The influence of socially responsible human resource management on green behaviours in the aviation industry

Thi Lan Phuong Nguyen, Thi Thu Huong Nguyen, Aleksandr Ključnikov

ABSTRACT

Many organizations are facing environmental issues and learning how to improve employee green behavior. However, few researchers have addressed the problem of GFHRM policies from the viewpoint of aviation industry employees. The purpose of this study is to examine the influence of general CSR facilitation human resource management (GFHRM) on green behaviour in the aviation industry and to improve the competitiveness of organisations. Using the social exchange theory, this study looks at the relationships between GFHRM and green behaviour and the mediation of an employee’s green work engagement while moderating roles of environmental leadership. The data were gathered from 397 respondents in the aviation industry in Vietnam through the use of the questionnaires on Google Docs. The time-lag technique is used to collect data to avoid common method bias. The results show that GFHRM has a positive relationship with employees’ in-role green behavior. Furthermore, GFHRM impacts positively on employees’ in-role green behaviors through employee work engagement. Moreover, environmental leadership has a positive moderating influence on the link between GFHRM and employees’ in-role green behaviors. The study focuses on CSR practices that put employees first, which have been looked at by a number of aviation industry companies. The importance of leaders in achieving environmental sustainability is shown by our research. This study notably highlights the interaction between GFHRM and environmental leadership on staff’s green behaviour while performing their job duties. Employee green work engagement may be best placed to moderate the association between GFHRM and in-role employee green behavior.

Keywords: General CSR facilitation HRM, environmental leadership, in-role green behavior, aviation industry

JEL Classification: M54, O15

1. INTRODUCTION

Managers need to actively participate in addressing environmental issues by adjusting their strategies, monitoring systems, and skills (Boiral et al., 2009). Companies that invest in environmental management may gain advantages that enable them to implement unique differentiation strategies, boost their reputations as environmentally friendly (Nejati et al., 2017) and sustainable (Rozsa et al., 2022), gain competitive long-term sustainability advantages (Metzker et al., 2021), and increase their corporate social responsibility activities (Vavrova, 2022; Androniceanu, 2019). However, due to a lack of financial assets (Civelek et al., 2023; Krajčík, 2022) and capital (Civelek et al., 2022), fragile structures (Civelek & Krajčík, 2022), and low revenues, small and medium-sized enterprises (SMEs) may fall behind in this regard (Ključnikov et al., 2021a; 2022). Nevertheless, innovative actions may enable them to improve their performance (Šimková et al., 2022), compete with their larger-sized rivals (Civelek et al.,
2021; Ključnikov et al., 2021b), and increase their ability to implement strategies for environmental management.

The facilitation of general corporate social responsibility (CSR) is a main part of a socially responsible human resource management system (Androniceanu et al., 2022). According to Pham et al. (2019), human resource management (HRM) should measure and affect staff’s sustainability-related actions, attitudes, knowledge, and motivation. HRM that supports broad CSR initiatives is concerned with implementing HRM principles and procedures that ensure that a company protects the interests of its stakeholders and achieves both short- and long-term sustainability (Shen & Zhu, 2011). An organization must investigate how general CSR facilitation human resource management (GFHRM) influences employees’ green behaviours to preserve sustainability, which necessitates considering its overall environmental efficiency (Kim et al., 2019). CSR requires businesses to enhance their environmental preservation efforts (Marakova et al., 2021) and competitive performance (Mai et al., 2021; Stojanovic et al., 2020). General CSR concerns, such as poverty reduction (Jenkins, 2005), climate change (Le Menestrel & de Bettignies, 2002), pollution prevention, and natural disaster aid (Androniceanu & Georgescu, 2023), must be addressed to safeguard the interests of various societal parties.

