Age ranged from most respondents being between 40 and 54 years (n = 156, 42.5%) and 25-39 years (n = 148, 40.3%), to small portions between 18 and 24 years (n = 30, 8.2%), 55-74 years (n = 25, 6.8%), below 18 years (n = 7, 1.9%) and 75 years or older (n = 1, 0.3%). In reference to education level, most respondents either had a bachelor's degree (n = 143, 39.0%) or a master's degree (n = 128, 34.9%), followed by those who had earned a doctoral degree (n = 63, 17.2%). Respondents with a qualification of high school diploma or equivalent were fewer (n = 30, 8.2%), as were respondents who did not finish high school (n = 3, 0.8%). The levels of occupation were somewhat evenly distributed, though many respondents were managers (n = 145, 39.5%), followed by senior-level (n = 90, 24.5%), mid-level (n = 68, 18.5%), entry-level (n = 33, 9.0%) and executive positions (n = 31, 8.4%). In regard to time spent at organization, just under half of respondents have spent over 10 years at their current (or most recent) organization (n = 174, 47.4%). Other amounts of time include 1-3 years (n = 68, 18.5%), 4-6 years (n = 60, 16.3%), 7-10 years (n = 42, 11.4%), and less than 1 year (n = 23, 6.3%). Finally, respondents were from a wide variety of industries, though the largest percentages were from education (n = 73, 19.9%), financial services (n = 56, 15.3%), and nonprofit/NGO (n = 40, 10.9%), with less representatives from technology, healthcare, manufacturing, hospitality, and others.

4.2. Measures

The measurement of all the constructs in the study was done using the already known scales modified to fit the study on the green human resource management and sustainability literature. Each of the items was judged using a Likert scale with 5 points (strongly disagree) to 1 (strongly agree). These measurement scales were selected due to their strong theoretical alignment with the AMO-TPB framework, their prior validation in organizational sustainability research, and their suitability for capturing

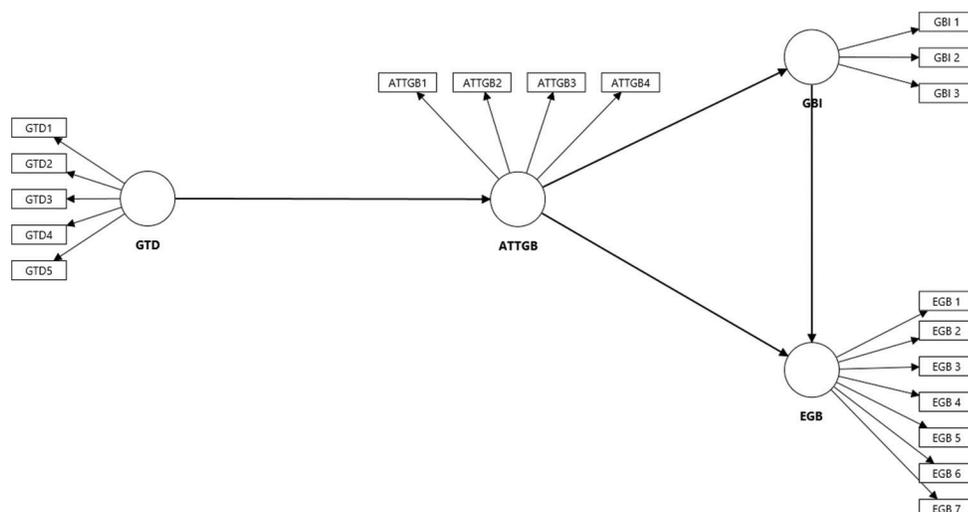
discretionary employee behavior in contexts characterized by limited formal environmental systems.

The seven-item scale adapted by Blok et al. (2015) measured the EGB of employees. This scale reflects the voluntary, pro-environmental behavior of employees at the workplace. The respondents were requested to respond to how often they had participated in certain green practices on a five-point scale from 1 (never) to 5 (always). Examples of such items include switching off air conditioners where unnecessary, printing both sides of paper, switching off computers and lights when one is not at the workplace, and recycling plastic, glass, and batteries. The scale has found extensive use in the study of organizational sustainability and has proven to have reasonable reliability and validity.

