Pakistan Journal of Commerce and Social Sciences
2023, Vol. 17(4), 729-761
**Pak J Commer Soc Sci**

# Top Management Green Commitment and Pro-environmental Behavior: Mediating Role of Environmental Knowledge Application and Moderating Role of Green Mindfulness

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**Article History**

Received: 26 Sept 2023 Revised: 21 Dec 2023 Accepted: 28 Dec 2023 Published: 31 Dec 2023

## Abstract

The paper studies the effect of top management's green commitment (TMGC) and pro-environmental behavior (BEB) using the interaction effect of green mindfulness and the mediating effect of environmental knowledge application (EKA) using data collected from ready-made garment employees in Bangladesh. In this study, there were 121 supervisors and 328 subordinates in the subordinate-supervisor dyad. The partial least square-based structural equation modelling technique was used to test the hypotheses. The finding established that TMGC positively and significantly predicts employee task-related PEB. However, the relationship between TMGC and proactive PEB was supported in this study.

Additionally, TMGC positively predicts PEB and employee EKA. Likewise, EKA significantly predicts employee task-related and proactive PEB. Green mindfulness

moderates the relationship between TMGC and task-related PEB, such that a high degree of employee green mindfulness strengthens the link. However, green mindfulness did not moderate the relationship between TMGC and proactive PEB, as hypothesized. With regards to mediation, EKA partially mediates the relationship between TMGC and task-related PEB. Surprisingly, EKA was not found to be a mediator between TMGC and proactive PEB.

**Keywords:** Environmental knowledge application, top management green commitment, green mindfulness, task related pro-environmental behaviour, proactive pro-environmental behaviour, garment industry, Bangladesh.

## 1. Introduction

Bangladesh achieves tremendous economic growth by delivering low-cost, high-quality manufacturing services while utilizing its thriving ready-made garment sector. Bangladesh's ability to maintain a reputable position among ready-made garment production countries is vital to the economy (Sarkar et al., 2020). The textile industry is usually involved in hazardous activities that pollute waterways and oceans, contributing to greenhouse gas emissions and global warming. Pollutant products are frequently associated with harmful business practices that lead to environmental degradation, which has negative consequences for the environment (Nisar et al., 2021). A green business strategy is recommended to be adopted by developing countries like Bangladesh to participate in global sustainability and assess competitive advantages (WRI CAIT, 2016).

Bangladesh's ready-made garments sector, employing 20 million people and generating $20 billion in annual revenues, is the largest single employment sector in the country, contributing significantly to economic development and achieving the government's goal of middle-income. (Aktar & Islam, 2019; Karmoker, Kona, Oyshi, & Yasmin, 2021; Sarkar, Qian, & Peau, 2020). Bangladesh, like many other developing countries, is grappling with huge problems such as increased energy reliance, climate change, and air pollution. The current level of energy use is mainly affecting the environment since greenhouse gas emissions will continue to rise in tandem with economic expansion (Zhang et al., 2019).

Top management's green commitment and environmental knowledge application have received little attention in the garment sector, even though it is one of the world's fastest-growing industries, employing millions of workers (Sarkar et al., 2020b). The current research aims to investigate the role of top management's green commitment and environmental knowledge application in understanding employee pro-environmental behaviour (PEB) in Bangladesh's textile sector.

This study is motivated by the imperative to understand and enhance sustainable practices within organizations in the face of escalating environmental challenges. With a focus on top management green commitment (TMGC), we aim to investigate the mechanisms driving PEB among employees. Recognizing the gap in understanding the cognitive

processes that connect TMGC to practical sustainability actions, we explore the mediating role of environmental knowledge application (EKA) (Lin et al., 2021). Additionally, we delve into the emerging concept of green mindfulness, seeking to unravel its moderating influence on the relationship between TMGC and PEB. This research not only contributes to the academic discourse on sustainability and organizational behaviour but also provides actionable insights for businesses striving to foster a culture of environmental responsibility in their operations (Graves et al., 2019; Karmoker et al., 2021; Lin et al., 2021; Nasir et al., 2023; Aktar & Islam, 2019; Hasan et al., 2024).

Despite the well-established link between TMGC and PEB, Chaudhary (2020) asserted that any research on how green commitment from management will impact green performance is only sufficient with a look at the process. Indeed, recent studies have highlighted the scarcity of research on how TMGC contributes to PEB (Darvishmotevali & Altinay, 2022). Pham, Tuckova, and Jabbour (2019) highlighted the need for a more in-depth study on the links between TMGC and existing factors, including green employee performance. Alternative mediating mechanisms, according to Chaudhary (2020), should be investigated to understand better the dynamics of the interactions between TMGC and PEB. The study examines the function of EKA as a mediating factor in the causal association between TMGC and task-related and proactive PEB.

This study employs an interactionist perspective to explore PEB within the context of the ready-made garments industry. Applying Lewin's field theory, where TMGC serves as the external stimulus, and green mindfulness represents an inherent trait of employees, it is anticipated that the combined impact of these factors will contribute to PEB. Therefore, the paper has four primary objectives: first, to examine the influence of TMGC on employees' PEB, considering both task-related PEB and proactive PEB. Secondly, to assess the impact of TMGC on EKA. Thirdly, to explore how EKA affects employees' PEB, encompassing both task-related PEB and proactive PEB. Fourthly, to investigate the mediating role of employee EKA in the relationship between TMGC and employees' PEB. Lastly, to scrutinize the interactive effects of TMGC and green mindfulness on employees' PEB.

This study contributes to the existing literature in four significant ways. Firstly, a primary contribution lies in recognizing the importance of green mindfulness as a crucial moderator, addressing the call to study interaction variables that influence the relationship between TMGC and PEB, as highlighted by Graves, Sarkis, and Gold (2019) and Darvishmotevali & Altinay (2022). Secondly, building on the emphasis by Jiang, Lepak, Hu, and Baer (2012) on investigating the mediating mechanisms between TMGC and green outcomes, this paper introduces employee EKA as a mediator to fill this research gap. Thirdly, while existing studies on the relationship between TMGC t and employees' PEB are predominantly from Western contexts, this paper addresses the gap by exploring whether the styles of managing environmental sustainability in a Western perspective also apply to countries such as Bangladesh. Fourthly, in comparison to research on PEB in the

service sector, the study sheds light on the underexplored area of employees' PEB in the ready-made garments sector, contributing to a more comprehensive understanding of PEB in this specific industry (Zhang et al., 2021).

The subsequent sections of this study are structured as follows: Section 2 delves into the literature review, hypothesis development, and theoretical background. Section 3 elucidates the research methodology. Following that, Section 4 outlines the data analysis. Ultimately, Section 5 offers a comprehensive discussion.