Green strategy-driven businesses typically see improved employee results (Hameed et al., 2020; Su & Swanson, 2019). To realize their potential for green behaviour, firms must encourage employee outcomes (Zibarras & Coan, 2015). Thus, green behaviour is attracting considerable attention. Employees have a fully acknowledged responsibility from leaders to address environmental issues (Kim et al., 2019; Luu, 2019). Employee acts that promote environmental management strategies at work are frequently referred to as "green behaviours" (Dumont et al., 2017). When employees’ green behaviours are taken into consideration, green practices are most successfully adopted in the workplace. Furthermore, inspiring staff to engage in green practices is crucial for environmental protection operations (Mazzi et al., 2016; Androniceanu & Sabie, 2022) that enhance environmental practices and provide companies with a competitive advantage (Kim et al., 2019).

Studies on various industries, including manufacturing, services, banking (Shao et al., 2019), tourism and hospitality (Tuan, 2021; Zhao & Zhou, 2020), and the naval sector (López-Fernández et al., 2018), have contributed to the growth of SRHRM research in recent years. In the aviation industry, many studies have investigated the benefits of CSR for customers’ perceptions of service suppliers (Choi & La, 2013) and customer satisfaction (Oppewal et al., 2006). However, few empirical studies have examined GFHRM policies from the perspective of employees in this sector. Moreover, a recent literature review emphasized the need for further research on various service industries (Pham et al., 2019). Thus, this study aimed to develop a framework for the influence of GFHRM on employees’ green behaviours, advance the GFHRM literature in general and the aviation industry in particular, and test the following questions empirically: Does employee green engagement mediate the relationship between GFHRM and employees’ in-role green behaviours? Does environmental leadership play a moderating role? We hypothesized that green work engagement (GWE) would mediate the relationship between GFHRM and employees’ green behaviours; see Figure 1. This relationship was premised on social exchange theory (SET) (Blau, 1964). Testing this research paradigm in the context of Vietnam (Nguyen & Diez, 2017) may expand the scope of these ideas. Vietnam’s shift from a centrally planned to an economic system has exposed companies to competition (Nguyen &
Diez, 2017). Vietnam could be a useful setting for investigating the association between SRHRM and employees’ adoption of environmentally friendly practices (Luu, 2013).

Fig. 1. Theoretical model (source: own research)

2. THEORETICAL BACKGROUND

2.1 Social Exchange Theory (SET)

Blau’s (1964) SET defines employment as the exchange of employees’ work and loyalty for a company’s provision of social resources and tangible incentives (Cropanzano & Mitchell, 2005). In fact, “only social exchange tends to engender feelings of personal obligations, gratitude, and trust; purely economic exchange as such does not” (p. 94). Thus, this theory considers employees’ engagement a significant social exchange system (Vadera et al., 2013). When employees experience a favourable work environment due to motivation provided by their team, company, or supervisor, they feel obliged to reciprocate by adopting positive attitudes and actions that support the organization’s objectives (Vadera et al., 2013). SET has been used to explain how SRHRM works (Jia et al., 2019; Newman et al., 2016). Based on this theory, we created a conceptual framework that proposes employee green work engagement (GWE) as a mediator in the relationship between GFHRM and employees’ in-role green behaviours.

2.2 Social Learning Theory

Social learning theory (SLT) is built on the idea that we learn from our social interactions with others. People develop similar behaviours by observing the behaviours of others. People assimilate and imitate the behaviour of others after following it, especially if their observational experiences are positive or include rewards related to the observed behaviour. Bandura (1977) defines imitation as the actual reproduction of observed motor activities. It is considered that the principles of social learning work in the same way throughout life. Based on these broad principles, learning can take place without behavioural changes. In contrast, social education theorists say that since individuals can learn from observation alone, they may not necessarily exhibit their knowledge in their performance (Bandura, 1977). In this study, SLT is used to explain the relationship, which is related to the environmental leadership variable.
2.3 GFHRM and employees’ in-role green behaviours (EIB)