The attitude of employees towards green behavior was measured with a four-item measure based on the adaptation by Blok et al. (2015). The items record the evaluative appraisals the employees make on pro-environmental behavior at work. The participants indicated their consent to the statements that deal with the degree to which they believe green behavior is important and desirable in the workplace. The sampled items additionally embody the general green practices and the understanding that the company would be willing to provide support on such practices. The responses were noted based on a five-point Likert scale that was between 1 (strongly disagree) and 5 (strongly agree).

The scale was a three-item measurement of green behavioral intention (GBI) according to Mancha and Yoder (2015). This scale measures the intentions of the employees to participate in environmentally responsible practices in the near future. The respondents rated statements concerning their intended activities to cut down their carbon footprints, preserve natural resources, and practice environmentally friendly behavior. All of the items were assessed in terms of a five-point Likert scale with 1 (strongly disagree) to 5 (strongly agree). Previous studies have demonstrated that the scale has high psychometrics.

The scale used to measure green training and development (GTD) was a five-item scale based on Masri and Jaaron (2017). The scale



measures the degree to which the organizations offer environmental training and incorporate environmental consideration in the employee development practices. Items measure practices like environmental awareness training, incorporation of environmental issues in training needs analysis, induction programs with a focus on environmental issues, accessibility of online training materials, and prioritization of environmental training. The answers were made based on a five-point Likert scale between 1 (strongly disagree) and 5 (strongly agree).

Table 1: Demographic characteristics of the respondents

Demographic variable	Frequency	Percentage
Gender		
Male	194	52.9
Female	168	45.8
Nonbinary	1	0.3
Prefer not to say	4	1.1
Age		
Under 18	7	1.9
18-24	30	8.2
25-39	148	40.3
40-54	156	42.5
55-74	25	6.8
75 or older	1	0.3
Educational level		
High school or equivalent	30	8.2
Bachelor's degree	143	39.0
Master's degree	128	34.9
Doctoral degree	63	17.2
Less than high school	3	0.8
Occupational level		
Entry-level	33	9.0
Mid-level	68	18.5
Senior-level	90	24.5
Managerial	145	39.5
Executive	31	8.4
Years of experience		
<1 year	23	6.3
1-3 years	68	18.5
4-6 years	60	16.3
7-10 years	42	11.4
More than 10 years	174	47.4
Industry sector		
Technology	23	6.3
Healthcare	25	6.8
Financial services	56	15.3
Education	73	19.9
Manufacturing	11	3.0
Hospitality	20	5.4
Non-profit/NGO (under social and public services)	40	10.9
Government and public services (combined for clarity)	10	2.7
Media and communications	12	3.3
Trade, distribution, and retail (combined for clarity)	22	6.0
Legal and professional services	3	0.8
Automotive and transportation	28	7.6
Consumer goods	10	2.7
Real estate and construction	15	4.1
Energy and utilities	8	2.2
Aerospace and defense	2	0.5
Research and development	9	2.5
Total	367	100.0

The measurement models were evaluated in terms of the reliability and validity of all scales as part of the measurement model analysis through the PLS-SEM approach. The constructs and their subscale are listed in Table 2 along with their construct loadings and reliability, which indicate that all the items have high loadings (≥ 0.7) except for EGB 7, and high reliability (Cronbach's $\alpha \geq 0.7$).

4.3. Data Analysis

Testing of the suggested conceptual model was conducted through partial least squares structural equation modeling (PLS-SEM) using SmartPLS. PLS-SEM was selected over covariance-based SEM due to the study's predictive orientation, the exploratory application of an integrated AMO-TPB framework in an under-researched SME context, and the presence of multiple mediation paths. Data preparation and screening were conducted in IBM SPSS Statistics (version 21). During this phase, descriptive statistics, sampling adequacy (Kaiser-Meyer-Olkin or KMO measure), and factorability of correlations matrix (via Bartlett's test of sphericity) were inspected.