## 2. Literature Review and Theoretical Framework

### *2.1 Employees' Pro-environmental Behavior*

Pro-environmental behaviors (PEB), which are those behaviors that intentionally attempt to reduce an employee's negative impact on the natural environment, are an effective strategy for establishing effective organizational sustainability programs (Darvishmotevali & Altinay, 2022; Kollmuss & Agyeman, 2002; Ming et al., 2022). In the existing literature, different examples of employees' PEBs have been submitted (e.g., Darvishmotevali & Altinay, 2022; Kumar et al., 2022; Paillé & Boiral, 2013; Wong-Parodi & Rubin, 2022; Zhang et al., 2021). Examples of PEB include recycling and reusing, proposing and implementing ideas to reduce the company's environmental impact, developing green processes and products, and questioning environmentally harmful behaviors (Darvishmotevali & Altinay, 2022; Hasan et al., 2024). Similarly, activities like turning off office lights after work, double-sided printing, avoiding disposable cups and plates, supporting the implementation of green strategies by the organization, using bicycles for commuting, waste reduction, minimizing energy consumption, green purchasing, waste recycling, and opting for hybrid cars are all illustrative instances of employee's PEB (Kollmuss & Agyeman, 2002; Ming et al., 2022).

The PEB is categorized into task-related PEB and proactive PEB (Bissing-Olson et al., 2013; Darvishmotevali & Altinay, 2022). Employee behaviors that are formally mandated by the organization and described in the context of employee duties are referred to as task-related PEB (Darvishmotevali & Altinay, 2022; Norton et al., 2014). Employees performing their core jobs in an environmentally friendly manner are referred to as task-related PEBs. On the other hand, the term proactive PEB refers to an employee's willingness to go above and beyond their job responsibilities in terms of green behavior. This type of Behavior includes providing green recommendations, identifying environmental problems, and finding solutions to those problems (Darvishmotevali & Altinay, 2022; Nasir et al., 2023; Norton et al., 2015). Employees who are proactive in terms of green practices are those who look forward to a clear green vision and likely events, plan actions, and strive for the best potential green outcomes (Darvishmotevali & Altinay, 2022). In this paper, therefore, the dependent variables of interest are both task-related PEB and proactive PEB.

*2.2 Top Management Green Commitment and Employees' Pro-environmental Behavior*

The degree to which an organization's senior members are viewed as committed to green practices is referred to as TMGC. In other words, the extent to which top managers demonstrate a commitment to environmental protection, drive the organization's green strategy, and support its green initiatives is known as TMGC (Graves et al., 2019; Lin et al., 2021). This green commitment is not only stated in words but should also be visible in action. This management commitment is critical to achieving a green organization's strategic objectives, according to Chadwick, Super, and Kwon (2015) and Ren, Jiang, and Tang (2022). Because management is responsible for utilizing an organization's resources, enough resources should be committed to ensuring employee PEB. Green projects necessitate the involvement of all employees within the organization, which can only be completed with the support of senior management (Graves et al., 2019; Darvishmotevali & Altinay, 2022). When senior management is committed to environmental issues, the resources required for a green human resources management system to be implemented successfully are made available (Darvishmotevali & Altinay, 2022).

Top management commitment is one of the most essential skills for developing and implementing corporate environmental policies in an organization (Nasir et al., 2023). The impact of top management commitment on organization-wide green initiatives has been extensively researched, including PEB (e.g., Colwell and Joshi, 2013; Graves et al., 2019; Ma et al., 2021). Employees will be more concerned about green practices as a result of TMGC, which will ultimately increase their proactive and task-related PEB (Darvishmotevali & Altinay, 2022; Graves et al., 2019; Lin et al., 2021). Therefore, the following hypotheses are advanced:

> $H_1$: Top management green commitment is positively related to employee proactive pro-environmental Behavior
>
> $H_2$: Top management green commitment is positively associated with employee task-related pro-environmental Behavior

*2.3 Top Management Green Commitment and Environmental Knowledge Application*

Researchers in the environmental management literature have paid close attention to top management's ecological attitudes in the implementation of green management techniques within the organization (Nasir et al., 2023; Rehman et al., 2021; Roy & Khastagir, 2016). Organizations with a high level of top management green involvement are predicted to result in higher employee green knowledge, resulting in more efficient outcomes such as product improvement, production process improvement, and technical innovation, among others (Rubel et al., 2021). The driver of employee green knowledge is supposed to be championed by top-level management, as it has a significant impact on the organizational culture (Rubel et al., 2021).

Employees' green knowledge can be one of the most critical and long-term sources of competitive advantage for an organization where top management is committed to green practices (Jaiswal et al., 2021). If senior management places a high value on the environment and its protection, employees are more likely to be knowledgeable and adopt green management techniques provided by the management (Jaiswal et al., 2021). According to Bhatti, Saleem, Murtaza, and Haq (2021), a high level of organizational support and solid personal commitment displayed by management within the organization play a substantial role in increasing employee knowledge, primarily through green training and green workshops. Furthermore, Rehman Khan and Yu (2021) found a positive link between TMGC and employee knowledge application in a recent study. Therefore, the following hypothesis was formulated:

> $H_3$: Top management green commitment is positively related to employee environmental knowledge application

*2.4 Environmental Knowledge Application and Employees' Pro-environmental Behavior*

Environmental knowledge is the cognitive component of ecological awareness that has received much attention in the literature on employee PEB (Safari et al., 2018; Zhang et al., 2021). This refers to a person's level of environmental knowledge as well as the fundamental relationships that lead to changed environmental perspectives and substantial ecological repercussions (Bhatti et al., 2021). The definition of environmental knowledge given by Zsóka, Szerényi, Széchy, and Kocsis (2013) is "knowledge and awareness of environmental challenges and viable solutions." Thus, environmental knowledge is a term that refers to an employee's understanding and awareness of environmental challenges and solutions (Zsóka et al., 2013). In the context of this study, environmental knowledge application refers to the use of ecological knowledge elements gathered over time, which has a significant impact on employees' PEB. Since knowledge is considered a reliable predictor of Behavior, it is essential to test whether employee knowledge is an important predictor of employee green behavior in this study (Raab & Bogner, 2021). Employees who have erroneous or no environmental information are less likely to make environmentally sound decisions (Zhang et al., 2021). Therefore, the application of environmental knowledge is a powerful construct to increase employee proactive PEB and task-related PEB because employees can correctly understand and vitalize positive green ideas and practices and stop having negative ideas about green practices (Zhang et al., 2021).

Employees with higher environmental knowledge applications are more likely to behave in an environmentally friendly manner, according to several studies (Vicente-Molina et al., 2013; Crucke et al., 2021). Environmental knowledge application, for example, has a considerable impact on household energy-saving behavior, according to Pothitou et al. (2016), while Zhang, Bai, Mills, & Pezzey (2021) discovered that environmental knowledge application increases customers' willingness to pay a higher price for renewable energy. Some researchers have also found a link between environmental knowledge

application and PEB (Fu et al., 2020; Safari et al., 2018; Zhang et al., 2021). Therefore, the following hypotheses are proposed:

$H_4$: Environmental knowledge application is positively related to employee proactive pro-environmental Behavior

$H_5$: Environmental knowledge application is positively associated with employee task-related Pro-environmental Behavior

*2.5 Mediating Role of Environmental Knowledge Application*

Environmental knowledge refers to a person's understanding of environmental issues and how to solve them (Ahmed et al., 2021; Fu et al., 2020; Zhu et al., 2022). The individual-environment matching theory asserts that knowledge and values alignment between workers and employers fosters the development of harmonious relationships between the two parties (Fu et al., 2020). Individual-environment matching promotes employee satisfaction and commitment to the organization (Fu et al., 2020). Individual-environment matching can also significantly and positively influence employees' emotional commitment. As a consequence, employees' expertise and values will impact how they make decisions and their intentions to be proactive in terms of their behavior. Taking into account their knowledge and ideals, they will assess the company during the working process (Ahmed et al., 2021; Fu et al., 2020; Ode & Ayavoo, 2020; Zhu et al., 2022).