General CSR facilitation human resource management (GFHRM) entails the use of HRM principles and procedures to engage businesses and their personnel in broader CSR programmes, such as minimizing environmental pollution (Dixon-Fowler et al., 2013) and combating climate change (Eberlein & Matten, 2009). These principles and procedures include praising and rewarding workers who support CSR projects, designating staff to oversee CSR initiatives, and prioritizing residents for hiring, especially those who have family issues or who have lost their jobs (Shen & Zhu, 2011). Employees are expected to engage in green behaviour as part of their job duties, which is the same as task performance (Tian et al., 2020). Hence, GFHRM suggests a new level of social consciousness in personnel management by calling for the adoption of procedures and guidelines that complement CSR and human resource activities in businesses (Barrena-Martinez et al., 2019). Moreover, according to SET, workers try to maintain a healthy social exchange relationship in the long term and create a mutually beneficial exchange balance at work (Blau, 1964). Employees’ in-role green behaviours are another element of green behavior (Davis et al., 2019). Job descriptions typically include the organizational behaviors that employees must exhibit. Workers must be conscious of the environment in addition to the tasks at hand in the aviation sector because green behavior is advised, given the nature of the work. Employees are more likely to feel obliged to reciprocate by participating in activities that are beneficial to the firm when they sense that their employer cares about their well-being (Blau, 1964). Shen and Benson (2016) argue that SRHRM may impact employees’ green behaviours while GFHRM is an element of SRHRM. Thus, we propose the following hypothesis:

H1: GFHRM positively influences employees’ in-role green behaviours.

2.4 Employees’ green work engagement (GWE) as a mediator

Work engagement is defined as “a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption” (Schaufeli et al., 2002, p. 74) and refers to an employee’s conceptual, spiritual, and physical commitment to a task. This leads to the concept of GWE, which refers to the amount of effort that employees expend to perform their green work assignments and their willingness to be involved in such work (Aboramadan et al., 2020). Employees’ in-role green behaviours are positively impacted by GWE.

According to the reciprocity notion of SET, when workers believe that their employer values them and their work, they are compelled to reciprocate in a similar manner (Blau, 1964). Moreover, according to Arthur (1994) and Wood et al. (1998), HRM promotes organizational effectiveness by fostering a climate in which workers actively engage with the organization and are committed to achieving its objectives. A social human resource management orientation through organizational commitment (Shen & Zhu, 2011), ethical treatment (Mura et al., 2021), and employee-focused CSR practices (Jong, 2011) is positively associated with employee engagement. According to López-Fernández et al. (2018), the association between SRHRM and employee commitment depends on how employees feel about SRHRM. Hence, we also propose the following hypothesis:

H2: GFHRM positively affects employees’ in-role green behaviours through employee green work engagement.

2.5 Environmental leadership as a moderator
As mentioned, GFHRM impacts positively on GWE, and GWE motivates them to adopt green behaviors. According to social learning theory, employees are more aware of environmental leaders and attempt to emulate and mimic their actions (Islam et al., 2020). When environmental leadership is high, GFHRM strongly impacts GWE. However, the mediator role of GWE can be changed when environmental leadership is changed. Based on the social learning theory (Bandura, 1977) and the social exchange theory (Blau, 1964), in an organization, when leaders pay attention to environmental leadership and GFHRM policies are set up higher, the reaction of environmental leadership on GWE is stronger. Hence, we propose this hypothesis:
H3: Environmental leadership moderates the effect of the link between GFHRM and GWE.

Moreover, according to social learning theory, when leaders pay greater attention to environmental leadership and GFHRM policies are put up higher in an organisation, the influence of environmental leadership on GWE is stronger. This indicates that employees are quite committed to exhibiting in-role green behaviour. Liu et al. (2016) and Kim and Stepchenkova (2018) stated that environmental leadership (ELS) improves environmental performance by influencing workers' green behaviours. Environmental leaders educate their followers on environmental values and take concrete actions to put environmental preservation concepts into action. Such actions strongly signal to followers that workplace environmental measures are respected, increasing employees' willingness to participate in green activities (Robertson & Barling, 2013). On the other hand, employees do not follow the techniques outlined in the job description. It indicates that the EIB is low. Hence, we state the hypothesis as follows:
H4. The mediating effect of the GWE on the link between GFHRM and the EIB is moderated by environmental leadership.