Analyses were conducted through a two-step procedure as suggested by methodological literature. Initially, the measurement model was investigated with regard to internal consistency reliability, convergent and discriminant validity of the constructs (El-Kassar and Singh, 2019; Wetzels et al., 2009). Following the confirmation of sufficient measurement properties, the structural model was analyzed by evaluating path coefficients to test the proposed hypotheses. A bootstrapping procedure was used to determine the statistical significance of findings.

4.4. Outer Model

We performed partial least squares structural equation modelling (PLS-SEM) with SmartPLS 4 to analyze the unstandardized dataset based on the reflective measurement model of all latent variables. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling

Table 2: Factor loadings and Cronbach's alpha for study constructs

Construct	Items	Factor loadings	Cronbach alpha
Green training and development (GTD)	GTD 1	0.914	0.941
	GTD 2	0.930	
	GTD 3	0.930	
	GTD 4	0.842	
	GTD 5	0.876	
Employee attitude toward green behavior (ATTGB)	ATTGB 1	0.910	0.903
	ATTGB 2	0.948	
	ATTGB 3	0.936	
	ATTGB 4	0.715	
Green behavioral intention (GBI)	GBI 1	0.952	0.942
	GBI 2	0.936	
	GBI 3	0.952	
Employee green behavior (EGB)	EGB 1	0.802	0.892
	EGB 2	0.790	
	EGB 3	0.822	
	EGB 4	0.864	
	EGB 5	0.746	
	EGB 6	0.717	
	EGB 7	0.685	

Adequacy and Bartlett’s test of sphericity were conducted to ensure that the dataset was adequate for factor analysis.

Table 3 presents the KMO test results. These results suggest that the dataset was adequate for factor analysis for all constructs. All constructs had a KMO value greater than the minimum recommended value of 0.60 (Hadi et al., 2016). Specifically, the KMO measure of sampling adequacy was 0.890 for GTD, 0.824 for ATTGB, 0.842 for EGB, and 0.768 for GBI. In addition, Bartlett’s test of sphericity for all constructs was statistically significant ($P < 0.001$), suggesting that the correlation matrix was not an identity matrix and that the indicators were suitable for factor analysis.

Next, we assessed the measurement model based on four criteria: indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. Indicator reliability was assessed by examining the outer loadings of the reflective indicators on their respective constructs (Table 4). Results show that most indicator loadings are above the commonly recommended value of 0.70 (Hair et al., 2024). Thus, most latent variables explain more than 50% variance in their indicators. Only one indicator had loadings slightly lower than 0.70, and all factor loadings were statistically significant. Although EGB7 exhibited a factor

loading slightly below the conventional 0.70 threshold (0.685), the item was retained for substantive and methodological reasons. First, the average variance extracted (AVE) for the Employee Green Behavior construct exceeded the recommended minimum value of 0.50 ($AVE = 0.604$), indicating adequate convergent validity at the construct level (Hair et al., 2022). Second, EGB7 captures a meaningful aspect of discretionary green behavior that is particularly relevant in SME contexts, where environmental actions are often informal and behaviorally heterogeneous. Retaining this item, therefore, preserves content validity and ensures comprehensive coverage of the EGB construct without compromising overall measurement quality.

Table 5 shows Cronbach’s alpha and composite reliability values that were used to determine internal consistency reliability. As shown in the table, Cronbach’s alpha values ranged from 0.892 to 0.942, all exceeding the minimum threshold of 0.70 recommended by Hair et al. (2022). Composite reliability scores (ρ_a and ρ_c) for all constructs exceeded the recommended threshold value of 0.70 and ranged from 0.914 to 0.963. Thus, our measurement scales had satisfactory internal consistency reliability.