If top management educates their employees and provides them with knowledge of environmental management systems, an enterprise green policy will improve employee knowledge application within the organization, which may lead to increased employee green behavior in the organization and increase their sense of integration and responsibility to the organization (Ahmed et al., 2021; Fu et al., 2020; Liu et al., 2021; Zhu et al., 2022). Along this line of reasoning, in this study, it is expected that employee knowledge application will mediate the relationship between TMGC and PEB in terms of both proactive and task-related aspects. Therefore, the following hypotheses are formulated:

$H_6$: Environmental knowledge application will mediate the relationship between top management's green commitment and proactive pro-environmental Behavior

$H_7$: Environmental knowledge application will mediate the relationship between top management green commitment and task-related pro-environmental Behavior

*2.6 Moderating Role of Green Mindfulness*

The definition of mindfulness is "consciousness that develops from paying attention to the current moment without judgment" (Errmann et al., 2021; Kabat-Zinn, 2013). The two primary mechanisms of the mindfulness construct that inform green mindfulness are highlighted in this definition. Mindfulness is a psychological construct that helps people become more aware of their inner (e.g., thoughts, feelings) and outer (e.g., verbal communication, visual symbols) environments (Brown & Ryan, 2003). When people are

more aware of their inner mental and physical states, they are better able to orient their attention to the context of their surroundings (Brown & Ryan, 2003). Contextual information within environments becomes more salient as employees become more aware of their surroundings (Brown & Ryan, 2003; Chen & Eyoun, 2021), influencing conscious information judgments (Brown & Ryan, 2003; Sawyer et al., 2021). For example, mindful employees are more respectful of the environment because they are more aware of the impacts on their own lives (Errmann et al., 2021). Green-minded employees become more aware of and contemplative of the environments in which they find themselves.

According to previous studies, there is a link between mindfulness and employee task performance (Dane, 2011; Lyddy et al., 2021). According to Herndon (2008), increased mindfulness leads to increased attention to environmental cues and, as a result, improved performance. Mindfulness can provide much focus, which can help with task-related pro-environmental behavior at work (Herndon, 2008). Employees who see their work from a broader and more meaningful perspective are more likely to fully engage in it, which is suitable for PEB (Herndon, 2008). Furthermore, mindfulness allows employees to improve their problem-solving and decision-making abilities, as well as their contact and communication skills, concentration, and attention. Therefore, mindfulness can boost PEB at work. Green mindfulness is a critical variable for green creativity to suit the global green trend. Based on the above debate, green is the best option. Various studies in other contexts reported the role of mindfulness as a moderator in another context (Lyddy et al., 2021); therefore, the following hypotheses are formulated:

> $H_8$: The relationship between top management's commitment to green practices and employees' proactive pro-environmental behavior is enhanced by the presence of green mindfulness among employees. This relationship becomes stronger when employees exhibit a high level of green mindfulness.
>
> $H_9$: The strength of the association between top management's commitment to green practices and task-related pro-environmental Behavior is influenced by green mindfulness among employees. This relationship becomes stronger when employees demonstrate a high level of green mindfulness.

The conceptual model in this paper is shown in Figure 1.

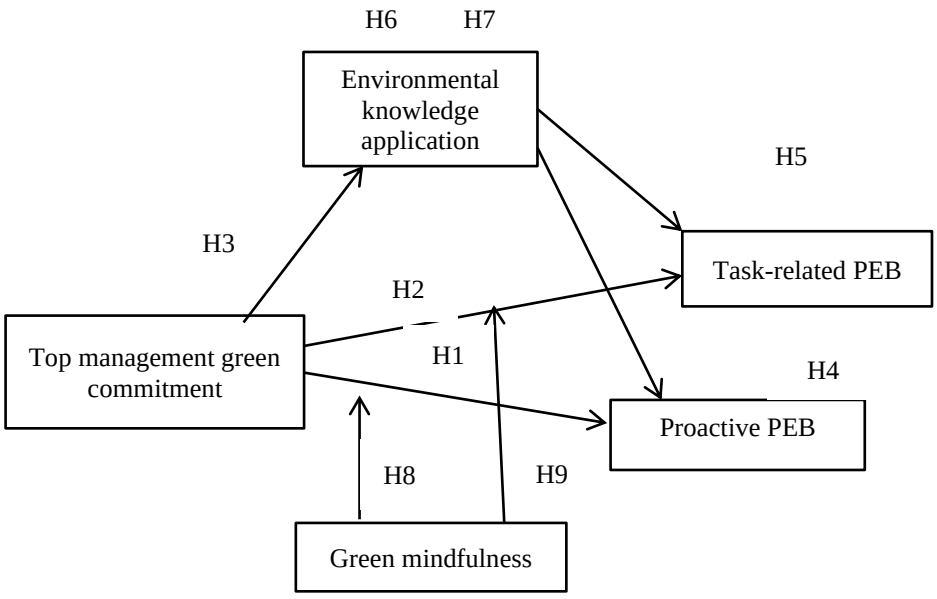


**Figure 1: Conceptual Model**

*2.7 Theoretical Underpinnings*

2.7.1 Upper Echelons Theory

The focus of the upper echelons theory is on an organization's top management, which serves as the primary interface with stakeholders and can influence an organization's decisions (Sozen et al., 2021; Hambrick & Mason, 1984). Top executives are in charge of making strategic decisions in reaction to internal and external changes (Bhatia & Jakhar, 2021; Sozen et al., 2021). They play a critical role in the acceptance of significant projects in a company (Zhao et al., 2021). As a result, top management's green commitment and support are critical for the adoption of specific environmental activities (Park et al., 2014). Top management is also in charge of facilitating and providing suitable resources to guide the organization's actions in a sustainable manner (Zhao et al., 2021).

It is critical that top management be aware of environmental laws and changes within the ecological environment and support them through measures that help integrate sustainability into the organization's practices. Therefore, this paper contends that top management's green commitment has an impact on employee green knowledge due to senior management's commitment. Past scholars have frequently accepted this viewpoint to examine business solutions to environmental challenges (e.g., Banerjee, Iyer, &

Kashyap, 2003). Further, Sharma (2000) discovered that top managers' views of environmental concerns as opportunities rather than dangers are highly linked to firms' voluntary pro-environmental approach. In other words, the way senior executives view environmental issues has an impact on corporate environmental proactivity. Furthermore, top management involvement and responsibility for the environment are strongly linked to employees' green environmental applications (Sharma, 2000).

2.7.2 Social Exchange Theory

Social exchange relationships are determined by the amount of information and support transferred between two parties (Blau, 1968; Cropanzano & Mitchell, 2005). The emphasis on social exchange links is emphasized in the conceptual framework of this study. Exchanging common interests and sharing advantages are characteristics of high-quality relationships (Blau, 1968). Workers can have distinct social exchange relationships with a variety of exchange partners, including their immediate management, coworkers, suppliers, and customers (Cropanzano & Mitchell, 2005).