3. METHODOLOGY AND DATA

The quantitative approach is used because the purpose of this study is to test the relationship between GFHRM and employees’ green behaviours and the mediation role of an employee’s green work engagement while moderating roles of environmental leadership. The data were identified by a two-stage procedure, followed by an online questionnaire survey. Then data was analysed using the SPSS, Smart PLS and PROCESS software packages.

3.1 Measurements
The questionnaire design was produced in English based on the scales above. Two academics who were bilingual in English and Vietnamese independently translated the questionnaire back into English, with any lingering concerns addressed through further discussion (Schaffer & Riordan, 2003). Each item was rated on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). To investigate the suitability of the questionnaire items, focus groups were consulted.

GFHRM was measured using Shen and Zhu’s (2011) scale. An example item was “my firm allocates adequate staff for general CSR initiatives.” The alpha coefficient was 0.816.
A six-item scale developed by Chen and Chang (2013) was used to assess environmental leadership. An example item was “the leader inspires company employees with environmental plans.” The alpha coefficient was 0.910.

Employee green work engagement was measured using a six-factor scale adapted by Aboramadan et al. (2020) based on Schaufeli et al. (2006). The alpha coefficient was 0.858.

Employees’ in-role green behaviours were measured using a scale developed by Bissing-Olson et al. (2013). An example item was “today, I sufficiently performed my assigned duties in environmentally friendly ways.” The alpha coefficient was 0.844.

### 3.2 Control variables
We treated the age, gender, and work experience (EXP) of the respondents - employees as control variables. Gender was recorded as 0 = male and 1 = female. Age was calculated using calendar years, while work experience was determined by asking, “how long have you been working in your current job (year)?”. This study used ratio scale (years) instead of a nominal one. This is important for testing correlations and regression. Then we categorized age and work experience according to the ranges presented in Table 5.

### 3.3 Data collection and analysis
The respondents were employees with at least one year of experience in the aviation industry. The participants accessed the questionnaires on Google Docs using PCs or mobile devices. Before administering the surveys, an author contacted the heads of departments of Vietnamese aviation businesses via email and explained the aims of the study. If they showed an interest in participating, we sent them an email with a survey link. To reduce potential common method bias, separate surveys were conducted in two waves (Podsakoff et al., 2012) from February to April 2022. Previous scholars such as Tuan (2021) and Ali et al. (2020) used time-lagged data collection in their studies. In the first wave, data on collective GFHRM and environmental leadership were garnered from aviation companies. The authors sent out 600 questionnaires and received 451 completed responses. After carefully examining the returned questionnaires, defective questionnaires were deleted due to issues such as missing data and major discrepancies. In this round, 397 people completed the survey. One month later, these respondents participated in a second survey related to green work and their green behaviours while performing their duties. The sample size of this study is 397, which is more than the minimum requirement of 200 respondents when using SEM for analysis (Hoogland & Boomsma, 1998; Soper, 2022; Westland, 2010). To avoid the common method variance caused by using perceptual data from the same source, information on these two rounds was gathered from various companies in the Vietnamese aviation industry at two different times (Podsakoff et al., 2012). 3A (Airlines, Airport, Air traffic control) were focused on in this survey. Main organizations in the Vietnam aviation industry are the Airports Corporation of Vietnam, the Vietnam air traffic management corporation, and airlines: Vietnam Airlines, Vietjet Air, Bamboo Airlines, Pacific Airlines and Vietravel Airlines. A survey was sent to all except Bamboo Airways and Vietravel Airlines, because they have been operating under three years. Data analysis was performed using SPSS, Smart PLS software and the PROCESS package.