AVE values were used to assess convergent validity. As shown in Table 5, the AVE value for all constructs exceeded the recommended minimum value of 0.50 (Hair et al. 2022). Specifically, the AVE was 0.778 for ATTGB, 0.604 for EGB, 0.897 for GBI, and 0.808 for GTD. These findings show that more than half of the variance observed in the indicators was due to the latent constructs, providing support for convergent validity.

Discriminant validity was assessed using the Fornell-Larcker criterion (Table 6). As shown in the table, square roots of AVE values (diagonal values shown in bold) for each construct were larger than their correlations with other constructs, meaning that the variables shared more variance with their indicators than they did with other variables in the model. Therefore, discriminant validity was supported among latent variables.

Table 3: Kaiser-Meyer-Olkin (KMO) measure and bartlett’s test of sphericity for latent constructs

Construct	Test	Result
GTD	Kaiser-Meyer-Olkin measure of sampling adequacy.	0.890
	Bartlett’s test of sphericity	$P=0.000$
ATTGB	Kaiser-Meyer-Olkin measure of sampling adequacy.	0.824
	Bartlett’s test of sphericity	$P=0.000$
EGB	Kaiser-Meyer-Olkin measure of sampling adequacy.	0.842
	Bartlett’s test of sphericity	$P=0.000$
GBI	Kaiser-Meyer-Olkin measure of sampling adequacy.	0.768
	Bartlett’s test of sphericity	$P=0.000$

Table 4: Outer loadings and bootstrapping results for reflective measurement model

Indicator	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics ($ O/STDEV $)	P-values
ATTGB1←ATTGB	0.910	0.909	0.021	43.663	0.000
ATTGB2←ATTGB	0.948	0.948	0.007	139.042	0.000
ATTGB3←ATTGB	0.936	0.936	0.008	111.343	0.000
ATTGB4←ATTGB	0.715	0.711	0.044	16.301	0.000
EGB1←EGB	0.802	0.802	0.026	31.250	0.000
EGB2←EGB	0.790	0.789	0.025	31.028	0.000
EGB3←EGB	0.822	0.822	0.023	35.827	0.000
EGB4←EGB	0.864	0.864	0.014	62.698	0.000
EGB5←EGB	0.746	0.744	0.034	22.200	0.000
EGB6←EGB	0.717	0.715	0.035	20.256	0.000
EGB7←EGB	0.685	0.683	0.037	18.675	0.000
GBI1←GBI	0.952	0.952	0.007	135.063	0.000
GBI2←GBI	0.936	0.936	0.010	93.285	0.000
GBI3←GBI	0.952	0.952	0.007	131.129	0.000
GTD1←GTD	0.914	0.912	0.022	40.755	0.000
GTD2←GTD	0.930	0.929	0.022	42.913	0.000
GTD3←GTD	0.930	0.928	0.021	43.861	0.000
GTD4←GTD	0.842	0.843	0.033	25.663	0.000
GTD5←GTD	0.876	0.874	0.023	37.908	0.000

Table 5: Internal consistency, reliability and convergent validity of constructs

Construct	Cronbach's alpha	Composite reliability (rho _a)	Composite reliability (rho _c)	Average variance extracted (AVE)
Green training and development (GTD)				
GTD1	0.941	0.954	0.955	0.808
GTD2				
GTD3				
GTD4				
GTD5				
Employee attitude toward green behavior (ATTGB)				
ATTGB1	0.903	0.940	0.933	0.778
ATTGB2				
ATTGB3				
ATTGB4				
Green behavioral intention (GBI)				
GBI 1	0.942	0.943	0.963	0.897
GBI 2				
GBI 3				
Employee green behavior (EGB)				
EGB 1	0.892	0.906	0.914	0.604
EGB 2				
EGB 3				
EGB 4				
EGB 5				
EGB 6				
EGB 7				

4.5. Inner Model

Model fit was assessed by inspecting the coefficient of determination (R²), path coefficients, effect sizes (f²), and indirect effects. The model explained 51.2% of the variance in employee green behavior (EGB), 41.4% of the variance in green behavioral intention (GBI), and its predictor explained 6.5% of the variance in employee attitude toward green behavior (ATTGB), as reported in Table 7. The effect size analysis presented in Table 8 further clarifies the relative strength of the relationships among the constructs.