Employees' proactive and task-related PEB are influenced by how their management and organization treat them, based on the social exchange theory and the reciprocity norm (Cropanzano & Mitchell, 2005). Employees who work for organizations where management is dedicated to green practices are more likely to have a positive social exchange relationship with that organization because they feel they have been treated correctly and with trust (Blau, 1968). As a result, workers are more likely to react favourably by increasing their sense of involvement at work and belonging (Blau, 1968). Employees can also improve themselves by engaging in proactive and task-related PEB (Biswas et al., 2022).

## 3. Methodology

### *3.1 Sample and Procedure*

A self-administered questionnaire was used to collect data from ready-made garment employees and their immediate supervisors. The garment workers were chosen from large-scale garment factories in Dhaka, Gazipur, and Savar, which are considered the primary hubs of Bangladesh's garment industry. Because of the growing global concern for eco-friendly procedures, large-scale garment factories were chosen because they are sensitive to environmental issues and are obligated to maintain internationally set environmental standards. The study targeted a population of 22 ready-made garment companies situated in Dhaka, Gazipur, and Savar, all of which officially consented to participate, constituting a total population of 2200 employees. Following the guidelines of Krejcie and Morgan (1970), the required sample size was determined to be 327 employees. To account for potential non-responses, 10 per cent was added, resulting in a final sample size of 360 employees (Zikmund, Babin, Carr, & Griffin, 2013). The administration of the questionnaire and data collection followed the proportional stratified sampling approach as outlined by Gay, Mills, and Airasian (2012). This was done in an effort to adequately

represent all of the different respondents' levels or cadres. Since 360 employees are needed, workers from each ready-made clothing company were picked based on their prevalence in the population to ensure proportional representation while taking into account each ready-made clothing company's size. A total of 328 valid questionnaires were collected, indicating a response rate of 91.1%. The 328 responses were sufficient based on the G*power requirement; a minimum sample size of 138 was required. Since the model had three predictors and two interactions, we set the effect size to medium (0.15) and the power needed to 0.95.

Research assistants were responsible for distributing and collecting the survey directly from the respondents. Participants were explicitly notified that the confidentiality of their personal information was assured, emphasizing that the study was solely for academic purposes.

*3.2 Measures*

3.2.1 Employees' Pro-environmental Behavior

Employee task-related pro-environmental Behavior was assessed utilizing the measurement scale devised by Bissing-Olson et al. (2013), which comprises three distinct items. The selected items encompassed statements such as "My subordinate effectively carried out assigned duties in a manner consistent with environmental sustainability," "My subordinate met the responsibilities outlined in my job description while adhering to environmentally friendly practices," and "My subordinate executed tasks aligned with environmental expectations."

Employee proactive pro-environmental behavior was evaluated employing the scale formulated by Bissing-Olson et al. (2013), which is comprised of three specific items. The included statements were "My subordinate seized opportunities to engage in environmental protection within the workplace actively," "My subordinate demonstrated initiative by adopting environmentally-friendly practices at work," and "My subordinate exceeded expectations in contributing to environmental efforts at work."

3.2.2 Top Management Green Commitment

The level of top management's commitment to environmental sustainability was assessed using the scale created by Daily, Bishop, and Steiner (2007), comprising four items. Some of the sampled statements include: "Adequate resources are allocated by top management and ownership groups for the implementation of environmental projects," "Environmental protection is considered an important issue by top management in our company," and "Top management in our company actively pursues suggestions for improving environmental protection."

3.2.3 Environmental Knowledge Application (Evaluated by Employees)

Environmental knowledge application was measured on the scale of Zhang, Xu, Jiang, and Zhang (2021), which consists of three items. A sample item includes: "I take advantage of new environmental knowledge".

3.2.4 Green Mindfulness

Green mindfulness was assessed using the scale developed by Williams and Seaman (2010), comprising six items. Examples of the measured items include: "I am comfortable discussing environmental issues and problems" and "There is encouragement to express diverse perspectives on environmental issues and problems." All items on the scale were rated on a five-point Likert scale, ranging from "strongly disagree (1)" to "strongly agree (5)" in the measurement section.

## 4. Data Analysis

The research model in this study underwent analysis using SPSS version 23 initially for data screening to ensure its suitability for Partial Least Square Structural Equation Modeling (PLS-SEM). The PLS approach, as a variance-based structural equation modelling technique introduced by Chin in 1998, was employed. Specifically, SmartPLS 3.2 software, developed by Ringle, Wende, and Will (2005), was utilized to assess both the measurement and structural models. PLS-SEM is recognized as a robust statistical tool in the fields of social and behavioral sciences, enabling the simultaneous testing of multiple relationships (Tabachnick & Fidell, 2007). Notably, PLS imposes minimal restrictions on the distributional characteristics of the data and the sample size (Ringle et al., 2005).

### *4.1 Common Method Variance*

For common method variance (CMV) estimation, the Latent Factor (CLF) and Harman Single Factor (HSF) methods were applied in this study. The loading of all items on a single factor without rotation was used as recommended by Podsakoff et al. (2003). This new factor, which was introduced to determine the HSF and then deleted, accounted for 27.8% of the variance explained, as shown by its eigenvalue. Therefore, CMV is not an issue because it is less than 50% (Podsakoff et al., 2003). The CLF technique introduces a new latent variable, connects it to all manifest variables, and constrains all pathways to being equal while keeping the common factor variance at one. The common variance is calculated using the square of each path's common factor before normalization. The resulting number of 21.5% is less than 50%, indicating that there is a need for CMV in this study (Eichhorn, 2014; Kitsis & Chen, 2021).

### *4.2 Respondents' Profile*

Concerning gender distribution, the predominant portion was male, accounting for 84.14%. Regarding age distribution, a significant majority falls under the age of 29 (67.68%). In terms of qualifications, the majority hold a Diploma (64.02%). The designation breakdown reveals that a substantial portion occupies lower-level positions (71.04%). Of the

demographic profiles of the employees' direct supervisors, 89% were male, and 31% were female. The average age of these immediate supervisors was 31 years, and they possessed an average of 4.2 years of experience working for the organizations.

*4.3 The Study Variables' Mean, Standard Deviation, and Correlation.*

The descriptive statistics and relationships for each construct are shown in Table 1. All of the criteria were found to have a substantial correlation with proactive PEB and task-related PEB among employees. With regard to the mean value, pro-active PEB has the lowest mean value (2.5691), while top management's green commitment has the highest mean value (3.9320). Proactive PEB has a mean of 2.5691 with a standard deviation of 0.74282, indicating a relatively moderate level of variability around the mean. Top management green commitment has a higher mean of 3.9320 with a smaller standard deviation of 0.76331, suggesting a more concentrated distribution around the higher mean. Environmental Knowledge Application exhibits a mean of 2.9407 and a relatively more significant standard deviation of 1.13144, indicating a wider spread of values and potential heterogeneity in respondents' knowledge application. Green Mindfulness has a mean of 2.9690 with a standard deviation of 1.00702, suggesting a moderate level of variability around the mean. Employee task-related PEB has a higher mean of 3.3394 with a smaller standard deviation of 0.79283, indicating a more focused distribution around the higher mean. Overall, these deviations from the mean provide insights into the spread and concentration of data points for each variable, helping to characterize the distribution of responses within the study.