### 3.4 Descriptive and demographic statistics
We examined the descriptive statistics of the sample. The purpose of descriptive statistics is to describe the features of a sample. Each variable’s median, mean, and standard deviation are reported together with a cross-tabulation of the demographic data in Tables 1 and 2.

### Tab 1. Descriptive statistics of the questionnaire items.

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean</th>
<th>Median</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>GFHRM1</td>
<td>4.634</td>
<td>5</td>
<td>1.291</td>
</tr>
<tr>
<td>GFHRM2</td>
<td>4.760</td>
<td>5</td>
<td>1.221</td>
</tr>
<tr>
<td>GFHRM3</td>
<td>4.803</td>
<td>5</td>
<td>1.217</td>
</tr>
<tr>
<td>ELS1</td>
<td>3.790</td>
<td>4</td>
<td>1.396</td>
</tr>
<tr>
<td>ELS2</td>
<td>4.359</td>
<td>5</td>
<td>1.492</td>
</tr>
<tr>
<td>ELS3</td>
<td>3.947</td>
<td>4</td>
<td>1.441</td>
</tr>
<tr>
<td>ELS4</td>
<td>4.538</td>
<td>5</td>
<td>1.484</td>
</tr>
<tr>
<td>ELS5</td>
<td>4.462</td>
<td>5</td>
<td>1.494</td>
</tr>
<tr>
<td>ELS6</td>
<td>4.495</td>
<td>5</td>
<td>1.492</td>
</tr>
<tr>
<td>GWE1</td>
<td>4.806</td>
<td>5</td>
<td>1.115</td>
</tr>
<tr>
<td>GWE2</td>
<td>4.674</td>
<td>5</td>
<td>1.169</td>
</tr>
<tr>
<td>GWE3</td>
<td>4.184</td>
<td>4</td>
<td>1.193</td>
</tr>
<tr>
<td>GWE4</td>
<td>4.785</td>
<td>5</td>
<td>1.104</td>
</tr>
<tr>
<td>GWE5</td>
<td>4.712</td>
<td>5</td>
<td>1.152</td>
</tr>
<tr>
<td>GWE6</td>
<td>4.434</td>
<td>4</td>
<td>1.145</td>
</tr>
<tr>
<td>EIB1</td>
<td>4.801</td>
<td>5</td>
<td>1.154</td>
</tr>
<tr>
<td>EIB2</td>
<td>4.765</td>
<td>5</td>
<td>1.141</td>
</tr>
<tr>
<td>EIB3</td>
<td>4.725</td>
<td>5</td>
<td>1.158</td>
</tr>
</tbody>
</table>

Source: Own research

The latent variable averages ranged from 3.790 to 4.806; their standard deviations ranged from 1.104 to 1.494; and the medians ranged from 4 to 5. This indicates that most respondents chose the agree response.

### Tab 3. Eta value

<table>
<thead>
<tr>
<th>Source: own research</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nominal by interval</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Eta value</td>
</tr>
</tbody>
</table>

Eta value = 0.008 < 0.05 (Cohen, 1992) would be an indication of a weak association between gender and EIB (see Table 3).

### Tab 4: Tests of Between-Subjects Effects

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Partial Eta Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected model</td>
<td>.010*</td>
<td>1</td>
<td>.010</td>
<td>.023</td>
<td>.880</td>
<td>.000</td>
</tr>
<tr>
<td>Intercept</td>
<td>9858.029</td>
<td>1</td>
<td>9858.029</td>
<td>23537.609</td>
<td>.000</td>
<td>.983</td>
</tr>
</tbody>
</table>

Source: own research
Gender  .010  1  .010  .023  .880  .000
Error  165.434  395  .419
Total  10023.889  397
Corrected Total  165.444  396

a. R Squared = .000 (Adjusted R Squared = -.002)

Sig value (Gender) = 0.880 > 0.05 means it is not statistically correlated between gender and EIB. Partial Eta Squared = 0.000 < 0.01 (Cohen, 1992) is interpreted as the percentage of variance in the dependent variable. Hence, it means that 0% of EIB is explained by gender, or the effect size of gender on EIB is very small (see Table 4).