H₁-H₄ included hypotheses about direct effects. Results are presented in Table 9 as standardized path coefficients calculated using bootstrapping. Green training and development had a significant and positive effect on employee attitude toward green behavior (β = 0.254, P < 0.001, f² = 0.069), supporting H₁. Employee attitude toward green behavior positively and significantly predicted green behavioral intention (β = 0.644, P < 0.001, f² = 0.708), supporting H₂. Employee attitude toward green behavior had a positive and significant direct effect on employee green behavior (β = 0.234, P < 0.001, f² = 0.066), supporting H₃. Green behavioral intention had a positive and significant effect on employee green behavior (β = 0.542, P < 0.001, f² = 0.352), supporting H₄. Effect size analysis

Table 6: Discriminant validity assessment using the Fornell-Larcker criterion

Construct	ATTGB	EGB	GBI	GTD
ATTGB	0.882	-	-	-
EGB	0.583	0.777	-	-
GBI	0.644	0.692	0.947	-
GTD	0.254	0.421	0.331	0.899

Note: Diagonal values (e.g., 0.882 for ATTGB) represent the square root of the Average Variance Extracted (AVE).

Table 7: Coefficient of determination (R²)

Construct	R ²	Adjusted R ²
ATTGB	0.065	0.062
GBI	0.414	0.413
EGB	0.512	0.509

Table 8: Effect size (f²) matrix

	ATTGB	EGB	GBI	GTD
ATTGB	-	0.066	0.708	-
EGB	-	-	-	-
GBI	-	0.352	-	-
GTD	0.069	-	-	-

Table 9: Direct effects (path coefficients)

Path	β (original sample)	Sample mean	STDEV	t-value	P-value
ATTGB→EGB	0.234	0.236	0.062	3.756	0.000
ATTGB→GBI	0.644	0.645	0.045	14.384	0.000
GBI→EGB	0.542	0.540	0.058	9.353	0.000
GTD→ATTGB	0.254	0.257	0.049	5.179	0.000

further clarifies this structure. The effect of GTD on ATTGB (f² = 0.069) is small, whereas the effect of ATTGB on GBI (f² = 0.708) is very large, and the effect of GBI on EGB (f² = 0.352) is large. This pattern confirms that the primary explanatory power of the model lies in the internal psychological processes rather than the organizational input itself.

H₅-H₇ included hypotheses about mediation effects, with Table 10 presenting bootstrapped indirect effects confirming all as partial mediations. Employee attitude toward green behavior positively and significantly mediated the relationship between green training and development and green behavioral intention (β = 0.164, P < 0.001), supporting H₅. Employee attitude toward green behavior also significantly mediated the relationship between green training and development and employee green behavior (β = 0.060, P = 0.005), supporting H₆. Additionally, a significant sequential indirect effect through employee attitude toward green behavior and green behavioral intention was found (β = 0.089, P < 0.001). Green behavioral intention positively and significantly mediated the relationship between employee attitude toward green behavior and employee green behavior (β = 0.349, P < 0.001), supporting H₇. All mediation effects were partial rather than full, indicating that while psychological mechanisms play a central role, direct associations between constructs remain present.

Table 10: Indirect effects

Indirect path	β (original sample)	Sample mean	STDEV	t-value	P-value
ATTGB->EGB	0.349	0.348	0.043	8.107	0.000
GTD->EGB	0.148	0.151	0.035	4.233	0.000
GTD->GBI	0.164	0.167	0.037	4.422	0.000
GTD→ATTGB→ GBI→EGB	0.089	0.090	0.022	3.942	0.000
GTD→ATTGB→EGB	0.060	0.061	0.021	2.822	0.005
GTD→ATTGB→GBI	0.164	0.167	0.037	4.422	0.000
ATTGB→GBI→EGB	0.349	0.348	0.043	8.107	0.000