In Table 1, significant correlations among the study variables are observed. Proactive PEB is positively correlated with top management green commitment ($r = 0.116$, $p < 0.05$) and employee task-related PEB ($r = 0.129$, $p < 0.05$). Moreover, a positive correlation is found between top management green commitment and environmental knowledge application ($r = 0.147$, $p < 0.01$) as well as employee task-related PEB ($r = 0.227$, $p < 0.01$). Environmental knowledge application is positively correlated with both top management green commitment ($r = 0.179$, $p < 0.01$) and employee task-related PEB ($r = 0.212$, $p < 0.01$). Additionally, green mindfulness demonstrates significant positive correlations with both environmental knowledge application ($r = 0.408$, $p < 0.01$) and employee task-related PEB ($r = 0.246$, $p < 0.01$). These findings suggest that a proactive approach to environmental Behavior is associated with organizational support, knowledge application, and mindfulness, highlighting the interconnectedness of these factors in fostering environmentally responsible behavior among employees.

**Table 1: Mean, Standard Deviation, and Correlation**

| Variables | 1 | 2 | 3 | 4 | 5 | Mean | SD |
|---|---|---|---|---|---|---|---|
| 1 Proactive P-EB | 1.0 | | | | | 2.5691 | 0.74282 |
| 2 Top management green commitment | .116* | 1.0 | | | | 3.9320 | 0.76331 |
| 3 Environmental Knowledge Application | .147** | .179** | 1.0 | | | 2.9407 | 1.13144 |
| 4 Green Mindfulness | -.008 | .207** | .408** | 1.0 | | 2.9690 | 1.00702 |
| 5 Employee task-related P-EB | .129* | .227** | .212** | .246** | 1.0 | 3.3394 | 0.79283 |

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

According to the guidelines proposed by Curran, West, and Finch (1996), it is suggested that the absolute values of skewness and kurtosis should both be less than 2 and 7, respectively. Additionally, Kline (2011) recommends more lenient thresholds, suggesting that the absolute value of skewness should be below 3, and the kurtosis value should be below 10. Based on the values of skewness and kurtosis observed in this study, variables are normally distributed in line with the positions of Curran et al. (1996).

*4.4 Evaluation of Measurement model (outer model)*

In this study, composite reliability (CR) was employed as the measure to assess the internal consistency reliability of the constructs. This choice was made because Cronbach's alpha assumes tau equivalence, where all items are assumed to have equal factor loadings, potentially leading to an underestimation of internal consistency reliability. In the context of Partial Least Squares Structural Equation Modeling (PLS-SEM), which was the chosen analytical approach in this study, C.R. is considered more suitable. This preference for C.R. over Cronbach's alpha is in line with the findings of Henseler et al. (2009), who argued that C.R. is better suited for PLS-SEM as it does not rely on the assumption of equal factor loadings, thereby providing a more accurate evaluation of internal consistency reliability. As reported by Hair Hult, Ringle, & Sarstedt (2021), the C.R. values for all of the variables in Table 2 are above 0.7, indicating good internal consistency. According to Hair et al. (2017), most items should be greater than 0.70, and the mean extract variance (AVE) must be greater than 0.5 for convergent validity. As shown in Table 2, all variables showed sufficient evidence of both reliability and validity (Hair et al., 2021).

**Table 2: Measurement Model / CFA**

| Variable | Loading | CR | AVE |
|---|---|---|---|
| **Green Knowledge Application** | | | |
| GK1 | 0.964 | 0.931 | 0.820 |
| GK2 | 0.767 | | |
| GK3 | 0.970 | | |
| **Green Mindfulness** | | | |
| GM1 | 0.837 | 0.909 | 0.632 |
| GM2 | 0.605 | | |
| GM3 | 0.910 | | |
| GM4 | 0.822 | | |
| GM5 | 0.613 | | |
| GM6 | 0.918 | | |
| **Proactive P-EB** | | | |
| PROAC1 | 0.876 | 0.843 | 0.729 |
| PROAC3 | 0.832 | | |
| **Top management green commitment** | | | |
| TMGC1 | 0.854 | 0.901 | 0.694 |
| TMGC2 | 0.859 | | |
| TMGC3 | 0.792 | | |
| TMGC4 | 0.826 | | |
| **Employee task-related P-EB** | | | |
| TRPRO1 | 0.977 | 0.981 | 0.944 |
| TRPRO2 | 0.978 | | |
| TRPRO3 | 0.960 | | |

The Heterotrait-Monotrait ratio (HTMT) of correlations was used to assess discriminant validity. As shown in Table 3, the HTMT value between the two variables should be less than 0.85. (Henseler et al., 2015). As a result, discriminant validity is not an issue in this study.

**Table 3: Discriminant Validity Heterotrait-Monotrait Ratio (HTMT)**

| Variable | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1 Green Knowledge Application | - | | | | |
| 2 Green Mindfulness | 0.457 | - | | | |
| 3 Proactive P-EB | 0.258 | 0.148 | - | | |
| 4 Employee task-related P-EB | 0.232 | 0.261 | 0.107 | - | |
| 5 Top management green commitment | 0.197 | 0.235 | 0.119 | 0.247 | - |

*4.5 Assessment of Structural Model (inner model)*

According to Hair et al. (2021), a bootstrapping approach should be used to evaluate each independent construct in the inner model for collinearity. Using a 5000 re-sample, Table 4 displays the Variance Inflation Factor (VIF) values for the predictors. According to Hair et al. (2021), every VIF value is less than 5, indicating that there is no collinearity among the predictors (see Table 4).

Table 4 presents the model fit assessment for the study. According to the criteria outlined by Hu and Bentler (1998), a structural model is deemed to have a good fit if the Standardized Root Mean Square Residual (SRMR) value is equal to or less than 0.08. In this study, the SRMR is reported as 0.031, falling below the threshold. Additionally, the Normal Fit Index (NFI) is noted as 0.955, surpassing the recommended threshold of 0.90. These findings indicate that the structural model in this study exhibits a good fit and can be considered reliable for further analysis.

**Table 4: Structural Model Assessment**

| | **Endogenous Variables** | **R-Square** | **R-Square Adjusted** | |
|---|---|---|---|---|
| R-Square | GKA | 0.040 | 0.037 | |
| | Pro-active P-EB | 0.058 | 0.049 | |
| | Task-related P-EB | 0.135 | 0.127 | |
| | Exogenous Variable | GKA | Pro-active P-EB | Task-related P-EB |
| Effect Size (F-Square) | GKA | | 0.050 | 0.014 |
| | GM | | 0.018 | 0.048 |
| | TMGC | 0.042 | 0.005 | 0.029 |
| | Exogenous Variable | GKA | Pro-active P-EB | Task-related P-EB |
| Inner VIF values | GKA | | 1.195 | 1.195 |
| | GM | | 1.199 | 1.199 |
| | TMGC | 1.000 | 1.064 | 1.064 |
| | Endogenous Variables | $Q^2$ (=1-SSE/SSO) | | |
| Q-Square | GKA | 0.008 | | |
| | Proactive P-EB | 0.055 | | |
| | Task-related P-EB | 0.021 | | |
| Model fit | Test | Value | | |
| | SRMR | 0.031 | | |
| | NFI | 0.955 | | |

*4.6 Hypotheses Testing*

**H1:** The study hypothesized a positive relationship between top management green commitment and employee proactive PEB. However, the analysis revealed non-significant predictive power for top management green commitment on proactive PEB ($\beta = 0.068$, $t = 1.164$, $p > 0.05$). As a result, hypothesis 1 was not supported in this study. H2: The second hypothesis posited a positive relationship between top management green commitment and employee task-related PEB. The analysis demonstrated a significant and positive association, indicating that top management green commitment predicts employee task-related PEB ($\beta = 0.166$, $t = 3.525$, $p < 0.01$). This suggests that higher levels of top management green commitment correspond to increased employee task-related PEB. Consequently, hypothesis 2 was supported.