3.5 Measurement assessment and common method variance
When the heterotrait-monotrait (HTMT) values are less than 0.9, a model’s discriminant validity is compromised (Henseler et al., 2015) as the figures in Table 5 demonstrate. Factor loadings, Cronbach alpha, composite reliability, and average variance extracted (AVE) were used to evaluate the measurements. The AVE was computed for each set of the construction’s parts. The results are shown in Table 6. All AVE values were higher than 0.5, suggesting that all constructs explained more than 50% of the variability in their indicators.

Tab 5. Correlations and discriminant validity.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Age</th>
<th>EXP</th>
<th>ELS</th>
<th>GFHRM</th>
<th>EIB</th>
<th>GWE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXP.</td>
<td>0.858</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>0.039</td>
<td>0.054</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ELS</td>
<td>0.105</td>
<td>0.097</td>
<td>0.707</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GFHRM</td>
<td>0.093</td>
<td>0.083</td>
<td>0.707</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EIB</td>
<td>0.093</td>
<td>0.094*</td>
<td>0.579</td>
<td>0.643***</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>GWE</td>
<td>0.114</td>
<td>0.120</td>
<td>0.347***</td>
<td>0.432***</td>
<td>0.560***</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: ***p < 0.001; *p < 0.05; EXP. is interpreted as "work experience."

3.6 Common method variance
Table 6 displays the scales’ Cronbach’s alpha values and overall reliability. According to Kock and Lynn (2012), who discussed common method bias phenomena in the context of PLS-SEM, convergent and discriminant validity tests are essential for confirmatory factor analyses (Tables 5 and 6).

Tab 6. Convergent validity and internal consistency reliability.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Item</th>
<th>Convergent validity</th>
<th>Internal consistency reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Outer loading</td>
<td>AVE</td>
</tr>
<tr>
<td>GFHRM</td>
<td>GFHRM1</td>
<td>0.774</td>
<td>0.734</td>
</tr>
<tr>
<td></td>
<td>GFHRM2</td>
<td>0.889</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GFHRM3</td>
<td>0.901</td>
<td></td>
</tr>
<tr>
<td>ELS</td>
<td>ELS1</td>
<td>0.723</td>
<td>0.695</td>
</tr>
<tr>
<td></td>
<td>ELS2</td>
<td>0.870</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ELS3</td>
<td>0.733</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ELS4</td>
<td>0.897</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ELS5</td>
<td>0.897</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ELS6</td>
<td>0.862</td>
<td></td>
</tr>
<tr>
<td>GWE</td>
<td>GWE1</td>
<td>0.774</td>
<td>0.586</td>
</tr>
<tr>
<td></td>
<td>GWE2</td>
<td>0.765</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GWE3</td>
<td>0.716</td>
<td></td>
</tr>
</tbody>
</table>
The conceptual model had sufficient convergent validity since the metrics met the minimum requirements. The constructs’ AVE values ranged from 0.586 to 0.763—that is, they exceeded the threshold of 0.5. The indicators’ loading factors ranged from 0.716 to 0.902, thus exceeding the threshold of 0.7 (Hair et al., 2017; 2019). Moreover, the model had sufficient internal consistency, with composite reliability values ranging from 0.892 to 0.931, Cronbach alpha values ranging from 0.816 to 0.910, and rho_A values ranging from 0.824 to 0.918, all of which were above the required thresholds (Hair et al., 2017; 2019).

4. RESULTS AND DISCUSSION

Direct Hypothesis testing
Hypothesis 1 suggested that GFHRM is positively associated with employees’ in-role green behaviours. Our results reveal that GFHRM is positively related to employees’ in-role green behaviours (b = 0.466, p < 0.001), supporting Hypothesis 1.