Table 11: Summary of hypotheses testing results

Hypothesis	Hypothesis statement	Path (s) tested	Result
H ₁	Green training and development positively influence employee attitude toward green behavior	GTD→ATTGB	Supported
H ₂	Employee attitude toward green behavior positively influences green behavioral intention	ATTGB→GBI	Supported
H ₃	Employee attitude toward green behavior positively influences employee green behavior	ATTGB→EGB	Supported
H ₄	Green behavioral intention positively influences employee green behavior	GBI→EGB	Supported
H ₅	Employee attitude toward green behavior mediates the relationship between green training and development and green behavioral intention.	GTD→ATTGB→GBI	Supported
H ₆	Employee attitude toward green behavior mediates the influence of green training and development on employee green behavior	GTD→ATTGB→EGB	Supported
H ₇	Green behavioral intention mediates the influence of employee attitude toward green behavior and employee green behavior	ATTGB→GBI→EGB	Supported

All hypotheses (H₁-H₇) were supported at conventional levels of significance using bootstrapping results (Table 11). These results indicate statistically supported relationships within the analyzed sample and demonstrate internal consistency with the proposed theoretical model. Given the use of convenience sampling, the findings should be interpreted as evidence of structural associations rather than estimates of population-level effects across all Lebanese SMEs.

4.6. VIF

Variance inflation factor (VIF) quantifies the severity of multicollinearity in an ordinary least squares regression analysis. It provides an index that measures how much the variance of an estimated regression coefficient increases due to collinearity. Values below 5 indicate that multicollinearity is not substantial, values between 5 and 10 suggest moderate collinearity that merits attention, and values above 10 signal serious multicollinearity (O'brien, 2007).

Results are shown in Table 12 for the outer model and Table 13 for the inner models. All VIFs range from 1 to 7.4, so there are no major multicollinearity issues.

5. DISCUSSION AND IMPLICATIONS

5.1. Theoretical Implications

The following theoretical interpretations are grounded in the observed pattern of relationships within the study sample and are intended to inform theory development rather than to make claims about the prevalence or strength of effects across the broader population of Lebanese SMEs. Given the use of non-probability convenience sampling, the theoretical implications discussed below should be interpreted as explanatory patterns within the analyzed sample rather than as population-level estimates for all Lebanese SMEs. The research has some valuable theoretical contributions to green human resource management (GHRM)

Table 12: Indicator-level variance inflation factors (VIFs) for the outer (measurement) model

Indicator	VIF	Indicator	VIF
ATTGB1	3.468	GBI1	4.913
ATTGB2	5.224	GBI2	3.864
ATTGB3	4.383	GBI3	4.858
ATTGB4	1.604	GTD1	5.520
EGB1	3.317	GTD2	6.357
EGB2	2.178	GTD3	5.494
EGB3	2.818	GTD4	2.149
EGB4	3.728	GTD5	3.079
EGB5	6.114		
EGB6	7.371		
EGB7	3.868		

Table 13: Indicator-level variance inflation factors (VIFs) for the outer (measurement) model

Structural path	VIF
ATTGB→EGB	1.708
ATTGB→GBI	1.000
GBI→EGB	1.708
GTD→ATTGB	1.000

and organizational sustainability literature. First, it propels the conceptualization of the ability-motivation-opportunity (AMO) framework and the theory of planned behavior (TPB) since it demonstrates how an ability-enhancing GHRM intervention, green training, and development affect employee green behavior in the utilization of specific psychological processes. Unlike previous investigations, which tend to define the concept of GHRM as a homogenous bundle, which leads to mixed results (Renwick et al., 2013; Fawehinmi et al., 2024), this study confirms that the absence of a link between aggregated GHRM and attitude was likely a methodological artifact. We show the theoretical usefulness of isolating particular practices (GTD) to better describe the specific cognitive and behavioral influence mechanisms.