**H3:** The third hypothesis proposed a positive link between top management's green commitment and employees' environmental knowledge application. The analysis yielded a

significant and positive relationship, indicating that top management green commitment predicts employee Environmental Knowledge Application ($\beta = 0.199$, $t = 4.021$, $p < 0.01$). This implies that greater top management green commitment is associated with higher levels of Environmental Knowledge Application among employees. Thus, hypothesis 3 was supported.

**H4:** The fourth hypothesis posited a positive relationship between Environmental Knowledge Application and employee proactive PEB. The analysis revealed a significant and positive prediction, indicating that Environmental Knowledge Application positively predicts employee proactive PEB ($\beta = 0.177$, $t = 2.720$, $p < 0.01$). This suggests that higher levels of environmental knowledge application correspond to increased proactive PEB by employees. Consequently, hypothesis 4 was supported.

**H5:** The fifth hypothesis suggested a positive relationship between Environmental Knowledge Application and employee task-related PEB. The analysis demonstrated a significant and positive association, indicating that environmental knowledge application positively predicts employee task-related PEB ($\beta = 0.168$, $t = 3.022$, $p < 0.01$). This implies that greater environmental knowledge application is associated with higher levels of employee task-related PEB. Therefore, hypothesis 5 was supported (Refer to Table 5).

The second part involves testing the hypotheses. The findings confirmed H1 in that there is a strong relationship between psychological engagement and smartphone game addiction as $\beta = 0.17$, $p<0.00$).H2 was approved on the basis of the findings that materialism has a significant positive influence on psychological engagement as $\beta = 0.18$, $p<0.00$.H3 was approved on the basis of the findings that materialism has a significant positive influence on smartphone game addiction as $\beta = 0.17$, $p<0.00$.The results supported H5 in that enjoyment significantly affects psychological engagement as $\beta = 0.50$, $p<0.00$.The results supported H6 in that enjoyment significantly affects smartphone game addiction as $\beta = 0.38$, $p<0.001$. Peer pressure has been found to significantly increase one's level of psychological engagement as ($\beta = 0.13$, $p<0.00$, lending support to H8. Peer pressure has been found to significantly increase one's level of smartphone game addiction as ($\beta = 0.20$, $p<0.00$, lending support to H9. The Figure 2 is also graphically presenting the results of structural model that depict the casual relationships of study variables.

**Table 5: Path Coefficients (direct effect)**

| Relationships | Beta | SE | t-Value | P-Value | CI | Decision |
|---|---|---|---|---|---|---|
| **H1** Top management green commitment -> Proactive PEB | 0.068 | 0.058 | 1.164 | 0.245 | -0.04, 0.179 | Not Supported |
| **H2** Top management green commitment -> Task-related PEB | 0.166 | 0.047 | 3.525 | 0.000* | 0.071, 0.257 | Supported |
| **H3** Top management green commitment -> EK | 0.199 | 0.05 | 4.021 | 0.000* | 0.108, 0.301 | Supported |
| **H4** Environmental Knowledge -> Proactive PEB | 0.177 | 0.065 | 2.72 | 0.007* | 0.030, 0.279 | Supported |
| **H5** Environmental Knowledge -> Task-related PEB | 0.168 | 0.056 | 3.022 | 0.003* | 0.062, 0.269 | Supported |

Note: *Significant at 0.01 (1-tailed), CI =Confidence Intervals

Table 6 presents the outcomes of the mediating effects of environmental knowledge application. The results indicate significant mediation relationships based on Beta values and t-values. To rigorously test the indirect effects, the bootstrapping technique with 5,000 re-samples and a bias-corrected and accelerated confidence interval was employed. In accordance with the approach outlined by Hayes and Scharkow (2013), a significant indirect effect is confirmed when the confidence interval does not span zero, meaning that both the lower and upper bounds exhibit the same sign (either positive or negative).

H6: The sixth hypothesis proposed that the application of environmental knowledge would mediate the relationship between top management's green commitment and proactive PEB. Unexpectedly, this hypothesis was not supported ($\beta = 0.035$, $t = 2.275$, $p > 0.05$). H7: The seventh hypothesis suggested that the application of environmental knowledge would mediate the relationship between top management's green commitment and task-related PEB. The analysis revealed that environmental knowledge application partially mediates this relationship, with a confidence interval ranging from 0.011 to 0.062 ($\beta = 0.033$, $t = 2.542$, $p < 0.01$), thus supporting H7.

**Table 6: Structural Model Assessment Indirect (Mediating) Effect**

| **Relationships** | **Beta** | **SE** | **t** | **P** | **LL** | **UP** | **Decision** |
|---|---|---|---|---|---|---|---|
| **H6** Top mgt. green commitment -> EK -> Proactive PEB | 0.035 | 0.015 | 2.275 | 0.023 | 0.005 | 0.063 | Not Supported |
| **H7** Top mgt. green commitment -> EK -> Task- related PEB | 0.033 | 0.013 | 2.542 | 0.011* | 0.011 | 0.062 | Supported |

H8: The eighth hypothesis posited that green mindfulness moderates the relationship between top management's green commitment and proactive PEB, explicitly enhancing the link when employee green mindfulness is high. Despite the significance based on the t-value and p-value ($\beta = -0.195$, $t = 2.507$, $p < 0.05$) as reported in Table 7, this paper rejects the hypothesis. The finding indicates that the relationship is actually stronger when the

degree of green mindfulness is low, contrary to the hypothesized direction (Refer to Figure 2).

H9: The ninth hypothesis is supported ($\beta = 0.251$, $t = 5.902$, $p < 0.05$). Figure 6 illustrates that the relationship between top management green commitment and task-related PEB is stronger for employees with high green mindfulness compared to those with low green mindfulness. This suggests that employee task-related PEB increases when both top management green commitment and green mindfulness are high (Refer to Figure 3).