Mediating role of employees’ green work engagement hypothesis testing
As shown in Table 4, the research findings indicate that GFHRM was positively related to GWE (b = 0.760, p < 0.001), and GWE was positively related to EIB (b = 0.398, p < 0.001). GFHRM had a significant indirect effect on employees’ in-role green behaviours (b = 0.303, p < 0.001). Thus, GFHRM had a positive indirect effect on EIB through GWE, supporting H2.

Moderating effect of environmental leadership (ELS) hypothesis testing
We hypothesised that environmental leadership would have a moderating effect on the relationship between GFHRM and GWE (Hypothesis 3). A significant negative relationship was observed between the interaction term (ELS × GFHRM) and GWE (β = −0.161; p < 0.001; CI = [−0.027; −0.110], not containing zero. The moderating effects of ELS are illustrated in Figure 2. The effect of GFHRM on GWE was strong when ELS levels were high and weak when ELS levels were low.

Thus, hypothesis 3 is accepted.
Finally, we conducted a moderated mediation analysis. The findings demonstrate that ELS moderates the indirect influence of GFHRM on EIB via GWE \((B = -0.064; p < 0.001)\) such that this indirect influence is stronger when the level of ELS is high and weaker when the level of ELS is low. Thus, hypothesis 4 is supported.

The determination coefficient is a phase in the structural model evaluation process that uses an \(R^2\) value to assess the model's predictive power. EIB \((0.514)\) and GWE \((0.286)\) both had high prediction accuracy (Cohen, 1992). Following that, we utilized PLSpredict in SmartPLS 4.0 with 10 folds and 10 repetitions to examine \(Q^2\)'s out-of-sample predictive power. The range of \(Q^2\) for GWE and EIB was 0.239 and 0.471, respectively, which was more than zero for endogenous variables (Hair et al., 2017). Therefore, the model had satisfactory predictive power (Shmueli et al., 2019).

As illustrated in the research questions, this study aimed to investigate the direct influences of GFHRM on employees' in-role green behaviour, as well as the mediating influences of employee green engagement to such connections. This study also checked the moderating and moderated mediation roles of environmental leadership, which have an effect on the above relationships. In this investigation, all hypotheses have statistical significance.

### Tab. 7: R-square and \(Q^2\) predict

<table>
<thead>
<tr>
<th></th>
<th>(Q^2) predict</th>
<th>(R^2)-square</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIB</td>
<td>0.472</td>
<td>0.514</td>
</tr>
<tr>
<td>GWE</td>
<td>0.239</td>
<td>0.286</td>
</tr>
</tbody>
</table>

### Tab. 8 Summary

<table>
<thead>
<tr>
<th>Path</th>
<th>Hypothesis</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>GFHRM (\rightarrow) EIB</td>
<td>H1: GFHRM positively influences employees’ in-role green behaviours.</td>
<td>Significant</td>
</tr>
<tr>
<td>GFHRM (\rightarrow) GWE (\rightarrow) EIB</td>
<td>H2: GFHRM positively affects employees’ in-role green behaviours through employee green work engagement.</td>
<td>Significant</td>
</tr>
<tr>
<td>GFHRM* ELS (\rightarrow) GWE</td>
<td>H3: Environment leadership moderates the effect of the link between GFHRM and GWE.</td>
<td>Significant</td>
</tr>
<tr>
<td>GFHRM* ELS (\rightarrow) GWE (\rightarrow) EIB</td>
<td>H4. The mediating effect of the GWE on the link between GFHRM and the EIB is moderated by environmental leadership.</td>
<td>Significant</td>
</tr>
</tbody>
</table>
In support of our hypotheses, our findings show that GFHRM significantly affects employees’ in-role green behaviours. By documenting the direct effect of GFHRM and the mediating effect of employees’ GWE, this study provides a pathway for nurturing employees’ in-role green behaviours using SET.