Second, the research enhances TPB-related elucidations by separating the employee attitude to green behavior, green behavioral intention, and employee green behavior into three conceptually different constructs. Our empirical results strongly support this disaggregation, particularly the sequential nature of the psychological mechanism. Specifically, the substantial effect size of ATTGB on GBI ($f^2 = 0.708$) underscores that evaluative beliefs—formed partly through GTD—act as the principal cognitive antecedent that catalyzes an employee's motivational readiness to act. This finding validates the fundamental TPB proposition that attitude must be established before an individual develops a concrete plan or intentional commitment (intention) to perform the behavior. By demonstrating that attitude and intention operate as distinct, yet sequentially linked, mechanisms through which the capacity-enhancing practice (GTD) predicts behavior, we clarify the micro-foundations of GHRM effectiveness and refine the application of TPB in workplace sustainability research.

Third, the research enhances TPB-related elucidations by separating the employee attitude to green behavior, green behavioral intention, and employee green behavior into three conceptually different constructs. In spite of the common usage of TPB in GHRM studies, it is commonly under-specified or combined with behavior (Fawehinmi et al., 2024). This study explains how evaluative beliefs and intentional readiness serve as complementary channels through which green training and development predict behavior, mediated by attitude and intention as distinct variables, aligning with key propositions of TPB.

Fourth, the results are generalizable to AMO theory in that the capacity-enhancing practices are not directly translated into behavior but rather work through the internal thought processes of the employees. Green training and development increase environmental knowledge and competence in accordance with AMO logic (Appelbaum et al., 2000), which in turn influences well-formed attitudes and shapes behavioral intention; this suggests that HR practices should be effective only when they are psychologically internalized by employees (Saeed et al., 2019).

Fifth, the research advances the discussion of the attitude-behavior gap by proving that green behavioral intention is a critical mediator between attitude and behavior. The results strengthen the claim of TPB that intention is the nearest predictor of behavior given a volitional control condition (Ajzen, 1991; Ajzen, 1985).

Sixth, although GTD significantly predicts ATTGB, the low explained variance ($R^2 = 0.065$) indicates that employee attitudes toward green behavior are influenced by multiple factors beyond organizational training alone. This finding reinforces the argument that GTD functions as an initiating rather than dominant attitudinal driver. This small effect size ($f^2 = 0.069$) may be particularly characteristic of the SME context, where limited resources often translate into less frequent, less formalized, or less continuously reinforced training programs, suggesting that GTD's ability to fundamentally reshape attitudes is restricted by the structural limitations inherent in emerging-economy SMEs.

Lastly, by targeting Lebanese small and medium-sized businesses,

this study can expand the applicability of AMO and TPB to the context of limited formal systems of sustainability when the attitude and intentions of the employees become more central to how organizational practices are directed toward environmental action.

5.2. Practical Implications

The practical implications discussed below should be interpreted as indicative insights derived from the study sample rather than prescriptive recommendations applicable to all SMEs. These implications illustrate how the identified psychological mechanisms may inform sustainability initiatives in similar organizational contexts. The results have significant practical implications for human resource managers, organizational leaders, and policymakers interested in encouraging employees to engage in green behavior, especially in small and medium-sized enterprises (SMEs) that thrive in situations where emerging economies like Lebanon exist.

The results highlight that green training and development are one of the major supporting HR practices in promoting environmentally friendly behavior. Given the findings that GTD's initial influence on attitude is small (likely due to resource constraints typical of SMEs), SMEs are expected to focus more on the ongoing and systematic green training rather than relying primarily on formal policies or technological solutions to enable them to develop environmental awareness, to make the employees recognize their responsibilities in the sustainability programs, and to underline the consequences of not pursuing sustainable practices. The practice will support the positive reaction to the environment as well as inspire the employees to practice sustainability within the workplace.