**Table 7: Results of Structural Model (moderating effects)**

| Relationships | Beta | SE | T | P | CI | Decision |
|---|---|---|---|---|---|---|
| H8 TMGC*GM--> Proactive PEB | -0.195 | 0.078 | 2.507 | 0.012 | -0.361, -0.113 | Not Supported |
| H9 TMGC*GM -> Task-related PEB | 0.251 | 0.043 | 5.902 | 0.000* | 0.185, 0.357 | Supported |

*Significant at 0.01 (1-tailed), CI =Confidence Intervals

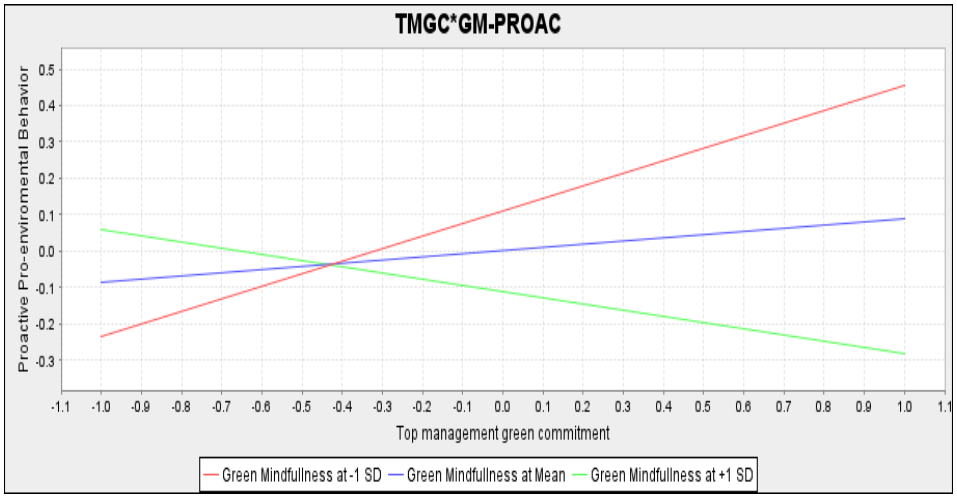


**Figure 2: Interaction Between Top Management Green Commitment and Green Mindfulness on Proactive Pro-environmental Behavior**

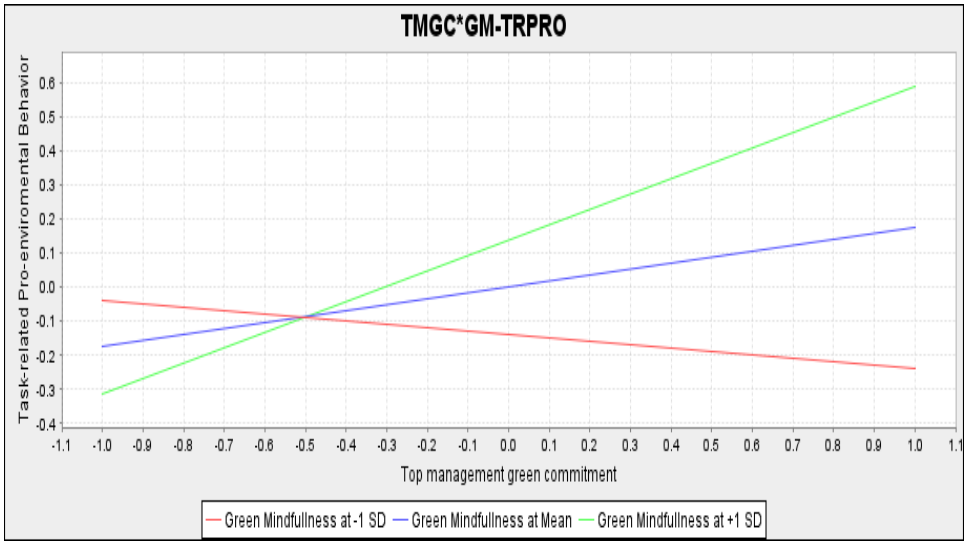


**Figure 3: Interaction Between Top Management Green Commitment and Green Mindfulness on Task-related Pro-environmental Behavior**

## 5. Discussion

The paper examined the effect of top management green commitment (TMGC) and pro-environmental Behavior (PEB) using a moderating role of green mindfulness and a mediating role of employee environmental knowledge application (EKA) among employees of ready-made garments in Bangladesh. Based on the findings obtained in this study, top management's green commitment does not significantly predict proactive PEB. This finding is not consistent with the prior study that reports top management's green commitment significantly predicts proactive pro-environmental Behavior (Graves, Sarkis, & Gold, 2019; Darvishmotevali & Altinay, 2022; Nasir et al., 2023; Wei et al., 2023; Aktar & Islam, 2019; Hasan et al., 2024). The possible reason why this relationship is not significant is that the management of ready-made garments pays closer attention to task-related PEB compared to proactive PEB. The finding established a significant relationship between top management's green commitment and employee task-related PEB. This implies that the higher the top management's green commitment, the higher the employee task-related PEB. This finding is consistent with the prior study that reported the significance of top management's green commitment in enhancing task-related PEB (Colwell and Joshi, 2013; Graves, Sarkis, & Gold, 2019; Srivastava et al., 2024; Ma, Liu, Appolloni, & Liu, 2021; Zhang et al., 2024). One possible reason for this finding could be attributed to the management style in Bangladesh. Managers in Bangladeshi companies are mostly autocratic in their beliefs and perceptions, and managers appear philosophically

opposed to employee freedom and participation. The dominant pattern of organizational Behavior in Bangladesh demonstrates a strong resistance to delegation as well as a marked proclivity toward bureaucratic, centralized, and paternalistic management (Khasro Miah, Wakabayashi, & Takeuchi, 2003).

The paper also established that top management's green commitment is related to employees' application of environmental knowledge. This finding is in line with the study by Roy and Khastagir (2016) and Uda and Basrowi (2024), which found that established employees applied their environmental knowledge if top management could provide a supportive environment that reflected their commitment, especially if they made environmental knowledge accessible to their employees. This paper supported the finding that environmental knowledge application positively and significantly predicts proactive and task-related PEB. This finding is in line with prior studies (Fu et al., 2020; Safari, Hasan et al., 2024; Salehzadeh, Panahi, & Abolghasemian, 2018; Zhang et al., 2021). The possible reason could be a result of the country's efforts in environmental education. Bangladesh's government is fully committed to dealing with the threats posed by global climate change through proper education of its citizens about climate change.

Environmental knowledge application partially mediates the relationship between top management's green commitment and task-related PEB in this study. This finding supports the earlier study that reported environmental knowledge application as an essential mediator in another context (Ode & Ayavoo, 2020). Surprisingly, the application of environmental knowledge did not mediate the relationship between top management's green commitment and proactive PEB. One plausible explanation for this discovery is the fact that top green management commitment is not a direct predictor of proactive PEB.

Green mindfulness was discovered to influence the correlation between the green commitment of top management and task-related PEB, with a stronger connection observed when employee green mindfulness is high. Interestingly, the moderating effect of green mindfulness was not evident in the relationship between green top management commitment and proactive PEB. The results indicate that the connection is more pronounced when the level of green mindfulness among employees is low. This discovery suggests potential opportunities for future studies to investigate this relationship in different contexts.

### *5.1 Theoretical implications*

This paper has theoretical significance in the management and environmental management literature, especially concerning the introduction of green mindfulness as a moderator and environmental knowledge application as a mediator. First, this paper reveals the mechanism of the influence of top management's green commitment on two dimensions of employee PEB (employee task-related and proactive PEB). Second, to explain the process by which top management's green commitment impacts PEB through the application of environmental knowledge, this research model draws on social exchange theory (Blau, 1964). Previous research on the mediating mechanism between top management's green

commitment and task-related and proactive PEB as two primary categories of employees' PEB had been limited; thus, this study addressed that gap.