Theoretical implications
This study adds to the body of CSR literature by assessing the impact of GFHRM on employees’ in-role green behaviours. Employees frequently suffer from the effects of CSR, especially those that are directed towards them; therefore, this is an important step (Aguinis, 2011). We found that GFHRM positively and significantly correlates with employees’ in-role green behaviours, with employees’ GWE mediating this relationship. CSR has been shown to enhance employees’ green behaviours and GWE (Ahmed et al., 2020; Jia et al., 2019). Our results expand these findings by providing empirical evidence that GFHRM, which is used to help implement CSR programmes, also enhances employees’ GWE, which in turn affects their green behaviours. Moreover, we found that environmental leadership has a moderating effect on the relationship between GFHRM and employees’ in-role green behaviours. Environmental leadership (ELS) influences workers’ green behaviors, improving environmental performance, according to Liu et al. (2016) and Kim and Stepchenkova (2018). The stronger the environmental leadership, the stronger this relationship.

Practical implications
This study contributes to the growing body of research on SRHRM by shedding light on employees’ GWE as a mechanism that mediates the relationship between SRHRM and employees’ green behaviours. One important finding is that employees’ GWE may be suitable as a mediator between GFHRM and employees’ in-role green behaviours. Employees who are more engaged may be more likely to exhibit a broader spectrum of behavioural, attitudinal, and cognitive results (Chabck & Conway, 2019; Kwon & Kim, 2020). Another important finding of this study is that employee engagement is multimodal and manifests in many processes. Our study highlights the effect of the interaction between GFHRM practices and environmental leadership on employees’ in-role green behaviour through their GWE. It increases workers’ commitment to playing their roles in advancing green behaviour (Aboramadan et al., 2020). A combination of personal and contextual factors influences employees’ in-role green behaviours and their motivation to participate in a company’s environmental efforts.

In line with previous studies (e.g., Robertson & Barling, 2013), our findings also highlight the crucial role of leadership in organizational environmental sustainability. This suggests that aviation businesses need leaders who are familiar with environmental issues and green behaviour to guide employees. Given that green values and attitudes have been identified as precursors to environmental leadership (Egri & Herman, 2000), organizations may benefit from evaluating managerial candidates’ green values and attitudes when making hiring decisions. This study primarily focused on employee-centred CSR practices, also known as SRHRM, which have been examined in various aviation businesses. Our findings show that companies’ engagement in general CSR activities, such as poverty reduction and environmental protection efforts, creates favourable work environments and builds strong management–employee relationships.

5. CONCLUSION
Our findings suggest that implementing CSR-centred HRM systems in companies is beneficial, as they yield desirable organizational results and improve organizations’ image. This
recommendation applies to both global and local managers. CSR-centred HRM practices, such as offering equal opportunities, providing proper development and training facilities, employing CSR staff, paying people for CSR programmes and undertaking general CSR initiatives, can help employees develop better mindsets and actions. This study draws attention to the “HRM function” by showing that CSR is no longer merely the purview of businesses’ marketing and communications departments but can also be included in HR policies, specifically in the form of general CSR facilitation HRM.

The ways in which organizational members interpret and react to an organization’s CSR policies must be properly understood by SRHRM planners. Because employees’ opinions of organizational CSR initiatives have been shown to be crucial for favourable organizational outcomes, leaders should keep organizational members up-to-date about CSR programmes. Discussions about CSR initiatives need to be held frequently to reinforce employees’ positive perceptions of their employers and workplaces. However, the requirement of simultaneously increasing employees’ commitment to their work should be addressed by policies and practices, as a CSR-focused HR policy or initiative alone may not be sufficient to motivate staff to act ethically.

This study only focuses on the variable of employees’ in-role green behavior, while green behavior has another variable called voluntary green behavior (Norton et al., 2015). Therefore, future studies should expand to do more research on the variable voluntary green behavior. Furthermore, this work just collects data on the aviation industry in Vietnam. The process that affects GFHRM on employee green behavior through GWE and the impact of leadership disclosed in this study may vary significantly with other dependent or moderator variables. As a result, future research should more deeply study the relationship with other green behaviours such as extra-role green behaviour and may test the moderator with social responsible leadership.

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