In addition, the findings suggest that the attitudes of employees toward green behavior can be considered a useful and effective leverage point for intervention. The HR professionals should then be involved in coming up with training that is not only focused on regular operational training but should also portray a wider value and relevance of environmental changes in the day-to-day work activities. Employees who feel that it is important and personally worthy to engage in green behavior have improved opportunities to have mighty intentions and convert the intentions into sustained behavior in the workplace. Organizations can support these intentions by expressing environmental expectations, allowing realistic sustainability targets, and promoting individual engagement in sustainability-related practices, including the identification and implementation of energy- and resource-saving practices.

Fourth, the implications are also particularly applicable to SMEs, where formal environmental management systems are frequently not extensive in such institutions. Under these circumstances, adoption of green behavior among the employees is heavily reliant on personal attitudes and intentions, but not institutional punishment. The targeted green training programs can consequently produce a significant behavior change despite the lack of sophisticated sustainability infrastructure.

Lastly, the findings guide policymakers and professional institutions that are geared towards increasing the sustainability of the SME industry. Green training programs and subsidies, as well as available and practice-based learning materials, could be more effective than mandatory compliance alone in the enhancement of sustainable workplace behavior in organizations with limited resources.

6. CONCLUSION, LIMITATION, AND FUTURE DIRECTION

The research adds to the existing body of green human resource management (GHRM) and organizational sustainability literature by investigating the role of green training and development in enhancing employee green behavior via employee attitude towards green behavior and green behavioral intention in Lebanese small and medium-sized business entities. The study focuses on the contribution of the internal cognitive and intentional mechanisms to converting HR practices into sustainable workplace behavior using the Ability-Motivation-Opportunity (AMO) concept and the theory of planned behavior (TPB) (Ajzen, 1991; Renwick et al., 2013).

In spite of these contributions, there are several limitations that need to be mentioned. To start with, the research was carried out in the Lebanese SMEs, which have a low level of formal sustainability systems. Although such a setting is theoretically pertinent, it can restrict the applicability of the results to larger organizations and to the contexts where the environmental management structure is more institutionalized. In future studies, the model can be replicated in large firms or compared across the size of the organization to determine whether context varies (Saeed et al., 2019; Tian et al., 2020).

Second, the information was gathered within one national environment. The cultural, institutional, and regulatory variations can influence the perceptions of employees towards green training programs and the way that attitudes and intentions are converted to behavior. Thus, the results should be cautiously applied to other nations, like Lebanon. The cross-national or comparative studies would assist scholars in the future in establishing whether the noted relationships are culturally strong or context-dependent.

Third, the research was based on self-administered scales of the green behavior of the employees, attitudes, and intentions. Though these measures are common in organizational studies and have been shown to be reliable, they can be affected by social desirability bias and limitation of perception (Podsakoff et al., 2003). To overcome these limitations and ensure robust measurement validity, future studies are strongly advised to incorporate objective measures of employee green behavior, such as tracking actual energy use data, waste metrics, recycling rates, or resource consumption measurements, ideally collected independently of the employees themselves.

Fourthly, the cross-sectional study design restricts causation between the variables in the study. The proposed relationships

were grounded in established theoretical models; however, future research must employ longitudinal research designs or experimental interventions in examining the evolution of employee attitudes, intentions, and behaviors over time, thereby assessing the long-term efficacy of green training interventions (Obeidat et al., 2020).

Lastly, this paper has chosen to specifically examine green training and development as one of the important capacity-building GHRM practices to offer theoretical clarifications. Future studies should expand this framework by considering other GHRM practices, such as green reward and compensation, green employee empowerment, and participation, to determine whether these practices influence employees' green behavior through the same or different psychological processes. It would further a more subtle view of the contributions of individual or comparative practices to workplace sustainability by testing the interventions of HR.

These conclusions reflect the relationships observed within the study sample and should be interpreted as theoretically informative rather than statistically representative of all Lebanese SMEs. All in all, the results demonstrate the important role of green training and development in the creation of employee attitudes and behavioral intentions that subsequently facilitate employee green behavior. This study, with its focus on psychological rather than structural enforcement per se, offers a starting point for further research that should be conducted to promote the sustainability of the environment based on the selected managerial practices of human resource management, especially in the realm of SMEs and emerging economies.

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