*5.2 Practical Implications*

This research has many important implications, particularly for practitioners in the ready-made garment sector and the government. First, the findings revealed that task-related PEB is dependent on top management's green commitment. Therefore, ready-made garment top management can demonstrate their green commitment by including it in the mission and making it a business aim and priority, displaying their full support for environmental sustainability. When developing strategy and operating processes, top managers are recommended to prioritize environmental challenges facing the industry. Additionally, they can create a written policy that expresses their commitment to providing the necessary support and resources to ensure that the ready-made garment firm meets the needed environmental standards. It is recommended that top managers dedicate more expenditures to educating key staff to ensure effective task-related green performance. Additionally, top management is recommended to provide regular feedback to staff to keep them informed about their organization's green practices. Mid-level managers may be involved in the formulation and implementation of environmental programs by senior management. They must review their environmental initiatives regularly to assess their progress toward fulfilling their stated objectives, find gaps, and take appropriate action.

Secondly, the application of environmental knowledge was found to be related to employee tasks and PEB. Therefore, there is a pressing need to raise environmental awareness among employees, which will make them more aware of the devastating effects of the wrong green Behavior at work. Thirdly, education is an effective means of changing behavior. Thus, environmental education has mainly focused on increasing environmental knowledge. Thus, enhancing employees' knowledge about the importance of sustainability. Further, education is a powerful tool for changing Behavior. As a result, environmental education is recommended to raise environmental awareness. Thus, improving the employees' knowledge of environmental issues and challenges at work.

Given the statistically significant relationships between top management's green commitment and both task-related PEB and environmental knowledge (E.K.), organizations should focus on enhancing their top management's commitment to environmental sustainability that could be achieved through leadership training, setting clear green initiatives, and fostering a culture of environmental responsibility. Secondly, recognizing the positive impact of environmental knowledge on proactive and task-related PEB, organizations should invest in training and educational programs aimed at increasing employees' understanding of environmental issues and sustainable practices which include workshops, seminars, and online resources to enhance employees' awareness and knowledge. Thirdly, since top management's green commitment has a significant effect on task-related PEB, organizations can encourage employees to integrate environmental

considerations into their day-to-day tasks and decision-making processes that could involve incorporating sustainability metrics into performance evaluations and providing incentives for environmentally responsible actions. Fourthly, while the direct effect of top management's green commitment on proactive PEB might not be statistically supported, organizations can still encourage employees to take proactive steps towards sustainability. This could involve creating a platform for employees to share innovative green ideas, recognizing and rewarding proactive behavior, and fostering a sense of ownership in environmental initiatives.

Fifthly, given the positive influence of environmental knowledge on both proactive and task-related PEB, organizations should consider integrating sustainability as a core component of their overall strategy that could involve developing a sustainability mission statement, setting specific environmental goals, and regularly communicating progress to employees and stakeholders. Sixthly, to maintain the positive effects of top management's green commitment and environmental knowledge, organizations should establish a system of continuous learning and training that can help ensure that employees stay updated on the latest sustainability practices, technologies, and trends, enabling them to make informed decisions and contribute to the organization's environmental goals. Encourage collaboration between different departments and functions within the organization to promote a holistic approach to sustainability. Cross-functional teams can work together to develop and implement initiatives that address various aspects of environmental impact. Develop effective communication strategies to raise awareness about the organization's environmental initiatives and progress. Regularly engage employees through newsletters, meetings, and workshops to ensure they are informed and motivated to participate in pro-environmental activities.

The findings that environmental knowledge application mediates the positive relationship between top management's green commitment and task-related PEB indicate the essential role of environmental knowledge application in instigating task-related PEB. Because employees' environmental knowledge and skills are critical for ready-made garment firms to develop employee task-related PEB, companies must hire the greatest human capital and train and improve their existing employees so that they can help the green organization improve green practices. Ready-made garment firms can improve their human capital by teaching their employees about environmental issues. In line with this study's findings, ready-made garment businesses must incorporate environmental mindfulness into their routine activities to improve employee task-related PEB.

*5.3 Implication of the Study to Sustainable Development*

The findings of this study have practical implications that align with certain Sustainable Development Goals (SDGs), which are a set of global objectives established by the United Nations to address various social, economic, and environmental challenges.

Responsible Consumption and Production (SDG 12): The positive relationship between top management's green commitment and task-related PEB, as well as environmental

knowledge, highlights the importance of fostering sustainable consumption and production practices within organizations. When top management is committed to environmentally friendly practices and when employees have a better understanding of environmental issues, it can lead to sustainable production processes.

Climate Action (SDG 13): The study's emphasis on top management's green commitment to influencing environmental knowledge and proactive environmental behaviour connects with SDG 13's focus on taking urgent action to combat climate change and its impacts. When organizations prioritize environmentally conscious practices and employees gain knowledge about environmental issues, it can contribute to efforts to reduce greenhouse gas emissions and mitigate climate change.

Quality Education (SDG 4): the relationship between top management's green commitment and employees' environmental knowledge underscores the significance of education and training in sustainability. Promoting environmental education and providing resources for employees to increase their environmental knowledge can contribute to achieving SDG 4, which aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

Industry, Innovation, and Infrastructure (SDG 9): the findings suggest that top management's commitment to green practices can influence employees' task-related PEB. The finding led to innovations in processes and practices that align with sustainable development principles. Organizations that embrace sustainability can contribute to SDG 9's goal of building resilient infrastructure, promoting sustainable industrialization, and fostering innovation.

Life on Land (SDG 15): the positive link between environmental knowledge and proactive environmental behavior highlights the potential positive impact on terrestrial ecosystems. Educated employees who engage in proactive environmental behavior can contribute to the conservation of biodiversity and the preservation of ecosystems on land, supporting the objectives of SDG 15.

*5.4 Limitation and Future Research*

Despite the study's contributions and implications for research and practices, the paper has some limitations that can help in future research. First, this paper focused on top management's green commitment as an independent variable to provide insights concerning the two dimensions of PEB and found interesting findings. Nevertheless, future researchers can focus on various leadership styles, such as destructive leadership or inclusive leadership, to understand employee behavior. Second, this paper can be replicated by combining other individual and organizational factors in one model to explain the moderating effects, such as green self-efficacy and supervisors' personality traits, to strengthen top management's green commitment and PEB relationship in other contests and the mediating role of green empowerment finally. At the same time, this study was a

single quantitative study with data collected by a cross-sectional survey, qualitative research or a mixed-methods strategy with a temporal lag for data gathering is strongly recommended.

*5.5 Conclusion*

This paper on pro-environmental behavior research in ready-made garment firms primarily focused on ready-made garment firms, looking at the mechanism through which top management's green commitment influences PEB and combining both individual and organizational factors in understanding PEB in Bangladesh. Individual, managerial, and relational-level variables were all incorporated in this study's integrated model. In addition, unlike earlier research that primarily looked at the direct relationship, this study took into employee knowledge applications. The results showed that the model was well-fitted. The practical implications of these findings are aligned with several sustainable development goals, particularly those related to responsible consumption and production, climate action, quality education, industry innovation, infrastructure, and life on land. Organizations that take steps to promote top management's green commitment, enhance employees' environmental knowledge, and encourage environmentally friendly Behavior can contribute to broader sustainable development objectives and help address critical global challenges.

**Research Funding**

The authors received no research grant or funds for this research study.

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